Down Syndrome Education Conferences

Educators Track
Ages 0-6

Speech/Language Pathologist Track
Friday, January 24, 2014
8:00 AM - 4:30 PM

Educator Track
Thursday, January 23, 2014
8:00 AM - 4:30 PM

Parent/Family Member Track
Saturday, January 25, 2014
8:00 AM - 4:30 PM

Registration Fees: $75 per person/$125 for two attendees
Register online by January 15, 2014 at http://conference.kcdsg.org/

Thank you to our conference sponsors!

down syndrome education international
discovering potential • transforming lives
When all you see is Down syndrome, you’re not seeing the whole picture!

The Down Syndrome Guild of Greater Kansas City (DSG) is a nonprofit organization whose mission is to provide support and resources to individuals with Down syndrome, their families, and the professionals who serve them. DSG seeks to provide the entire community with information and education to broaden awareness and foster positive attitudes regarding people with Down syndrome.

We are so proud to be celebrating our 30th anniversary in 2014. DSG has been a part of some amazing advancements for people with Down syndrome during the last 30 years. Early intervention therapy, inclusive education, community integration, and medical advancements mean longer lives and greater opportunities for our friends to achieve their full potential. DSG is so grateful for our partnerships with hospitals, schools, therapy centers, community centers, corporations, and funders which allow us to dream big for the next 30 years.

Our 1200 members with Down syndrome invite you to join DSG and help us create a more inclusive world by offering your support in the following ways:

- Volunteer for the DSG
- Host a Dress Down for Down Syndrome Day
- Sponsor an event
- Hire an employee with Down syndrome
- Collect items for our new parent baskets

With your help, we can achieve great things!
Breakout sessions offer age appropriate guidance which will help you understand how students with Down syndrome develop and learn. Latest research findings indicating effective ways to help students with Down syndrome will be shared. Additionally, the presenters will share how you can use this research evidence to develop practical methods and activities to promote appropriate social and academic development in the home and educational settings.

<table>
<thead>
<tr>
<th>Time</th>
<th>Early Years Track (0-6 Years)</th>
<th>Childhood Track (7-16 Years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:30 AM - 8:00 AM</td>
<td>Registration</td>
<td>Continental Breakfast (included with registration fee)</td>
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<tr>
<td>8:00 AM - 9:00 AM</td>
<td><strong>Keynote:</strong> The learning profile of children with Down syndrome, implications of research for delivering effective education</td>
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<tr>
<td>9:15 AM - 10:00 AM</td>
<td>Developing early language-teaching vocabulary and sentences</td>
<td>Developing reading skills and using literacy across the curriculum</td>
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<tr>
<td>10:15 AM - 11:15 AM</td>
<td><strong>Teaching reading—the first steps</strong></td>
<td>Developing speech and language</td>
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<tr>
<td>11:30 AM – 12:30 PM</td>
<td>Activities to develop clear speech</td>
<td>Teacher numbers and math</td>
</tr>
<tr>
<td>12:30 PM - 1:30 PM</td>
<td>Lunch On-site (included with registration fee)</td>
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<tr>
<td>1:30 PM - 2:30 PM</td>
<td>Developing play, motor, cognitive, independence and managing behavior</td>
<td>Ways to access the full curriculum</td>
</tr>
<tr>
<td>2:45 PM - 3:45 PM</td>
<td>Supporting social development, independence and managing behavior</td>
<td>Supporting full inclusion—friends, social development, managing behavior</td>
</tr>
<tr>
<td>4:00 PM - 4:30 PM</td>
<td></td>
<td>Closing remarks and Q&amp;A</td>
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</tbody>
</table>
Becky Baxter CertMRC SLT

Becky is a speech and language therapist registered with the Royal College of Speech and Language Therapists and the Health Professions Council in the UK. She runs her own practice ‘Let’s Go’ providing a range of speech, language and education services – see http://www.letsgouk.org/.

Becky has had experience of working with children across a broad range of difficulties in a number of different settings including mainstream pre-schools and schools, a Specific Language Impairment Unit in a mainstream school and Great Ormond Street Hospital where her role included the management of caseloads, the use of a variety of assessments and intervention techniques and writing reports for external professionals including annual reviews.

She worked at Down Syndrome Education International full-time for 4 years where her roles included delivering specialist early development groups for children with Down syndrome from birth to school age; managing an outreach support service to children with Down syndrome in local mainstream schools, providing specialist assessment and consultancy services with families and in schools as well as delivering training conferences and workshops around the world.

Sue Buckley

Sue Buckley is a Chartered Psychologist with over 40 years of experience in the field of developmental disability. Sue studied Psychology at the University of Reading, UK and then went to Oxford, UK, for training in Clinical Psychology. She worked in the National Health Service for several years and moved to teaching in the Psychology Department, University of Portsmouth in 1975. Sue continued clinical work in the community establishing early intervention services in the 1970s and began research into the learning needs of children with Down syndrome in 1980.

She continued to teach and research in the University as well as establish the work of Down Syndrome Education International from 1980. She also worked on national and local government bodies tasked with improving services for individuals with disabilities. For the past 30 years, Sue has travelled widely to speak at conferences and training events and she is in high demand as a speaker. She has also published widely for families, practitioners and researchers and played a leading role in stimulating growth in research into the education and development of children with Down syndrome worldwide.

Sue is knowledgeable about most aspects of the development of children and adolescents with Down syndrome, but her special area of expertise is cognitive development, particularly language, literacy and memory development. Sue also has firsthand experience of many of the issues that affect families as the eldest of her three children, Roberta, has Down syndrome and was adopted into Sue’s family when she was a baby. Roberta is now an adult living with her partner in supported independent living facilities.
DOWN SYNDROME SEMINARS

All sessions are 8:30 AM-11:30 AM
Down Syndrome Guild Conference Center
5980 Dearborn Street, Suite 100 Mission, KS 66202

Down Syndrome 101 for Educators
October 17, 2013 OR February 20, 2014
Are you an educator, professional or family member working with a student who has Down syndrome currently? If so, do you understand the unique learning profile of your student and how you can most effectively include, educate and encourage your student? Presenter will explore and provide information, resources tips and strategies for the following:
- Common medical issues related to Down syndrome
- Communication issues and strategies for success
- How to improve social skills
- Processing time and memory issues
- Benefits of inclusive education
- Environmental issues which can hamper success
- Ways to adapt the curriculum
- Peer presentations to increase friendships
- Behavior intervention strategies
- Preferred teaching methods

Down Syndrome Specific Curriculum Supports
December 12, 2013 OR April 17, 2014
This educator led interactive seminar will help you better understand education support materials designed for learners with Down syndrome. Curriculums which improve reading, literacy, math, handwriting and memory skills will be covered. We will explore how these programs can be applied to your existing curriculum. Attendees will:
- Identify Ds specific curriculum, programs and tools
- Discuss common core standards and how to apply
- Evaluate IEP goals and assignments
- Review unique learning profile of students with Ds
- Learn helpful instructional styles that promote success
- Identify ways to motivate and engage students in the classroom
- Evaluate what works and ways to adapt what’s not working
- Learn how to modify and accommodate general education assignments to meet students needs

Effective Behavior Management Techniques for Students with Down Syndrome
September 26, 2013 OR January 16, 2014
Are you struggling to reach your student with Down syndrome? Frustrated that you spend a majority of your day managing behaviors instead of teaching? Do you feel your student is capable of more, but just can’t figure out how to get there? This hands on interactive seminar will provide practical strategies and real time solutions to help you work effectively and efficiently with your student who has Down syndrome. Attendees will learn:
- The benefits of providing appropriate processing time
- Tips for creating a high level of trust
- Creating a schedule and environment that works
- Planned ignoring techniques that work
- Strategies for dealing with the “top and drop”
- Helping your student be responsible for his own behavior
- Consequences and reward systems that make sense
- Techniques for managing non-compliance

Practical Solutions for Improving Speech and Communication in students with Ds
November 14, 2013 OR March 6, 2014
As a pediatric SLP and parent of a child with Down syndrome, I have a unique opportunity and perspective. Have you wondered why speech is so difficult for your student/child? Why they seem to know or understand something one day but not at a later date? Have you considered how memory and processing affect language learning and use? Are negative behaviors impeding progress? This presentation will highlight:
- Typical learning profile for student with Down syndrome
- Language supports and strategies
- Identify ways memory directly impacts language and learning
- Speech therapy considerations and techniques
- Interventions which prevent negative behaviors
- Language considerations when adapting curriculum
- Language facilitation strategies that can be used across all environments

RSVP FOR SEMINARS TO INFO@KCDSG.ORG OR 913-384-4848

Seminars sponsored by:

[Image of Down Syndrome Guild Logo]
CONNECT WITH THE PUJOLS FAMILY FOUNDATION

The Pujols Family Foundation proudly serves individuals with Down syndrome through extraordinary programs & services in St. Louis, Nashville, Southern California and Kansas City.

Please contact the Pujols Family Foundation to sign your child with Down syndrome up to participate in future programs & for up to date information follow us on social media.

In fact, get our your smartphone and connect with the Pujols Family Foundation right now!

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Down Syndrome Education International

- The charity exists to advance the education and development of individuals with Down syndrome worldwide through research, information and training.
- Since 1980, we have had an active programme of research and provided services to children, families and schools.
- This has enabled our team to work directly with children in early intervention and in classrooms, as well as collect research data.

Keep in touch with our work

- We have a large information site at Down Syndrome Online at [http://www.down-syndrome.org/](http://www.down-syndrome.org/).
- This has much information for teachers in the Down Syndrome Issues and Information Education series (DSII).
- There is also a wealth of papers by world leading experts in the Down Syndrome Research and Practice section.
- Teaching materials, books and videos can be found at our online store at [http://store.dseusa.org/](http://store.dseusa.org/).

Setting the scene for effective education

- What do we know about the effects of Down syndrome on development?
- First – the big picture across all areas of development
- Second – a closer look at the areas of specific weakness
- Do we know any of the reasons for this profile?
- What are the implications of what we do know for intervention strategies?
- If we apply these strategies – can we improve the areas of weakness and change the profile?
- Applies in special and mainstream classrooms – and to many other children
Effects of Down syndrome on development

- Most children will have delayed development
- There is a very wide range of individual differences from mild delays to more severe levels of disability
- For most children, severity of disability cannot be predicted at birth or in early years
- Not all aspects of development are equally delayed
- Research in the past 15 years has highlighted a profile of strengths and weaknesses
- We can use this information to be more effective in helping children reach their full potential – development is not fixed at birth

The specific developmental profile associated with Down syndrome

- Good social interactive skills
- Good empathy and positive personalities
- Sensitive to failure and negative emotional cues
- May use social skills to distract/avoid difficult tasks
- Good behaviour relative to mental ability and communication skills
- Good practical self-help/daily living skills over time
- Delayed early motor development – affects early learning through play and handwriting progress

The importance of the weaker areas – speech, language and working memory

- Language underpins cognitive and social development for all children
- Words for knowledge – vocabulary size
- Language for remembering, thinking, reasoning
- Language for self-control and planning
- Language for dealing with emotions and worries
- Language for communicating with others
- Language for friendships
- Any child with language delay will have cognitive (mental) delays (including executive function difficulties)
- Working memory deficits will affect all learning

Learning to talk

- Talking is for communicating – getting the message across, engaging with others
- Starts with looking, smiling, pointing – non-verbal skills for commenting, requesting, answering
- Then words – vocabulary learning – working out meanings and saying the words
- Then sentences – grammar learning – stringing words together for more complex meanings
- Talking requires clear speech skills – takes time for all children
Speech and language development

For most children with Down syndrome spoken language is delayed for mental age but they show an uneven profile

- Communication skills are usually good
- Vocabulary is delayed but grows steadily
- Language is ahead of expression
- Grammar is a challenge and lags behind vocabulary
- Tend to be 'telegraphic' talkers, using key content words
- Understanding is ahead of expression
- Clear speech is a challenge and speech is often difficult to understand

Vocabulary/grammar link

- Vocabulary size pushes along grammar development
- Children with Down syndrome have a vocabulary delay
- 200-250 words are needed before grammar starts
  - Understanding will be ahead of production
  - 200-250 words understood to begin to understand grammar
  - 200-250 spoken words to begin to use grammar

There will be many children with Down syndrome in kindergarten and elementary schools who do not yet have 250 words in spontaneous spoken language.

Why this learning profile?

- Hearing loss plays a part
- Auditory processing may play a part
- Slow vocabulary learning may delay grammar
- Difficulties with verbal short-term memory play a part
- We know nothing of early speech discrimination in children with Down syndrome
- Speech difficulties will delay language development
- We know very little about causes of speech-motor issues
  - Not just a motor issue
  - Planning component
  - Verbal short-term memory component

Vocabulary/grammar link (Pennanen, Buckley & Archer 2000)

Typically developing (TD) children = 100-90
Children with Down syndrome (DS) = 3-6 years

Baddeley’s 2006 Working Memory Model

Central Executive

Verbal Short-term Memory
Phonological Loop

Episodic Buffer

Visual Short-term Memory
Visuo-spatial scratchpad

Looking in more detail at weaker areas – working memory

- Working memory is the immediate memory system that supports all mental activity
- The working memory system has several components
- The central executive, which holds and processes information
- Supported by limited capacity stores
  - The visual spatial scratchpad – to hold visual information
  - The phonological loop – to hold verbal information
  - Both hold information from senses for about 2 seconds
  - The episodic buffer, which links to long-term memory
- Capacity in working memory increases with age
Working memory is important for all children

- Working memory is the mental workplace in which information can be temporarily stored and manipulated during complex everyday activities.
- Listening to another speaker
- Decoding an unfamiliar word whilst holding the meaning of the previously decoded text in mind
- Writing while formulating the next part of the text
- Engaging in mental arithmetic
- Predicts academic progress better than IQ (Alloway)

Verbal short term memory & language

- The phonological component supports verbal short-term memory (VSTM)
- Verbal short term memory span improves with age and can be measured with digit and word span tasks
- Verbal memory span is influenced by increases in speech perception and production rates, and by reading ability
- The phonological loop influences the learning of vocabulary and syntax – and the storage and processing of sentences
- It seems to influence spoken language output – may play a role in holding the phonological structure of speech prior to output (Gathercole et al 2005)

Working memory in children with Down syndrome

- A 4-year-old typically developing children have a digit span of 3, 16-year-olds a span of about 6/7, teenagers with Down syndrome only have spans of 2/4
- For children with Down syndrome their verbal working memory skills are delayed for mental age – a specific deficit
- Most of the research has measured verbal and visual short term memory
- Visual short-term memory skills are significantly better than verbal short-term memory skills in most studies
- However, recent Italian research has indicated visual STM impaired if material require simultaneous rather than sequential processing (dual tasks) and also central executive impairments (Laniolancias et al.)

Why this profile?

- A number of research studies by Chris Jarrold and team at Bristol University, UK have shown that the deficits cannot be explained by hearing loss or speech difficulties
- They suggest a phonological loop deficit – which will affect word learning as well as memory.
- They have shown children with Down syndrome have specific difficulty learning the accurate phonological or sound pattern of words
- There is some evidence that training can improve working memory function including computer training – Cogmed (Bennett, Holmes, Buckley 2013)
- Early speech perception and production difficulties could be causal as system has to tune to native language

Effects of poor verbal short term memory function

In other children with poor verbal STM
- Speech characterised by short utterance length
- Inaccurate syntax/grammar
- Limited range of vocabulary
- Speech clarity issues
- Storage and processing of sentences
- Poorer reading and poorer maths


Executive functions now being studied

- Laniolancias et al (2010) – adolescents with Down syndrome showed impairments relative to their MA on planning, inhibition, shift and working memory. (ie. Fidler et al. 2011) also report EF impairments and continue to study EF. Working memory and shift improved with WM training (Bennett et al 2013) – very preliminary finding.
- Important role of language in executive functions
Implications for intervention and education

Use social/emotional strengths
- build on emotional responsiveness – encourage social communication, looking, smiling, gesture
- early social communication underpins cognitive and language development
- talk to and play naturally with children
- build on social understanding – encourage ‘good’ behaviour
Always encourage AGE appropriate behaviour – do not ‘baby’ or ‘spoil’ child (or adult), have clear expectations and boundaries

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Implications for intervention and education

- Target speech and language difficulties from infancy and through school years
- Remember that children are visual learners
- Use reading to teach talking from early (2 to 3 years) and through school years
- Learning from listening will be specially difficult but learning from looking easier so always use visual supports – signs, pictures, reading, the computer
- Enable understanding to be demonstrated without the need to say it – choosing, pointing, selecting

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Implications for intervention and education

- Progress with grammar is linked to total vocabulary size for children with Down syndrome – therefore teaching vocabulary is an important goal from early
- Speech skills start in first year – therefore intervention should start then – games to develop discrimination and encourage production of speech sounds
- Non verbal communication skills predict talking (joint attention and pointing) therefore intervention should start in first year
- Gesture use can close the comprehension/production gap but we need more research on the proper use of signing

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Implications for intervention and education

Compensate for 'weaknesses'
- Hearing, vision – regular checks, good health care – speak clearly, use signs, limit background noise. Involve sensory impairment team
- Address working memory difficulties with sound and word discrimination games from infancy, improving spoken language development and playing memory games
- Encourage motor development at all times
  - Active practice
  - Encourage active movement through play
  - Sporting skills are good for fitness as well as social skills

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In summary

- Children with Down syndrome are visual learners
- They find learning from listening particularly difficult
- This effects learning to talk and it effects processing spoken language and instruction
If we plan interventions to
  - to focus on teaching spoken language
  - support all learning visually – especially with print
  - to improve and compensate for working memory
Can we make a difference?
Our data for teenagers taught in this way from preschool years suggests we can

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Closing the speech-language/non-verbal ability gap

- This is another version of the earlier coloured profile slide
- One group show the expected profile – social and practical strengths, language weaknesses
- The 'adapted input' mainstream group show language skills as good as their other skills – it is possible to change the profile

Comparison across domains

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Language and literacy - inclusion study

- Very significant gains in literacy (mean gain 1.3 yr) and expressive language (mean gain 2.5 yr) in mainstream education.
- Children fully included in mainstream classrooms.
- Access the same curriculum with individual targets and in-class support.
- Both groups had same range of abilities and social backgrounds at start of school.

The evidence for a specific phenotype or profile

- See Deborah J. Fidler (Colorado State University) and colleagues for a recent review of the evidence.

And free access articles – preschool, primary and teenage profile papers.
- Down Syndrome Research and Practice 9 (3) special section on the specific profile free at:

Relevant research evidence is growing

- Whole journal issues devoted to Down syndrome – important review papers in 2007.
- Important recent review papers and chapters on cognition (Silberman), language (Fidler et al., Roberts et al., Al Bedelu et al.), education (Fidler & Nadal), reading (Green et al., Buckley, Snowling et al.), social development (Irozzi et al., Cebela & Wistort).
- Gathercole & Alloway articles and books on working memory for teachers.

References – speech, language and memory


References – cognition and education

- Importance of full inclusion in changing the profile
Overview

1. Language learning
2. Encouraging pre-linguistic and non-verbal skills
3. Using signs
4. Teaching vocabulary
5. Teaching grammar

- The ability to produce speech sounds influences vocabulary and language development therefore work on speech is equally important from the first year through childhood
- Language and speech work should proceed in parallel

1. Language profile - research update

- Communication skills are usually a strength
- Early vocabulary development is delayed
- The pattern of vocabulary development is the same as in typical development
- Typically developing children and children with Down syndrome show huge individual variability with vocabulary development
- Expressive difficulties become greater with increasing age for children with Down syndrome
- Vocabulary paces grammar, just as in typical development
- Most children with Down syndrome are combining words and/or signs by 5 years of age.

1. Language intervention

- Language is learned every day in natural situations as you talk to children – so the first thing to stress is the importance of talking to your child. The quality and quantity of talk influences language progress for ALL children.
- In addition - children with Down syndrome will benefit from explicit teaching of vocabulary and grammar
- This gives them more opportunities to hear and to learn words - more practice and repetition are needed
- Language learning begins in the first year of life and continues throughout life with the early years being a very important time

2. Pre-linguistic skills – babies & toddlers

- Pre-linguistic skills serve as the building blocks for language development and learning
  - eye contact
  - gesture use
  - imitation
  - joint attention
  - turn-taking
- Improved pre-linguistic communication will enable pre-linguistic children to communicate more effectively and lead to better language skills later on
- These non-verbal ‘pivotal’ skills continue to be important when children have started to talk
Eye contact and social responsiveness

- The development of sustained and meaningful eye contact plays an important role in the development of relationships
- Allows engaged and intimate interactions to take place between parents and infants
- Learn to use and understand smiling, facial expression, tone of voice, body movement and gesture as methods of communication
- Important that parents and caregivers respond to and interpret the social signals of babies
- Overall a strength area:
  - Eye contact is usually good
  - The children are person orientated

Gesture use

- ALL children go through a stage of using natural 'deictic' gesture (showing, pointing, requesting)
- Gesture is used for communication before words – particularly pointing/requesting
- Natural gesture use by parents and child links to later vocabulary development
- Children with Down syndrome use natural deictic gestures – showing, pointing and requesting at same MA as other children
- Children with Down syndrome make more use of gesture as toddlers
- Gesture use broadens ALL children’s opportunities to communicate

Imitation

- Imitation is a key learning strategy for all children in the early years
- Children with Down syndrome have usually good at learning to imitate
- Can be a strength in social play situations and language intervention contexts in the early years
- Children with Down syndrome often use this strength for longer
- In later language development children need to develop more learning strategies

Joint attention

- Joint attention is when the infant and carer are attending to the same object or activity
- In this situation the carer tends to talk about what they are both attending to
- This helps the infant to ‘see what you mean’ and encourages comprehension of words and sentences
- Important to ‘follow the child’s lead’ to increase opportunities for joint attention
- Children who experience more joint attention episodes learn language faster
- Children with Down syndrome generally develop good joint attention

Turn-taking

- Turn-taking in early games precedes turn-taking in conversation
- Helps babies to learn about the ‘back and forth’ pattern of all social interactions
- Parent and baby engage in babble or smiling ‘conversations’ with each partner taking a turn while the other pauses and listens
- Helps babies and young children to develop an understanding of the pattern of interactions that they will use throughout their lives

Pre-linguistic teaching programmes

- Pre-linguistic milieu teaching - promotes language development by teaching parents to engage in highly responsive interaction throughout daily routines – targets gesture, joint attention and eye gaze shift
- Hanen approach - helps parents learn how to turn everyday routine activities into language learning opportunities for children
- Responsive teaching - An early intervention curriculum designed to address the cognitive, language and social emotional needs of young children with developmental delay focusing on ‘pivotal behaviours’ (including those discussed above) as the foundations for communication development
Teaching early vocabulary

- Understanding comes before expression
- Use DSE Vocabulary checklist – first 120 words – to select words to teach and to record progress
- Have separate targets for words to understand and words to say – targets may be very different
- Make it visual – objects, pictures and signs
- Structured practice – short bursts
- Extra practice in natural ways – e.g. play
- Start with nouns and verbs and then move on to include a variety of words e.g. adjectives, prepositions
- Matching-selecting-naming games - See and Learn

Using gestures and signs

- Evidence suggests that teaching signs increases early vocabulary
- Many children can sign words before they can say them
- Signs hold the child's attention and can be a clue to the meaning of the word
- Signs can be used when talking to babies from 6-9 months
- Always say the word as you sign it
- Remember you are using signs as a bridge to talking
- The focus should be on teaching the child to talk
- Our data shows that signs are steadily dropped as the child begins to say words
- Note cautions about later use of signs at end of slides

DSE research – children with Down syndrome

We have some data on sign and word development from two studies:

1. Unpublished student project – data based on parent report using the MacArthur Communicative Development Inventories (CDI) collected in mid 1990s (Pennanen 2000)
2. Some preliminary data from the first data collection point of an ongoing longitudinal study of 40 children aged 18-42 months at the outset
- Note the data provides a guide to expected rates of spoken vocabulary development and is similar to other studies

Signers and non-signers (Pennanen 2000)

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<th>Signers N&gt;50</th>
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<td>mean</td>
<td>std dev</td>
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<td>12-24 (9)</td>
<td>10.7</td>
<td>12.7</td>
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<tr>
<td>24-36 (15)</td>
<td>26.1</td>
<td>24.9</td>
</tr>
<tr>
<td>36-47 (22)</td>
<td>32.6</td>
<td>10.7</td>
</tr>
<tr>
<td>46-56 (26)</td>
<td>34.7</td>
<td>14.6</td>
</tr>
<tr>
<td>50-71 (33)</td>
<td>29.7</td>
<td>13.4</td>
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Total productive vocabulary

Data from MacArthur CDI records collected in mid 1990s (NB cross-sectional data & large individual differences)
Signs seem to give an advantage to 36-47 months, mental age of about 21-24 months. By 4 years no difference in productive vocabulary size – as Miller predicted and TD data predicts

Changes in word and sign use over 12 months

<table>
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<tr>
<th></th>
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<th>Group 1</th>
<th>Group 2</th>
<th>Group 2</th>
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<tr>
<td>Sign only</td>
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<td>33%</td>
<td>44%</td>
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<td>45%</td>
</tr>
<tr>
<td>Word only</td>
<td>9%</td>
<td>23%</td>
<td>22%</td>
<td>10%</td>
</tr>
</tbody>
</table>

NB Preliminary data and considerable individual variation

Group 1 N=16
At 23.5 months CA the children have words for 42% of vocabulary
At 36 months CA they have words for 67%
Group 2 N=24
At 36 months CA the children have words for 53% of vocabulary
At 48 months CA they have words for 75% of vocabulary

Research summary: children with Down syndrome

- Signs increase total productive vocabulary from M/A 14m to 26 m – this would be about 4/5 years old (CA) for children with Down syndrome
- Typically developing children use signs from 14-26 months of age – then spoken words take over from signs
- Children with Down syndrome are in this stage of using gestures and signs for a longer time period
- The percentage of total vocabulary that is signed decreases with age even from 24 to 36 months CA
- At 4/5 years, most children with Down syndrome are decreasing use of sign and increasing use of spoken language (Miller; Berglund; Buckley)
See and Learn Language and Reading

- A practical resource for professionals and families
- A language programme that focuses on receptive language, expressive language and reading development
- Teaches vocabulary on DSE Vocabulary Checklist 1
- Kits and apps available

Teaches matching, selecting, naming

- Matching – child matches picture to picture while hearing and learning the word
- Selecting – child chooses the picture when you say the word – so demonstrating comprehension of the word
- Naming – child can name picture
- This is a very effective procedure for teaching words, colours, numbers, shapes...
- Most children will be able to select many pictures correctly showing that they are understanding the words long before they can say them without a prompt
- Important to record what they understand and keep teaching new words for their cognition

Special words app – match pictures, hear word

Special words app – match picture to word

See and Learn – picture matching

1. First Words Pictures
   - 60 first vocabulary pictures and matching baseboards
   - Guidebook, instructions and record sheets for activities
2. First written words
   - 16 written words, 20 phrase cards, matching boards, 9 books
   - Teaches range of 2 'key-word' phrases
3. More Words Pictures
   - 55 more first vocabulary pictures and baseboards
   - Instructions and guidance for activities
4. First Sentences
   - Introduces 16 more written words within simple sentences and in 4 books - teaches a range of three 'key-word' sentences
Special words app – match printed words

Special words app – match print to picture

Special words – add your own words and pictures

www.Specialiapps.co.uk

Special words – first pictures and words from See and Learn Language and Reading program

Special stories – for creating personal books

You can get the See and Learn Language and Reading books from our website to download into Special Stories Apps and software play to our children's strengths as visual learners

Very powerful learning tools but learning from app must be generalised to everyday use

Encouraging Word Production

• Choose words the child already understands
• Modelling and imitation
• Give choices
• Create opportunities for the child to communicate
• Respond to all word attempts
• Allow extra time for responses
• Keep a record
• Use DSE vocabulary checklists

Film clip – teaching vocabulary

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Film clip – Understanding pronouns – 4 years old

Language Development
- First words
- Combining two words
- Grammar

Language and Grammar - research
- The same 2 and 3 word combinations as typical development
- Average age for emergence of 2 word phrases – 3 years old (Kumin 1999)
- Expressive grammar - particular area of difficulty (understand and express concepts, but are not using the morphological markers (e.g. plural ‘s’, past tense ‘ed’, possessive ‘s’))
- By 3 years old many will understand early grammatical concepts although not able to use the grammatical markers until about age 5. (Kumin, 1999)
- May be linked to speech difficulties

Developing knowledge networks
- The first 100+ words children learn are for people and activities in their daily world – common in all languages
- As their vocabularies expand they will learn words more easily if they can link them with words they already know so teach in themes
- Research shows they learn words faster in a context
- Make sure you teach a range of words – nouns, verbs, adjectives, pronouns, prepositions etc (DSE vocabulary checklists provide a guide)
- Also very important to teach category words for linking words by meaning and supporting memory

Film clip – category words – 4 years old

Language and grammar - intervention
- Modelling
- Imitation and expansion
- Use of signs
- Pictures/props
- Pacing boards
- Repetition and practice
- Conversation diary
- Sequencing cards/games
- Focused personal books (e.g. plural book)
- Open-ended questions (e.g. tell me more...)
Importance of expansion

- Importance of expansion as a language teaching tool
- It is a natural tool for teaching sentences and grammar – when children are at a 2 ‘keyword’ stage, child says ‘Daddy gone’ and you say ‘Yes, Daddy has gone’
- Or ‘Mummy shoe’ and you say ‘Yes it is Mummy’s shoe’
- When making personal books or conversation diaries – ask child to talk about the picture – then take their key words e.g. ‘play sand’ and make shortest correct sentence ‘I played in the sand today’
- This way you will be giving them the language for what they are looking at/thinking about – very important if they are to understand and remember it.

Sharing books

- Reading books together is a very powerful way to teach new vocabulary and sentences
- Repetitive reading of favourite stories
- Talking about the people and the activities in the book
- Most children with Down syndrome love to share books
- Give them time to take in information and join in
- Encourage pointing to the pictures as you talk about them
- Follow the child’s lead – let them point and show their interest

Importance of daily communication

- The extra teaching games will make a difference
- Daily repetition and practice
- But children learn to talk because we listen to them and they can effect their world – ask for things, tell you how they feel
- It takes children with Down syndrome longer to plan and say words and sentences – we need to give them time
- We need to sensitively support daily talk and be sure to respond to all communication attempts – any sounds or gestures – to encourage more
- When children are late to talk and say few words they get talked to less and have fewer learning opportunities

Summary

- Developing spoken language should be a priority – at home and in preschool
- The number of words a child knows matters – vocabulary teaching should be planned and progress recorded until at least 600 words are spoken
- Use visual supports – objects, pictures, signs
- Use ‘expansion’ to teach sentences and grammar
- Make full use of story books
- Make personal books
- Communicate naturally with your child at every opportunity

Use of sign with children with Down syndrome

- No clear evidence of benefits – poor control groups in the few studies that are often quoted in favour of signing. We need much more sophisticated longitudinal research.
- Arguments in favour:
  - Strength in natural gesture
  - Risk of hearing loss
  - Working memory delays
  - Risk of phonological issues
  - Speech delays
  - Increases attention
  - Reduces frustration
  - Increases quality and quantity of parent-child communication
  - Improves general communication between child and parent

Cautions – real and possible

1. Signs cannot teach phonology and grammar
2. Signing is sometimes not stressed as augmentative – need to encourage sounds, words, lip-reading from first year of life
3. We do not know how children cope with attentional demands of sign plus speech or if signing changes how parents talk to children
4. Signs can reduce parent responsiveness to child’s speech attempts
5. Signing may reduce child’s spoken word attempts – use of voice/sounds/words need to be encouraged at all times
6. Research indicates that by 4-5 years, most children with Down syndrome are switching from majority of signed words to majority of spoken words – spoken language should be the focus from 4 years old for most children
7. By 4-5 years old, print is a better support for phonology and grammar
Resources

- hanen approach - it takes two to talk: http://www.hanen.org/refs/HanenPrograms/It%20Takes%20Two%20to%20Talk.html
- kumin, l. (2008) helping children communicate better. woodbine house, maryland

DSE See and Learn Language and Reading

See and Learn First Words Pictures
See and Learn First Written Words
See and Learn More Words Pictures
See and Learn First Sentences
Kits available DSE shop: http://www.dseusa.org/en-us/resources/teaching/see-and-learn/
See and Learn More Sentences - 2014
See and Learn Letters and Sounds - 2014
Kits to download and make plus DSE app versions of kits 2014

DSE Language Resources

- DSE checklists for speech, vocabulary and grammar – http://store.dseusa.org/ in print and digital versions. Use to choose words to teach and record progress.
- Development in Practice DVD – Activities for babies with Down Syndrome – available from http://store.dseusa.org/
- Development in Practice DVD – Speech and Language Activities for Pre-School Children with Down Syndrome – available from http://store.dseusa.org/
- Down Syndrome Issues and Information series of books – Speech and language available at http://store.dseusa.org/
- To be updated 2014

Special Apps

See and Learn apps for apple and android in UK and USA http://www.specialapps.co.uk/en_gb/

Special Words – teaches See and Learn vocabulary and you can add your own pictures and words.
Special stories – enables you to make personal books with photos and text – it is easy enough to be used by children. Developed by ICT experts who also happen to have a son with Down syndrome - both apps have won awards

References

### Developing early reading skills

- **Teach reading early – why?**
  - Sarah Duffen's story
  - Our first reading research in 1980-1983
  - Printed words seem easier to remember than spoken words – a real strength for many children with Down syndrome from as early as 2-3 years
  - Develops their spoken language
  - Sight words used to teach spoken words and sentences – so sight vocabulary is chosen based on language development
  - Sets the foundation for learning to read - phonics taught at 4-5 years

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### Reading for children with Down syndrome

- Reading is an important and worthwhile goal for all children
- Many children with Down syndrome are able to develop some level of independent reading ability – all benefit from reading activities and books
- Literacy attainments vary widely with some 10 year olds able to write short stories unaided and some learning a sight vocabulary – Many of the highest achievers were introduced to reading at an early age
- Some children 'take off' with reading as teenagers.
- Reading shares reciprocal relationships with speech, language and working memory development – they benefit each other

### The benefits of developing reading

- Literacy is an important goal in itself
- In addition
  - Learning from listening is difficult for children with Down syndrome, learning from looking is easier.
  - Printed words seem easier for them to remember than spoken words.
  - Reading activities can teach new vocabulary and new grammar.
  - Reading supports spoken practice of words and sentences as children read aloud or imitate.
  - Spelling and phonics word can support articulation and phonology so improve speech intelligibility.
  - These benefits are true also for non-readers (i.e. supported reading activities)

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### Overview

#### First steps to literacy from 2 years
1. Teach a small sight vocabulary
2. Use these sight words in sentences
3. Ensure the sentences can be read and understood
4. Teach text comprehension strategies
5. Practice formulating sentences
6. Use Personal Books
7. Develop phonics skills
8. Make activities fun and motivating!
9. Start RLI for 5-6 year olds

### 1. Teach a small sight vocabulary first

#### Whole word reading
- Pre-school children – we start whole word/sight word reading activities when:
  - a child understands 30-100 words
  - is able to match and select pictures
  - this is usually around 2.6-3.6 years of age
- Choose words that the child understands and finds motivating e.g. family names.
- Introduce words through the hierarchy of matching, selecting and naming.
Word matching (film clip) 2 years 5 months

Word selecting (film clip) 2 years 4 months

Word naming (film clip) 3 years 10 months

2. Use these sight words in sentences
   - From the beginning choose words to make simple grammatically correct sentences.
   - Select words as appropriate for the child's language comprehension level and interests, starting with words that the child already understands.
   - Always read the words and sentences with the child while they are learning - that is use errorless learning techniques to support success.
   - Make books using pictures of the child's own world and interests to illustrate the sentences.

Simple sentences (film clip)

3. Ensure words and sentences can be read and understood
   - From the start ensure that the child is reading for meaning.
     - Can read word and match to correct picture
     - Can read sentence and match to correct picture
   - In books
     - Use of pictures to support understanding of text.
     - Act out sentences/match to pictures to ensure understanding
   - Once the child is enjoying the reading activities with familiar vocabulary, introduce new vocabulary and grammar targets into the reading.
   - Always be ready to prompt to support success but give child time to respond first
4. Teach text comprehension strategies

- Sequencing – familiarity with concepts and language (first, next, last), start with sequences/routines that the child is very familiar with e.g. Daily routines (bath time, brushing teeth), favourite nursery rhymes and stories.
- Retelling/repeating – repeating sentences the child has read, asking the child to repeat sentences you have read, use of carrier phrase activities.
- Summarising/commenting – 'my favourite part was ....'
- Questioning
- Use of modelling and scaffolding

5. Practice formulating sentences

- Matching the key word in a sentence
- Matching all the words in a sentence
- Ordering words to form a sentence
- Choosing words to make own sentence
- Filling in the missing word

6. Personal books

- These books should be:
  - Written as if the child has written it themselves
  - Written at an appropriate language level for the child
  - Created together with the child to build understanding
- Examples of this type of book include:
  - Carrier phrase books – I like..., I can...
  - Conversation diaries
  - Topic books
Personal book (film clip)

Personal book

See and Learn Language and Reading – step 2
First Written Words – 16 written words
- 16 written words picture cards/16 written words word cards
- 9 books
- 20 phrase cards
- Guidebook and instructions for activities
- Record sheets

See and Learn Language and Reading – step 4
First Sentences
- 24 word cards/24 picture cards
- 6 word to word matching base boards
- 16 sentence cards and matching picture boards
- 4 reading books
- Guidebook and detailed instructions

See and Learn First Sentences

7. Teaching phonics
- Start to teach 'phonics' once the child has a sight vocabulary of 30-40 words (pre-schoolee) or with the rest of the class in school.
- As with all activities using visual supports is key e.g. pictures, plastic letters, whole words
- Many of the early phonic skills will overlap with speech activities e.g. Letter sounds, initial sounds in words
- See and Learn Letters and Sounds coming soon – evaluated with 4 year olds – teaches letter sounds & at a time to make rhyming words e.g. cat, hat, mat, bat.
- An easy way to start phonics and we were surprised at the children's progress
7. Phonics is important

- Children learn to read using a variety of strategies
  - Sight word learning to get started and for the many irregular words in English (yacht, island, was...)
  - Context - guess the 'new' word by choosing a word that gives correct meaning or grammar in sentence
  - Sounding out - sound out the letters in an unfamiliar word in the book and try to 'blend' them to identify the word – this is using phonics
  - Phonics is also very important for working out how to spell a word – the faster children understand phonics the faster they progress as readers

7. Component skills for phonics

- There are three important component skills
  - Phonological awareness (PA) - the ability to hear sounds in words
  - Letter sound knowledge - learning the sounds represented by letters
  - Using letter-sound knowledge and PA to work out a printed word by 'sounding out' and 'blending'

Children need to be taught all three

- Studies show children with Down syndrome use their strong sight word skills to support their reading for longer than other children but many do master and use phonics
- US research (Lemons et al.) showed children with Down syndrome with more sight vocabulary learned phonics faster

7. Phonological awareness

- Listening to sounds (phonology)
  - Use visual supports where helpful (pictures/objects)
  - Rhyme
    - Rhyme matching/pairing game, rhyme oddity, rhyme production
    - Write with pictures/objects/word cards
  - Phonemes
    - Discriminating initial/ending sounds
      - Matching and sorting games: ask child to match pictures or objects based on starting or ending with the same sound
      - Visual cones: ask child to find objects in a picture that start/end with a certain sound
      - Phoneme hunt: ask child to spot words in a book that start/end with the same sound or not?

7. Phonics and phonological awareness

- Phonemes (continued)
  - Segmenting
    - Use phonemes to get children to blend
    - Use a toy to do 'sound-talk': ask child does the sound talking – What word is the toy saying? e.g. 'p-e-e'
    - I spy with a few objects e.g. 'I spy with my little eye a p-e-e'
  - Segmentation
    - Use phonemes to get children to blend
    - Use a toy to do 'sound-talk': ask child does the sound talking – What word is the toy saying? e.g. 'p-e-e'
    - I spy with a few objects e.g. 'I spy with my little eye a p-e-e'
    - Phoneme frames: ask child to sound out a word (e.g. dig) and put a clip/clay/counter into the frame each time a sound is said
Film clip – early blending – 4 years old

B. Make activities fun, model correct responses and prompt success

- Make reading fun and meaningful
  - Use a variety of activities and/or presentations
  - Choose words and sentences that relate to the child's interests or knowledge from everyday life
  - Be enthusiastic!
- Play games and activities with the same vocabulary to support understanding and recognition.
- Use errorless learning – ensure lots of practice and experience before introducing testing.
- Children with Down syndrome can be sensitive to failure and we want to guarantee their success and motivation.

RLI – Reading and language program

- We have designed and evaluated a school reading and language program which incorporates these principles
- Progress was significantly faster on key reading and language measures on the programme
- Younger children (5-6 years) made faster progress
- RLI Handbook and Resources published with video
- An pilot project in Texas shows RLI can be used in US schools with positive outcomes for both reading and language
- Training educators across Texas at present plus RLI accredited US based trainers and offer Web training

RLI Programme Structure

- Daily 40-minute individual sessions, delivered by trained teaching assistants
  - Teaching sessions (1 to 4, 6 to 9): routine structure
  - Consolidation sessions (5 and 10): reflect and revise
- Two interactive components
  - Reading Strand
  - Language Strand
- Prescribed programme
  - Set out in manual
  - Opportunities to tailor sessions to play to individual's strengths and address weaknesses

Evaluations with 5-10 year olds – follow link to published paper

Resources

- See and Learn Language and Reading
  - First Written Words
  - First Sentences
- See and Learn apps for iPad: see at http://www.specialagoos.com/en-us/
- Down Syndrome Issues and Information books on Reading
  - see http://store.dseusa.org/collections/books/reading (to be updated 2014)

Resources

- RLI Handbook
- Also videos showing preschool and primary readers from our work over last 25 years now available as DVDs
Speech development – start early

- Starts early in typical development
  - In typical development, children are learning to discriminate sound in the first year of life – tuning in to native language
- High incidence of hearing loss
- Phonological difficulties
- Verbal short term memory difficulties
- Poor auditory processing
- Differences in anatomy and physiology

- SPEECH WORK MUST START EARLY – as research shows sound production ability influences first words in language development
  - (Steel-Gammon 2011) - and continue through childhood
- Principles similar for older children

What the research says about speech

**Children with Down syndrome**

- Babbling - mixed information in the research
  - more alike than different
- Babbling period is much longer and transition to words takes longer

**Phonology** - mixed information in the research

- Barbara Dodd – emergence of phonemes follows typical development
- Libby Kumin – different emergence of phonemes
- Both agree – huge variability and lots of inconsistency in production
- Recent study shows delay in phonological development increasing from stage of first 10 words – about 2 years of age
  - (Sokol, Fey 2013)

**Intelligibility**

- 95% of individuals with Down syndrome have speech sound production difficulty
  - (Kumin 2006)

What the research says about speech

**Phonological processes**

- Some typical phonological processes seen
- Some atypical processes seen – e.g. backing, initial consonant deletion, use of non-English phonemes
- Error patterns persist for longer
- More error patterns are present
- Errors are more inconsistent
- Fewer errors in imitated productions
- Greater delay than would be expected by mental age

Intervention

**Listening practice**

- Develop phonological system
- Typically developing children develop this in first year of life
- Children with Down syndrome need practice and repetition

**Practical activities**

- Sound cards
- Sound games (bang)
- Symbolic sounds (brrrm, brumm, choo-choo, baa, moom)
- Talking/singing
**Film clip – early imitation – 4 months old**

**Film clip – sound cards – one year old**

**Film clip – discrimination – 2-1/2 years**

**Film clip – syllable marking – 4 years old**

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**Intervention**

**Discrimination**
- challenging the auditory system
- noticing subtle changes in sound
- refining the listening system

Practical activities
- noticing differences between similar sounds
- rhyming words/similar words

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**Production practice**
- allows for voice exploration
- voice has power and meaning
- turn-taking for conversation – speaker/listener

Practical activities
- single sounds/sound cards
- bubble
- symbolic sounds
- consonant-vowel combinations – ba, bo, bee
- simple words
- syllable marking – 1, 2, 3, 4 syllable words
Intervention

Auditory bombardment – repetitive listening and/or production of a particular sound – in isolation or in a word
- draws attention to sounds in isolation, syllables, and words
- production practice of sounds in isolation, syllables and words

Practical activities
- sound books
- sound boxes
Order of sounds is child-led by child’s production

Some evidence this approach is effective for children with Down syndrome and can improve phonology quite quickly (see Dodd, Ni Cholmain ref) See and Learn Saying Words kits based on this work.

Copyright © 2012 Down Syndrome Education International

Film clip – auditory bombardment – 2 yr old

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Intervention

Sorting by initial sounds in words
- listening practice – draws attention to initial sounds in words
- production practice – draws attention to sounds in words

Practical activities
- sound books/boxes – sorting by initial sound
- I spy..... Game

Note these are phonological awareness activities and will help speaking and reading.

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Film clip – auditory bombardment – 3 yr old

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Film clip – initial sounds in words – 4 years old

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Intervention

Letters and sounds
- listening and production practice
- foundations for phonics
- visual prompt for production

Practical activities
- sound cards and plastic letters
- matching letters in words
- sound blending – listening and production

Direct link with foundations for reading and supported by study by van Bysterveld et al (2010) – taught PA and letter sounds and positive effect on speech

Copyright © 2012 Down Syndrome Education International
Film clip – CVC – beginning blending

See and Learn Speech

See and Learn Speech aims to improve speech discrimination skills and develop clearer speech production
- Structured, step-by-step programme designed specifically for young children with Down syndrome (from 6 months to 7 years old)
- Materials and guidance for activities (suitable for home, group and therapy settings)

See and Learn Playing with Sounds

- Listening to sounds and becoming familiar with sounds
- Hearing the differences between sounds (discrimination)
- Producing sounds in isolation

See and Learn Putting Sounds Together

Resources:
- Picture cards representing consonant-vowel combinations (e.g. bee, key, tie, pea, sea)
- Picture cards representing symbolic sounds (e.g. bim-bim, chup-chup)
- Record sheets

Activities:
- Using sound cards and picture cards as visual cues to prompt production of sound combinations

Oral motor skills

- Little is known about the link between oral-motor skills and speech skills. There is no evidence that interventions that target non-speech oral-motor skills benefit speech production.
- However, some basic oral-motor skills are necessary for speech e.g. jaw closure, lip rounding and tongue retraction.
- Any activities that promote these skills may be helpful and certainly won’t be harmful.
- Research in progress on this issue in UK (Alcock, Goody)
Oral motor skills
- Blowing
  - breath support and breath control
  - lip rounding/lip closure
- Straw drinking
- Tongue retraction/building muscles
- Lip closure/lip rounding
- Jaw stability
- Jaw strength to support speech
- Mouth closure

Baddeley's 2006 Working Memory Model

Auditory memory difficulties
- Hearing loss
- Poor discrimination skills
- Poor phonological representations constructed
- Slow development of clear speech
- Lack of familiarity with words
- Slow retrieval of phonological information
- Slow organisation and production of words
- Lack of rehearsal strategies

Interventions – memory training
- Memory games – remembering 1, 2, 3 items
- Pairs games
- Kim's game
- Rehearsal training
- Sorting/category games
- Activity recall
- Interventions for improving phonology and speech (previous slides in speech intervention)

Interventions – supporting memory
- Props for remembering and recall
- Pictures
- Pacing boards
- Written information
- Practice in daily activities
  - Following instructions
  - Delivering messages

Film clip – memory – 3 years old
### References/Resources - speech

- **DVD – Speech and Language activities for preschool children with Down Syndrome** — available at [www.downsyd.org](http://www.downsyd.org)
- Intervention reference

### Intervention references


### References - speech


### References - speech


### References - speech


### Resources and references - memory

**Play, number and cognitive skills for young children with Down syndrome**

Children learn through play
- How things work in the world
- How to manipulate things
- Build strategies
- How to think, plan and solve problems
- Consolidate all that they learn from their everyday lives
- Play shows how much they understand about their world
- The process of play is important, not just the outcome

**Types of play**
- Sensory play
- Exploratory play
- Cause and effect
- Pretend play
- Imaginative play
- Co-operative play

**Cognitive skills**
- Exploration skills
- Imitation skills
- Object permanence
- Cause and effect
- Symbolic play
- Problem-solving
- Discrimination/classification
- Sequencing

**Play skills and Down syndrome**
- Play partner for longer
- Gross and fine motor delays
- Need for modelling and imitation
- Risk of opting for social games rather than problem-solving
- Language learning opportunities in play
- Experiencing a range of types of play

**Play partner**
- Children with developmental delays may get ‘stuck’ in repetitive play.
- Children with Down syndrome need play partners even more than other children – people to join in their play and support them in play.
- They may be more dependent on others to show them the next steps and how to play.
- Practice and repetition

**Gross and fine motor delays**
- Motor skills support play in a variety of ways.
- Children with Down syndrome need more opportunities to practise different kinds of play, but delayed motor skills may interfere with this.
- Take note of interest through looking, attention and pointing and provide variety and opportunity in play.
- Help them to do some of the things their gross and fine motor skills don’t allow them to do – e.g. shape sorters.
Need for modelling and imitation

- Children with Down syndrome need to see it, experience it and practise it over and over again before new skills are spontaneously used in their repertoire.
- Imitation is a strength area for many children with Down syndrome and a great way for them to learn.
- Modelling new skills highlights their strength in visual learning.
- Turn-taking games

Social games

- A strength in social skills allows children with Down syndrome to 'opt-out' of more difficult tasks rather than problem-solve or try new strategies.
- Provide support within new tasks for new activities – prompting and guiding correct responses until the task can be completed without the support.
- Modelling, turn-taking and shared participation may help.

Language and play

- Play provides opportunities for language learning and communicating together.
- Pretend play provides opportunities for repetition and practising language they experience everyday – e.g. eating, sleeping, drinking, washing.
- Play provides opportunities to link ideas together for two and three word phrases.
- Pretend play allows for practice of foundation skills for sequencing and problem-solving – linking ideas together.
- Requesting games prompt communication

Developing attention skills

- Notice the child's attention across different types of activities.
- Look for preferences.
- Look at ways of reinforcing and maintaining attention – individually, in a small or large group.
- Use visual and social strengths – pictures, signs, photos, gestures, peer support – to support attention.
- Use music, songs and movement.

Following the child's lead

- Join in their activity and what they are enjoying.
- Try to understand the play level they are at and what they are learning from their play.
- Copy what they are doing – wait until they watch you and then begin to 'play together'.
- Move forward just enough for child to copy and join in – 'scaffolding'.

Mastery motivation / Intrinsic motivation

- The desire to succeed through intrinsic motivation and enjoyment of learning rather than reliance on external motivation and rewards.
- Intrinsic motivation is important for learning – for perseverance and problem-solving.
- Teach and support problem solving – cause and effect toys, shape sorters, puzzles, nesting boxes – chain 1, 2, 3 steps.
- Allow freedom to explore.
- Allow the child to initiate activities and interactions.
- Follow through on developmentally challenging activities.
- End activities in a positive way even if it is supported.
Teach and show - don’t test

- Children with Down syndrome have a strength in social understanding and are quick to realise when they are being tested
- This sets up a ‘pass/fail’ situation
- Model and show activities, guide with ‘errorless learning’
- Allow them the time and space to let them show you what they know without pressure
- Provide support when necessary and then fade support as the skills improve

Know when to stop

- Pay attention to cues about participation in activities
- Is there a better time of day to do structured work?
- How long can children maintain their attention?
- Are they hungry, tired or uncomfortable and not able to tell you?
- Short bursts of structured activity throughout the day are just as effective as longer, drawn out activities

Allow extra time – be patient

- Research suggests that children with Down syndrome have slower rates of responding
- This can lead to an underestimation of a child’s skill and knowledge
- Allow extra time for a child to receive information
- Give children time to process the information
- Give time to organise and execute a response
- This allows them to demonstrate what they know
- This allows you to challenge them appropriately

Prepare the learning environment

- Provide an environment that invites exploration and supports incidental learning through observing, exploring, speculating and making discoveries
- Allow exploration that may be different to the adult’s goals and expectations – don’t intervene too quickly
- Multi-tasking – using one activity to target several different skills and concepts
- Give activities a purpose and a structure
- Encourage generalisation of skills across different activities

Pre-linguistic Milieu Teaching

- Promotes language development by teaching parents to engage in highly responsive interaction throughout daily routines
- Increases the frequency and complexity of intentional nonverbal communicative acts – sets the stage for later language learning
- Targets pre-linguistic skills – gesture, joint attention and eye-gaze shift
- Increases requesting and commenting

Effective for children:
- at a mental age of up to 9 months
- children who produce 10 or less words or signs
- children who understand less than 75 words


Hanen approach – fostering language through everyday experiences

- A practical approach that helps parents learn how to foster their child’s language development during everyday routines and activities
- Parents learn how their child communicates and her/his stage of communication
- How to turn everyday activities into opportunities for their child to learn to communicate
- Effective strategies that will help their child learn to communicate
- How to talk so their child can expand her/his understanding of language
- How to play, read and use music with their child to enhance her/his communication development

Hanen approach – structured, repetitive practice will benefit children with DS

http://www.hanen.org/
Responsive teaching – Mahoney, MacDonald

- An early intervention curriculum designed to address the cognitive, language and social emotional needs of young children with developmental delay
- Implemented by parents and other caregivers
- Supports and enhances child development
- Encourages children to develop and use ‘pivotal behaviours’ that are foundations for development
  - social play
  - initiation
  - problem-solving
  - conversation
  - persistence
  - joint attention
  - feeling of competence

http://www.respondinteaching.org/

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How number skills develop typically

- Social experiences and pre-school exposure
- Practical materials to support understanding, importance of practice and rote learning of basics
- The relevance of the skills to everyday life
- Motor skills for counting and recording (writing numerals)
- Knowing the language and concepts for maths
- Working memory capacity
- Logical reasoning ability

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Teaching number skills

- Principles for teaching number are the same as for all children – understanding progresses in the same order
- But we need to take into account the language and verbal memory difficulties and use strengths in visual learning
- Use visual supports (e.g. numeral cards, number lines, number squares, Numicon and Cuisenaire rods)
- Break tasks into small steps with lots of repetition
- Vocabulary - may need working on explicitly, as concepts may not be understood
- See and Learn Number in development – out 2014

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Practical activities

- Language environment – displays, books, songs, conversation, use number words in play and real activities
- Play counting games
- Use number lines
- 1:1 correspondence
- Match – select – name numbers
- Play quantity games – how many?
- Teach maths vocabulary words
- Introduce Numicon shapes and games

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Early math vocabulary

- Size
  - big, small
- Colour
  - matching games
  - sorting games
- Shape
  - Circle/square/triangle
  - Shape sorter/posting box
- Quantity – more, lots, some

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Film clip – early counting skills

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Need to master counting principles

- 1:1 correspondence
- Stable order
- Cardinality
- Order irrelevance
- Conservation of number
- Takes time (5-7 years TD child)

Activities to teach counting

- Play counting games, sing songs, share books, use displays, play board games
- Use visual support of number line to learn number words in stable order
- Start with 1-5 in saying words, 1-2, 1-3, 1-4 in sets
- Play correspondence games with toys/objects to practice one-to-one correspondence
- Share items and compare sets – 'more', 'less', 'same'
- Play 'give me' games and end counting games with 'How many?' to teach cardinality
- Introduce Numicon – visual-spatial representation of number

Extra visual supports for learning number words

- Match, select and name
  - Numerals
  - Numicon shapes
  - Number words

Numicon shapes explain numbers

- An accurate visual-spatial representation of numbers
- Number shapes clearly show:
  - that each next number is one more equal unit
  - and the relative size of different numbers

Numicon activities

Cover the board

Other activities:
Playdough – press shapes into playdough and name
What's in the bag? – choose shapes out of a bag and name
Cut-outs – cut out Numicon shapes, colour and name
Hide and find Numicon shapes

Numicon activities

- Matching shapes
- Matching numerals to plates
- Selecting plates by name
- Matching plates to a number line
- Ordering plates
- Matching plates to appropriate quantities of items
Numicon activities

Jumbled shapes
  • Model arranging the shapes in order – 1-5 at first
  • Jumble up the shapes, the child arranges in order
  • Increase to shapes 1-110
  • Fill in the gap
  • Swaps
  • Simple addition

Resources and references – play/cognition

• Autism and Developmental Delays in Young Children: The Responsive Teaching Curriculum for Parents and Professionals: Gerald Mahoney James MacDonald. From PRO ED in USA:  
• Hanen approach – It Takes Two to Talk:  
  http://www.hanen.org/web/Home/HanenPrograms/ItTak esTwoToTalk/tabid/76/Default.aspx

Resources and references – play/cognition


Resources and references – Numicon

See and Learn Number - to teach first shape, size and colour concepts, how to classify, make a sequence and to count items 0 to 5, understand numbers indicate quantity, ordinality (each next number is 1 more), cardinality (the last count word tells how many you have), compare sets (same or different). Add and subtract. (Supports development from 2 years to primary school). In development at DSE – out 2014

Numicon teaching kits from DSEUSA store:
• 1st Steps with Numicon at Home is a starter kit for parents
• Numicon Farm Foundations Kits – One-to-one and Class Kits
• See http://store.dseusa.org/collections/numicon/numicon-kits

Information on Numicon see http://www.numicon.com/indice.aspx

Resources and references – number

• Clarke, B. & Faragher, R. (2013) Educating learners with Down syndrome. Routledge Education. (Includes four chapters on maths by math experts)
Supporting social development and behaviour – early years

Overview
1. Social emotional development
2. Developing social skills
3. Learning to manage behaviour
   - prevention is better than cure
   - how to change difficult behaviour

What is social-emotional development?
• Social-emotional skills form the foundation for further development in other areas as they determine how cognitive, play and communication skills are acquired, used and developed
• They impact significantly on a child's ability to make use of learning opportunities in the environment

Social-emotional development
• The process of social-emotional interaction develops in a similar way in infants with and without Down syndrome
• The social-emotional abilities of children with Down syndrome are relatively unimpaired, despite delays in cognitive development

What is social-emotional development?
• Self-regulation – manage emotions
• Adaptability – copes with changes
• Reactivity – respond to events and demands
• Frustration tolerance – perseveres with tasks
• Expression of emotion
• Relationships with others
• Empathy
• Self-esteem
• Self-confidence
• Motivation

Developing social skills
• Encourage eye contact and babble games
• Follow child's lead in developing joint attention
• Join in games and read books to encourage concentration and increase attention span
• Be responsive to social interactions initiated by the child
• Provide opportunities to play with other children
• Provide opportunities to learn social behaviour from typically developing peers
• Provide a wide range of social experiences with family and friends
Learning from others

- Increase awareness of emotional responses and eye contact
- Teach sharing, turn taking, waiting, offering/receiving
- Teach communication skills – requesting skills – 'more', 'help', 'finish', 'yes', 'no', 'go away please'
- Encourage social interest in others
- Teach vocabulary for emotions – from simple to complex e.g. happy, sad, tired, hungry, angry, proud, scared
- Practise imitation games

The importance of brothers, sisters and friends

- Relationships with other children play a very important role in social development
- Parents of more socially successful children tend to give them more play opportunities
- Ability to get along with same-age peers is relevant for child's progress in pre-school and school, in taking part in social activities in their communities, and making their way in adult life
- All children learn from their brothers, sisters and peers

Social opportunities

- Providing opportunities and support
  - Organising play areas so children can be near each other for play and communication
  - Duplicate set of toys for imitation
  - Encourage shared play and co-operation
  - Imitation is a great way to learn
  - Praising children for positive social behaviours

Social development and behaviour

- The majority of children with Down syndrome have good social understanding and empathy
- They are quite capable of behaving in a socially appropriate manner if that is what is expected of them at home, at nursery and at school
- But they can also use this good understanding inappropriately – they know how to get a reaction
- For the family and in preschool we need chronologically age-appropriate behaviour expectations

Getting it right from the start

- Children respond best when adults have high expectations, and provide appropriate support
- Easy to 'baby' children with Down syndrome
- Making allowances for unacceptable behaviour because a child has Down syndrome undermines the child's potential to show the behaviour of which he or she is capable
- Positive messages about acceptable behaviour as early as possible

Prevention is better than cure

A key to promoting positive social behaviour is taking a proactive approach
- Settled, predictable daily routines from infancy
- Provide clear boundaries at all times
- Actively teach positive social behaviours, self-regulation and ways to express emotions
- Reward positive behaviour throughout the day
- Expect and reward age-appropriate behaviour right from the start
Prevention is better than cure

In home, preschool and school
- Set realistic and achievable targets
- Give warning and preparation time for transitions, changes and demands
- Give children small jobs and responsibilities
- Use visual time tables and reminders to promote cooperation and independence
- Provide ways of making choices and having some control
- Be aware of pressure on the child

Identifying behaviours to change

Behaviours that may ...
- Be harmful to the individual, others or property
- Impede the individual or others' enjoyment of an activity
- Interfere with learning or ability to carry out a task
- Draw negative attention to the child
- May be damaging to relationships with others, e.g. family members, friends
Choose your battles wisely!!!

Understanding difficult behaviours

- Always consider and investigate health issues before implementing a behavioural intervention:
  - Sleep
  - Diet
  - Sensory (vision, hearing, touch etc)
  - Teeth
  - Infections
  - Pain

The ABC of behaviour

Changing difficult behaviours

- Difficult behaviours can be changed by changing either the antecedents which lead to the behaviour, or the consequences that follow it
- Choose one behaviour to address at a time
- Always give child an appropriate alternative to the behaviour
- Adult behaviour must change if you want the child's behaviour to change
- Everyone concerned with the child must agree to act in a consistent manner or behaviour will not change
- Time spent on planning is essential and must involve everyone in contact with child

General strategies for responding to difficult behaviours

- Many behaviours are repeated for the reaction or reward obtained
- Attention should be withdrawn both verbally and non-verbally (emotional ignoring)
- Social interaction should be resumed, without reference to the inappropriate behaviour after 30 seconds (or so)
- Discussion of bad behaviour should be avoided completely – discussion gives room for negotiation, social interaction, displays of emotion are rewarding
General strategies for responding to difficult behaviours

- Consistent responses and consequences
- Always consider consequences from child's perspective
- Provide opportunities for positive attention and praise as soon as possible
- Social stories – keep to positive language
- Clear visual communication systems

What to expect ...

- Behaviours that are allowed to persist become habits
- Worse before it gets better
- The longer a behaviour has been in place, the longer it may take to change
- Be consistent!
- Review plan regularly and make adjustments when necessary

Summary

- Social understanding, empathy and social interactivity are areas of strength from infancy through to adult life
- Social behaviour is influenced by the same factors as it is for other children, their temperament and personality, language and cognitive abilities, emotional relationships, family environment, expectations and parenting styles
- There is a wide range of individual differences and the more developmentally delayed children are the most vulnerable
- It is important that parents and professionals have good management strategies in place and expect age-appropriate behaviour

5 case studies and interventions

Strategies to address challenging behaviour in young children with Down syndrome by Kathleen Feeley and Emily Jones

- Challenging behaviours linked with poor sleep
- Noncompliance – refusals
- Inappropriate hugging
- Avoidance
- Self-stimulatory behaviours

Freely available on Down Syndrome Online

Recommended reading

- Down Syndrome Issues and Information: education series
  - Social development for individuals with Down syndrome – an overview
  - An overview of the development of infants with Down syndrome (0-5 years)
  - http://www.dseonline.org/collections/books/social-skills
  - Down Syndrome Research and Practice
  - The power of behavioral approaches – we need a revival.
    http://www.down-syndrome.org/updates/2012/
  - DSIP 122. By S. Buckley
  - Strategies to address challenging behaviour in young children with Down syndrome. By Kathleen Feeley and Emily Jones

Recommended resources

- Down Syndrome online http://www.dseinternational.org/
- Right to Know CD 2004 – Down Syndrome Society of South Australia
- SEAL resources: archive of photos
  http://nationalstrategies.standards.ccsf.gov.uk/node/89143?uc=force_ij
- How do I feel? By Joan Green, DSE online shop
  http://store.dseenterprise.org/collections/books/products/how-i-feel
What vision should underpin our work?

- We all have the potential to learn and develop across the life span from birth to old age.
- Brains are not fixed at birth; the way the brain develops is influenced by input and activity from birth.
- The important input is social – interaction with others.
- In the family, school, work and wider community.
- As we grow and learn we change at the biological, psychological and social levels.
- Learning always involves brain change.
- New skills increase self-esteem and confidence – they also increase social participation.

Individuals with Down syndrome

- What matters for individuals with Down syndrome? How do we help them achieve their potential?
- Their development is influenced by the same things – family, education and wider community opportunities.
- We can all make a difference but what do we focus on – what should be our priorities?
- I have told you about what I have learned wearing my professional hat as a psychologist supporting children, families and educators since 1970.
- Now I want to tell you what my daughter Roberta with Down syndrome has taught me over the past 43 years.

Roberta's life so far

- Born in September 1969.
- Into institutional care at 5 weeks – 'subnormality' hospital.
- I met her at 9 months of age.
- Fostered at 16 months.
- Adopted at 10 years.
- Left home at age 22.
- Partner at 23.

Not a 'high flier' – late to walk and talk

- Standing at 22 months.
- Walking with truck – 32 months.
- Finally walked unaided at 4 6 yrs.
- First intelligible words at 5 yrs.
- Born before right to go to school – law changed in 1971.
- Went to an ESN (educationally subnormal severe) school.
- Day care – not education.
- Segregation – 'in the bus'.
- Low expectations.

Teenage years with family

-
Teenage years – my worries? Mental age?

- Still limited language
- Not fully continent at night until 13 years
- Not reading or counting
- Some skills at ‘preschool’ level
- At 17 not able to write name legibly or tie laces
- Still needed help with personal care
- I saw only deficits, delays
- I worried about the future

Roberta taught me to forget mental age and think chronological age at all times

- Roberta hit puberty, wanted to wear her jeans to school, sit with the boys in the bus, knew the pop groups watched the soaps – age appropriate interests, needs, behaviour but with limited language and less cognitive ability
- At 22 she fell in love and had a wonderful relationship for 5 years – still same emotions, needs and behaviour – she needs a bit more support, to live like you and I.
- A person with Down syndrome goes through life based on age – just like everyone else
- School at 5 years, puberty in early teens, out of school at 17 – the milestones are the same

Early 20’s – getting a life!

Roberta showed me the importance of expectations and beliefs

- Roberta did not join the ‘real world’ until she was 22 when she moved to supported living
- Staff treated her like a young woman of 22 - who just happened to have Down syndrome but who had a right to an ordinary life – and she met Andrew and got a life!
- Staff attitudes and having a partner changed her self esteem and self identity dramatically – and her skills - more progress from age 20-30 than in previous 15 years.
- With Andrew she had social independence – could plan her own life - go out without staff or family
- We understand who we are and our place in the world by the way we are treated.

Roberta and Mark – current partner

Roberta taught me not to underestimate understanding

- The biggest difficulty that most children and adults with Down syndrome face – on a daily basis – is not being understood because they cannot put into words all they know and want to say – imagine how that feels
- Since Roberta reached adulthood she has constantly surprised us with her understanding and competence
- The way she has managed her life and relationships
- The way she has coped in emergencies – Mark has been in hospital as an emergency admission twice – the only person who could keep him calm and get him to let the doctors help was Roberta. She even had procedures first to show him it was OK and sat with him for many days (she probably has an IQ of 30-40???)
What has helped Roberta to succeed?

- Social competence and confidence – an extrovert
- The ability to learn the social rules and behave in socially appropriate ways in different settings such as at home, in school, in church, in a cafe or on the bus – this requires the ability to control one’s emotions, impulses, desires and behaviour
- The ability to make friends and maintain relationships – this requires the ability to understand other people’s behaviour and feelings and react appropriately
- Social competence determines the quality of life of any person – and is not predicted by mental ability
- It is learned through social experience

Quality of life – the vision

- A right to independence, dignity and choice – an ordinary life
- Same needs as all children – the need to feel loved and valued – at home, at school and in the community
- Leading to a sense of security, self-esteem and confidence – a secure base from which to explore and learn
- A secure and loving family, brothers and sisters
- A stimulating and quality school environment
- Friends and a sense of belonging in the world of childhood in their communities – participation, inclusion
- Not isolation and exclusion as is still all too common

Back to the big picture

- We all need to fight for the rights of our children to be fully included in the world of childhood
- We all need to enable adults with Down syndrome to be adult – independence, choice, work, partners – this last step is often hard for parents and depends on good services being available
- We all need to work to help them to be fully included in the social world, to have friends, take part in sports and leisure activities
- This is all starts with what we offer in early years and schools
- We all need to fight discrimination and prejudice in schools, communities and in wider society

What else would have helped her?

- Better spoken language
- Some literacy and numeracy skills – better education
- Full inclusion in school and community as a child
- We have made much progress on these issues since Roberta was a child
- Research has given us a much greater understanding of the effects of Down syndrome on development
- Allowing us to develop more effective early intervention and teaching methods
- Attitudes to disability have changed

The priorities?

- Think ‘person first’ – see the child/person not the disability
- Think chronological not mental age
- Think self esteem and self identity – subtle expectations and feedback from everyone around
- Think social competence – it is learned through experience so requires social immersion/inclusion
- Think behaviour control – it is learned and begins at home
- Think communication – develop speech and language
- Think inclusion in education – and the value of literacy
- Remember the social strengths – build on these as all human development is social

Resources – Dsii series of books and videos

- Both in Dsii Development and Education series
- A series on Adult issues is also available – edited by Roy Brown – and with an international team of authors
- All provide reviews of available research and guidance on evidence based practice.

- Available now by mail order from Dsii see www.dsiiinternational.org
- Electronic versions and some translations available