

# The role of basic concepts in teaching and learning for adults with Down syndrome.

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# What are Basic Concepts?

The term “basic concepts” is commonly used in educational contexts to define fundamental ideas related to quality, position, time and number that underpin school activities and are critical to learning and educational success particularly in literacy and numeracy

(Balat, 2009)

# Why do you need basic concepts?

- **Basic concepts are needed to understand classroom conversations and teacher directions** (Boehm, Classon, & Kelly, 1986; Bracken, 1986)
- **Basic concepts are needed to understand administration directions of early childhood tests of intelligence** (Bracken, 1986; Flanagan, Alfonso, Kaminer, Rader, 1995; Kaufman, 1978) **and tests of achievement** (Cummings & Nelson, 1980)
- There are suggestions that a lack of knowledge of basic concepts influences educational progress and could contribute the low level of expectations and consequently limited learning experience in language and mathematics (Kliwer & Biklen, 2007)

# Basic Concepts and Intellectual Disability

For students with intellectual disability the impact is more marked:

- first because they may not have had the learning opportunities and/or experiences to develop these concepts
- second because of their difficulties in understanding the relational nature of these concepts.

(Facon, Magis & Courbois, 2012)

# Research into basic concepts

Much of the research on the development of basic concepts for learners with learning disabilities and intellectual disability has been undertaken with kindergarten and pre-school children

- Providing clear evidence that children with intellectual disability lag behind typically developing peers in the development of their understanding of these concepts

(Facon, Magis & Courbois , 2012; Kliwer & Biklen, 2007)

- Such research has led to a call for specific programs to be developed to teach these concepts in educational programs.

# Research Continued

However, despite research evidence that an understanding of basic relational concepts is integral to success in education for all students there is scant research available that has both investigated

- the knowledge and understanding of basic concepts for individuals with intellectual disability
- and identified effective pedagogies for teaching these concepts to this population.

The lack of research becomes increasingly problematic as children with intellectual disability progress through school and into workplace contexts where assumptions are made that they know, understand and can apply their knowledge of these concepts to complex tasks.

# Research Questions

Our research was a preliminary investigation and looked at the following questions:

1. What knowledge and understanding of basic concepts do young adults with Down syndrome have?
2. Can a specifically designed teaching and learning program provide evidence-based data that would show improvements in their knowledge and understanding of three selected basic concepts: time and sequence; size and comparison and direction and position?
3. What kind of systematic instruction with age-appropriate strategies and activities could support the continuing development of basic concepts?

# Study overview

## Location

Ireland

- 4 Latch-On classrooms (49 students)
- Post school literacy and numeracy program for adults with intellectual disability. In this case – students with Down syndrome

## Dual level research design

answers research questions 1 & 2

pre-test - 18 weeks of teaching- post test

answers research question 3

focus groups and individual teacher session feedback sheets

# Our Role

- Develop materials
- Conduct professional development to demonstrate to teachers how to use the program
- Provide support
- Analyze the results

# Teacher's Role

- Attend professional development
- Pre-test
- Teaching
- Keeping records
  - Recording level of appropriateness of materials for individual students/changes in students' skills/adaptations made
- Post test

# Instruments

- *Bracken Basic Concept Scale -3<sup>rd</sup> Edition: Receptive (BBCS-3: R)* (Bracken, 2006):
  - used to examine the level of knowledge and understanding of basic relational concepts in a pre and post-test
  - individually administered assessment with items in 11 sub-scales assessing important concepts such as shapes, sizes, textures/materials, and time/sequence
  - presented orally within the context of complete sentences, and visually in a multiple-choice format
- *Session logs* for teacher and tutor evaluation of activities  
(developed by research team)
- *Semi-structured interview protocols* for teacher interviews  
(developed by research team)
- *Observation proforma*: used by research team, teachers and tutors  
(developed by research team)
- *Teaching resources*: Developed by the research team using concepts  
(derived from *Bracken Basic Concept Scale*)

# Sub-scales to be used

- Size and comparison
- Time/sequence
- Direction/position

We selected 18 topics from these areas

# Key components of the teaching program

Explicit instruction and experiences

The use of interactive activities with ongoing use of concrete materials

Worksheet format used a version of gradual release of responsibility (Fisher & Frey, 2013)

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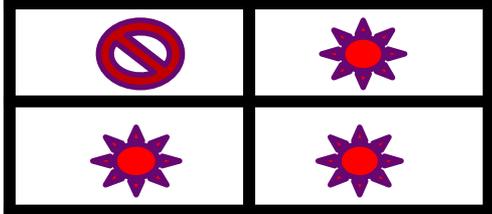
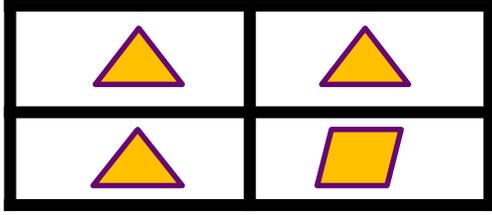
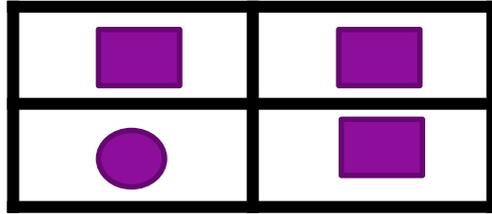
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# Lessons

- Give examples of the concept
  - ❖ Example
  - ❖ Non example
- Start with a simple example and move to more complex
- Relate the examples to their everyday life
- Worksheets
  - ❖ Helps student to practice the concept
  - ❖ Indicates if they understand the concept

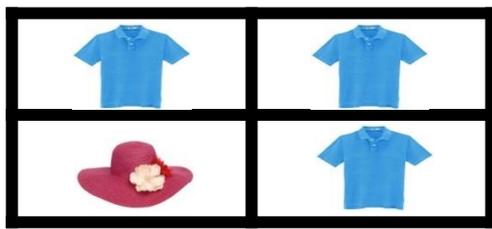
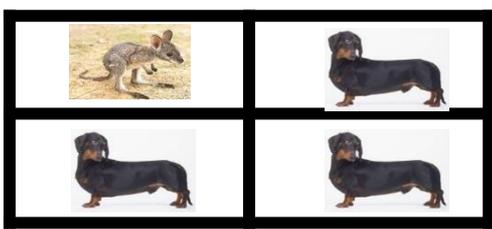
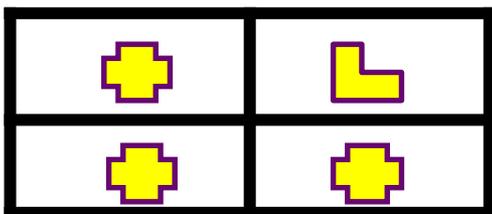
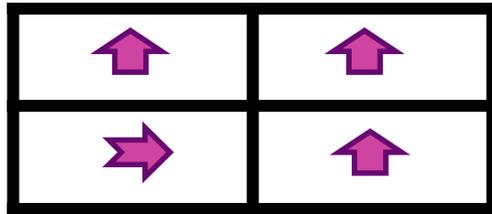
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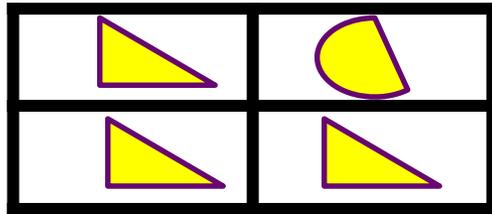


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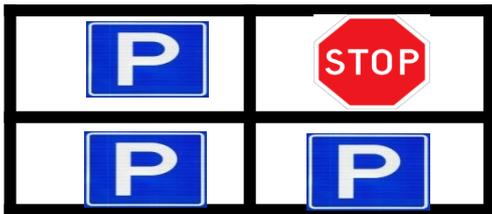
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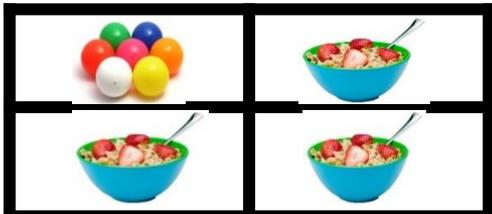
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# Results: Questions 1 & 2

## Question 1 (What knowledge and understanding of basic concepts do young adults with Down syndrome have?)

- Direction & position (62 items) - mean 31 correct (range 4-55)
- Time & sequence (30 items) - mean 11 correct (range 3-23)

## Question 2 (Can a specifically designed teaching and learning program provide evidence-based data that would show improvements)

- Direction & position - mean 35 correct (range 9-55)
- Time & sequence - mean 13 correct (range 2-28)

Overall 60% of students showed improvement in their scores

# Results: Question 3

**Question 3** What kind of systematic instruction with age-appropriate strategies and activities could support the continuing development of basic concepts?

Focus groups/session logs

Comments very positive

- Engaging & motivating
- Easy to use
- Using concrete examples was very effective
- Relating to real life examples was relevant to the students
- Appropriate for all levels of students
- Surprised at the gaps of concept knowledge in more able students

# Limitations

- Sample size was small and varied in age range and ability level
- Communication difficulties between the intervention developers and the teachers
- Interface between teaching and research
- Expectations of time available within the 18 weeks of intervention may have been too high

# Discussion

- Explicit instruction and concrete materials were effective teaching strategies
- Adults with Down syndrome can continue to build their basic concept knowledge
- Jigsaw
- More research needed to see how it underlies the development of literacy and numeracy skills

# Contact

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