Basic Concept Assessment/Intervention: Building Blocks to School Success

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Areas to be Covered:

- Review using outcomes of the Boehm Test of Basic Concepts-3 as they relate to the roles of early childhood educators and specialists
- Application of multiple step procedures for assessing basic concepts
- Strategies for developing intervention activities and monitoring progress

Boehm Test of Basic Concepts- Third Edition

Two age ranges available:
- Preschool
- School Age

- Assesses receptive knowledge of basic concepts essential for learning to read, solving math problems, and follow directions
- Directions and items presented in English and Spanish with norms for both languages
- Directions presented twice to focus on the child’s knowledge of basic concepts rather than memory
- Teacher-Report, Ongoing Observation and Parent-Report are included in the response form to help document progress
- Two forms of school-age version available for convenient test-retest

Boehm 3 Test Development

- Test items were chosen to align with early childhood curricular materials and benchmarks, and to reflect language usage in the classroom
- A major function of the test is to identify gaps in learning to guide instruction of important language concepts at school and home

Why Basic Concepts Present Difficulty

Basic concepts are difficult for many students because they:
- Refer to a broad variety of situations in everyday life
- Are applied across contexts:
  - Space – which car is before/after the truck in line
  - Quantity – what number comes before/after #5
  - Time – what happened before/after an event at home, school, or in a story
- Are used at many levels of difficulty from concrete to abstract

Basic Concepts Covered on the BTBC-3

Basic concepts as defined here are relational concepts, such as more-less.

They:
- Are important for language and cognitive development
- Play a central role in everyday language
- Are used across all areas of school learning
- Are fundamental to following directions and classroom routines
- Are building blocks for problem solving and thinking
**Why Basic Concepts Present Difficulty**

Basic concepts are also difficult for many students because they present different challenges:

- Identifying the **front** and **back** of objects with a defined front and back, such as a chair, is easier than **front** and **back** of a table which depends on the perspective of the viewer.

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**Boehm-3: Preschool**

Assesses 26 concepts at each of two age levels:

- 3 years 0 months to 3 years 11 months
- 4 years 0 months to 5 years 11 months

Each concept is assessed twice to identify concepts that are emerging, the child knows, or concepts that need development. English and Spanish norms and interpretation information are presented by 6-month age bands.

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**Uses for the Boehm-3 Scores**

- Norm referenced scores allow the examiner to know if a score is appropriate compared to same-age children by assessing back understanding of receptive concepts.
- As a criterion referenced measure, the examiner can analyze errors in order to develop interventions for concepts still to be acquired and those already acquired.
- As a criterion referenced measure, results can be analyzed with regard to the child's language background.

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**Sample Item on the Boehm-3 Preschool**

Spanish and English:

"Point to the dog that is on the box."

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**Using Outcomes of the BTBC-3: Preschool**

- The assessor can identify if the child understands one, both, or neither of items for each concept.
- Some of the errors made by the child can be identified as point to the representation opposite in meaning (under instead of over).
- This knowledge can inform instruction for an individual child or the class as a whole.

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**Boehm-3 School Version**

- Assesses 50 basic concepts that appear in print materials, reading and mathematics curricula, and verbal instructions.
- The test is group administered but can be individually administered.
- Norms are provided by grade level (K-2) for both fall and spring. This allows for pre- and post-testing to assess within-year progress.
- Two parallel forms are available in both English & Spanish.
Today’s presentation focuses on how the BTBC-3 is useful to speech-language pathologists, teachers, and other Specialists

- Identify problems with basic concepts
- Inform instruction and intervention consistent with evidence-based practice
- Provide intervention appropriate to student’s age and learning needs
- Track student progress

The importance of the early language learning environment

The age and background experiences of the child make a big difference in the ease of learning concepts. Hart & Risley (1995) found large differences in language usage at home across different economic backgrounds. But, regardless of parents’ economic background, the more parents talk, the greater the vocabulary growth in their children.

The Bottom Line: Enriched early language exchanges facilitate the ease with which children learn concepts.
The importance of the early language learning environment (cont.)

- The nature of the exchange between parents and children as partners plays a central role (Hart & Risley, 1999). This is a reciprocal process as parents and their child interact with each other.
- Heath (1983) found large differences in frequency of adult-child conversations and conversational forms used by adults in 3 communities in the Piedmont areas of North and South Carolina.

**The Bottom Line:** Children come to school with very different types and degrees of oral language practice. Some have practice in the forms schools want; others do not.

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The importance of the early language learning environment (cont.)

- Familiarity with task demands is another key issue.
- Many children have not had the opportunity to name (label) pictures or respond to “what, when, why, where” questions.
- There are discontinuities between the demands and expectations of home versus academic contexts (a child may know the function of objects but not their name) (Peña & Quinn, 1997).

**The Bottom Line:** Children may perform poorly due to the unfamiliar format of test directions and unfamiliar types of tasks. This poor performance can be *misinterpreted* as a language delay or lack of readiness skills.

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An Integrated Assessment Process Using the BTBC-3

6 Important Steps:

- Assess the entire class at the K-1 levels
- Observe children of concern in ongoing classroom activities
- Conduct a Brief Strategy Interview
- Engage child in a mini-teach and test out possible reasons for difficulty
- Develop intervention activities
- Chart student progress

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BTBC-3 Record Form

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An Integrated Assessment Process Using the BTBC-3

Step 1: Assess the entire class

The goal here is to identify concepts that may be difficult for the class as a whole as well as for individual children.

*Leads to instructional and intervention planning*

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An Integrated Assessment Process Using the BTBC-3

Step 2: Observe children of concern in ongoing classroom activities

- Identify ways basic concepts are embedded into classroom routines and activities?
- Identify ways basic concepts are used across different contexts
- Identify ways the teacher provides feedback to children who are still learning concepts or for whom English is not their home language
Outcomes of Ongoing Observation

Raise hypotheses related to areas of difficulty or strength:

- Unfamiliar with concept term
- Familiar with term in home language
- Familiar with term in another context
- Ready to learn – has not had experience with term
- Can understand the term when used in a story
- Can use term in everyday talk when engaged in a familiar activity

An Integrated Assessment Process Using the BTBC-3

Step 4: Engage child in a mini-teach and test out hypotheses

- Find out if the child is familiar with the concept in his or her home language. If yes, we are dealing with a vocabulary vs. concept issue
- Teach the concept using objects such as toy cars or an example drawing on the child’s background experiences
- Some children catch on right away – they may not have been introduced to the concept term in every day experience
- Let’s say we are interested in the concept middle. You might want to use a toy car, bus, and truck to avoid color names

Chart student progress

The end goal is for the child to use the target basic concept being taught across learning areas that often are benchmarks in state or local standards

<table>
<thead>
<tr>
<th>Aspect of Concept Mastery</th>
<th>John S.</th>
<th>Pat. A.</th>
<th>Annie C.</th>
<th>Jessica F.</th>
<th>Tom B.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moves body parts near &amp; far from each other</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Moves near and far from other children</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Understands effects of moving close to/away from mirror</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Uses concepts to describe concept card scenes</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Uses comparative and superlative forms of concepts</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

An Integrated Assessment Process Using the BTBC-3

Step 4. Engage Student in a Brief Strategy Interview

- Assessor engages in an interview with the child who has not yet learned many many concepts on the test to understand how she or he solved the items
- Select 1 or 2 correct items and 1 or 2 incorrect items to discuss with the child
- Ask the child a question such as, “How did you figure out that answer?”
- This technique helps to identify sources of error or emerging concepts and strategies used
- Areas to be informed include: attention, memory, language, testing situation, lack of exposure, and child’s cognitive processes

Step 6: Develop instructional activities

Develop a systematic plan for teaching basic concepts

Use target concepts frequently during everyday activities

Emphasize basic concepts as tools to follow directions

Build on basic concepts as tools of thinking

<table>
<thead>
<tr>
<th>Step 6: Develop instructional activities</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Scaffold learning by expanding on what children say and making connections to previous learning</td>
<td></td>
</tr>
<tr>
<td>Ask many open-ended questions that elicit language</td>
<td></td>
</tr>
<tr>
<td>Examples: “Tell me about your picture” “Why do you think that happened (in the story)?” “How would you change the story or picture?”</td>
<td></td>
</tr>
</tbody>
</table>

Helping Children Learn Basic Concepts

We use basic concepts in many ways everyday. For example, we can talk about the first tomato of the season, the small strawberries we wish to eat, or the ball under the chair.

Since these concepts are relational, they are applied to many situations that change – the tallest child in one group might be the shortest in another; the box on top of the pile can be moved to the bottom.

This shifting use of concepts makes them difficult for many children.
Focus on Relational Concepts Assessed by the BTBC-3 Across Learning Areas and Contexts
Concepts are used across contexts such as those:
• related to time and sequence, such as: beginning, end
• that describe position in space, such as: near, far
• that describe quantity and are used to count and make comparisons, such as: more, less, few, some, many
• that describe size, speed and distance, such as: large, small, near, far
• that are important when using books, such as: front, back, top, bottom
• that relate to sound (high-low) as well as emotions (“I feel the same way as you”)

Research-Based Points to Consider When Planning Basic Concept Intervention
• There is an order of concept difficulty
• There are systematic, sequential stages of acquiring concepts
• The orientation of objects influences their difficulty:

A Comprehensive Approach to Teaching Basic Concepts
Concrete and Represented Applications

Sensory
• relate the concepts to children themselves: “touch the top of your head”
• engage child in actions: “jump over the box”

Concrete
• use concrete objects to illustrate the concept in the child’s immediate environment, both at school and at home: “put the doll on top of the bed” “find the box on the bottom shelf”

The Importance of Basic Concepts for Children’s Success on other Tests and Assessments
Examples of commonly used basic concepts:

**In test items**
- How are these two things the same?
- How are these two things different?
- Find the object that is missing from the picture.
- Point to the flower under the tree.

**In test directions:**
- Start at the top of the page and work your way down to the bottom
- Go to the next item when you are finished
- Work across the page from left to right

Where do we go with the assessment process?

HERE!

Check out Results:
Move to next higher level or goal
OR
Modify the task by breaking down activities into breaking down component steps

A Comprehensive Approach to Teaching Basic Concepts
Two-dimensional

• use photos or pictures to illustrate the concept
• read storybook or other books that illustrate the target concepts
• ask children to draw pictures and then have them respond to questions that include concepts that refer to these pictures: “Show me what is on top of the --- you drew.” “What is at the top of your picture?”
• help children make the transition from pictures to line drawings or practice pages (sometimes their special cues, such as a line on a page or perspective, that a student needs to pay attention to)

**Some concepts such as soft and fast when presented in two-dimensional form require prior experience with the objects or situations represented**
A Comprehensive Approach to Teaching Basic Concepts

Productive Use in the Child’s Own Speech
- Spontaneous use of target concepts is encouraged in daily activities so that children can communicate to others
- Elicited use of basic concepts is encouraged through teacher or parent engaging in activities such as playing with puppets or toys of interest and asking questions that focus on the target concepts
- Complexity of language structures - The types of questions used to elicit target concepts (what, which, where, when, who) all need lots of practice
- Alternative words can be used to describe some relationships (boxes may be same or alike; a child is at the beginning of a line or is first; a child is standing in the center or the middle of a circle). Both words need practice

Common steps in acquiring concepts
- Child is unfamiliar with both members of a concept pair such as top-bottom
- Knows something about the concept but not the concept term
- Learns one member of the concept pair such as top
- Confuses the concept with its opposite (bottom)
- Learns both members of the concept pair
- Uses concept at different levels of complexity

Developing Representations in Memory

Imagery or Mental "Pictures" are encouraged
- For example, show children an object under another object, such as a basketball under a table. Then have children close their eyes and describe what they saw.
- Continue by asking children to close their eyes and take a picture of objects or situations that include the target concepts. Children can then describe what they imagined

The goal is to help children gain a representation of the concept in a way they can remember. This is important since many basic concepts are relative and shift across situations.

A Comprehensive Approach to Teaching Basic Concepts

- Comparing: Concepts are used frequently to make comparisons
  "Which teacup is the biggest? Smallest?" “Find the box with the fewest balls”.

- Sequencing: Many basic concepts can be used to order relationships.
  “Which box has a few balls and which has many?” “Put the teacups in order from the biggest to the smallest.”

A Comprehensive Approach to Teaching Basic Concepts

Classifying: Basic concepts are often a qualifier to classify objects or situations that represent the same relationship. This relationship can range from easy to very difficult
- “Find all of the boxes that are big”
- “Find all the children who have their right hand up”
- “Find all of the pennies, dimes, and quarters. Now find all of the money.”

A Comprehensive Approach to Teaching Basic Concepts

Applications at More Abstract Levels

- Reversing: The application of many concepts can be reversed in time or space
  - the toy to the right of the child can be moved to the left of the child or a block on top of a stack can be moved to the bottom
  - the first toy a child puts in a box on one occasion might be the last one on another occasion
More Points to Consider

- Transfer is more likely to occur if child uses the concept name and can manipulate objects
- Feedback facilitates learning (including prompts, familiar examples, and encouraging comments)
- Learning the concept in one context does not necessarily mean the child can use it in another. Children need to have lots of practice with activities in different contexts
- A major goal is the use of basic concepts across different contexts and in everyday language
- Learning basic concepts facilitates the learning of new concepts and is an important component of problem solving

The Central Role of Basic Concepts to Reasoning

- Positions of objects and events can be reversed
- Essential to make comparisons
- An integral part of ordering and sequencing
- A critical feature for classifying
- Often used in combination for multiple-step directions (ex. Open your books and begin at page 10)

A Comprehensive Approach to Teaching Basic Concepts

- **Used in combination with other concepts:** The ability to respond to multiple-part directions is essential in school learning and to the student’s cognitive development
  
  *(ex. Open your books and begin at page 10)*

  Many factors are involved in complying with directions including the number of behavior steps and the qualifiers used. Many of these qualifiers used are basic Concepts: “Find all of the blocks that are big”
  
  “Find all of the blocks that are long and red”
  
  “Find all of the long red blocks under the table”

The Benefits of Using the BTBC-3 for Early Childhood Professionals

- Clearly identify concepts the child is missing that will impede academic success
- Help children follow directions of increasing length and complexity.
- Used over time can help educators track progress
- Provide a road map for intervention and developing IEP’s
- Contribute to documentation related to state or local learning standards

References


