


**Overview of the Boehm  
Test of Basic Concepts-3**  
Using Outcomes to Guide Instruction



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**Areas to be Covered**

- Review the use of the Boehm Test of Basic Concepts-3 for early childhood educators and specialists
- Discuss the application of multiple step procedures for assessing basic concepts
- Outline strategies for developing intervention activities and monitoring progress

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## Boehm-3

Two age ranges available:  
**Preschool and School Age**



- Assesses knowledge of basic concepts essential for learning to read, solve math problems, and follow directions
- Test and norms available in both English and Spanish
- Directions presented twice to better assess concept knowledge (rather than memory)
- Response form includes tools to share results and document progress (Teacher-Report form, Ongoing Observation form and Parent-Report form)
- Two forms of school-age version allows for test-retest

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### Boehm 3 Test Development

Test items were chosen to:

1. Align with early childhood curricular materials and benchmarks
2. 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

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### 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
- Central to understanding of everyday language
- Used across all areas of school learning
- Essential to following directions & classroom routines
- Building blocks for problem solving and thinking
- Used across all cultures

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### Why Basic Concepts Present Difficulty

1. Basic concepts refer to a broad variety of situations in everyday life
2. Basic concepts are applied across contexts:
  - Space** – which car is *before/after* the truck
  - Quantity** – what number comes *before/after* 5
  - Time** – what happened *before/after* the party
  - Senses** – what we hear, taste, touch
  - Emotions** – what we experience or express
3. Basic concepts are used at many levels of difficulty from concrete to abstract

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Focus on Relational Concepts Across Various Learning Areas and Contexts

Concepts are used across contexts important to reading, math and science, as well to as interacting with others, such as those:

- Related to time and sequence - *beginning, end*
- Related to position in space - *near, far*
- That describe quantity and are used to count and make comparisons - *more, less, few, some, many*
- Related to size, speed and distance - *large, small, near, far*
- Related to books concepts - *front, back, top, bottom*
- Related to sound and emotions – *high, low, "I feel the same way as you"*




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Basic Concepts are Important for Success on other Tests and in Other Assessment Activities

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
- Mark *all* of the pictures that *begin* with the *same* sound

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The bottom line with assessment activities is to discover whether or not students understand the directions for completing the task before engaging in the assessment task – if they do not, outcomes do not have meaning.

Understanding in one context does not ensure understanding in another. Any one test provides only a snapshot.

Observation and recording across contexts is essential

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### Boehm-3: Preschool

- Available in English and Spanish
- Assesses 26 concepts at two age levels:  
3 years, 4-5 years
- Each concept is assessed twice to identify concepts that are known, emerging, or not yet developed
- Norms and interpretation information are presented by 6-month age bands
- Parent report form and teacher observation forms included

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### Uses of BTBC-3: Preschool Outcomes

- Review whether the child answered one or both items assessing the concept correctly
- Review if there is a pattern in the errors the child makes which might reflect a common developmental pattern such as selecting the opposite member of a concept pair (*top for bottom*)
- Determine the performance range for the child (knows most of the basic concepts that children his or her age knows; knows many of these concepts, or does not yet know many concepts)
- If English is not the child's first language, explore whether the concept is recognized in the home language
- Review concepts that are easy or present difficulty for the class as a whole

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### Boehm-3 School Version

- Assesses 50 basic concepts that appear in print materials, school curricula, and verbal instructions
- Can be administered individually or in a group
- Norms are provided by grade level (K-2) for fall and spring to allow for pre- and post-testing to assess within-year progress
- Two parallel forms are available in both English & Spanish



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### Multiple Uses for the Boehm-3 School Age Version Outcomes

- 1. Class Record Form**
  - Allows assessor to review entire class performance
  - Helps assessor identify concepts that are difficult for several children and should be embedded into ongoing instruction
  - Allows assessor to identify concepts that are difficult for specific children and should be addressed through individualized intervention
  - Information on error types can contribute to instruction
- 2. Parent Report Form**
  - Presents a list of concepts covered and highlights those the child has not yet developed
  - Provides suggestions for how parent(s) can help the child learn basic concepts at home

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### Uses for Boehm-3 Outcomes

- Identify basic concepts that are difficult for individual children and the class as a whole in relation to children of the same age or grade
- Inform instruction and intervention in accordance with evidence-based practice
- Document progress related to Common Core standards

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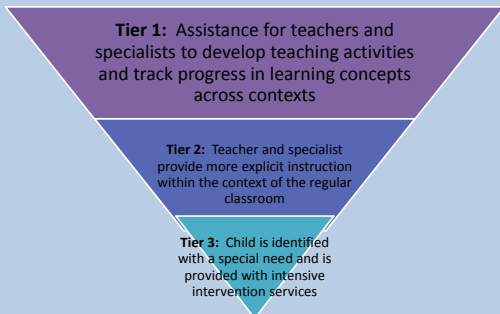
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### Outcomes Inform all 3 Levels of RTI



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**Factors to Consider when Reviewing Outcomes**

**The importance of the early language learning environment**

**Enriched early language exchanges facilitate the ease with which children learn concepts:**

- The age and background experiences of the child heavily impact the ease of learning basic concepts.

**Children come to school with varying types and degrees of oral language practice:**

- Some have practice in the forms schools want; others do not.

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**Factors to Consider when Reviewing Outcomes:**

**Familiarity of Task Demands**

- Many children have not had the opportunity to label pictures or respond to "what, when, why, where" questions
- There are discontinuities between the demands and expectations of home versus school contexts, for example, a child may know the function of objects but not their names (Peña & Quinn, 1997)

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

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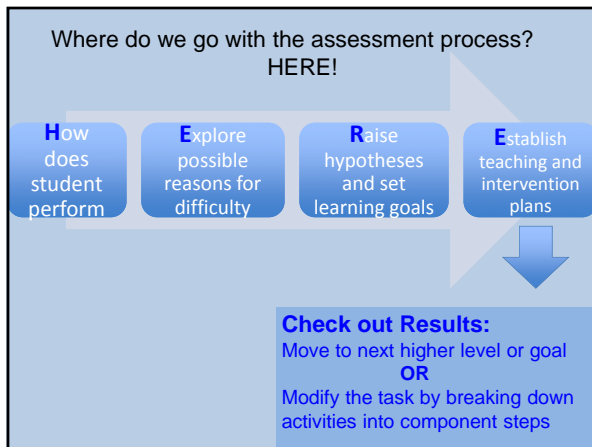
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**An Integrated Assessment Process Using the BTBC-3**

**6 Important Steps**

1. Assess the entire class at the pre-K-1 levels
2. Observe children of concern in ongoing classroom activities
3. Conduct a Brief Strategy Interview
4. Engage child in a mini-teach and test out possible reasons for difficulty
5. Develop intervention activities
6. Chart progress for the class as a whole as well as individual students

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**An Integrated Assessment Process Using the BTBC-3**

**Step 1: Assess the entire class**

The goals are 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**

The goals are to identify:

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

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### Outcomes of Ongoing Observation

Use your observation data to raise hypotheses related to areas of difficulty or strength:

The child may be:

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

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### Step 3: Engage Student in a Brief Strategy Interview

1. Perform an interview with a child who has not yet learned many concepts on the test to understand how s/he approached the items
2. Select 1 or 2 correct items and 1 or 2 incorrect items to discuss with the child
3. Ask the child a question such as, "How did you figure out that answer?"

This technique helps to identify sources of error, emerging concepts, and strategies used

Possible factors: attention, memory, language, testing situation, lack of exposure, and child's cognitive processes

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### 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, you are dealing with a vocabulary versus concept issue
- Teach the concept using objects such as toy cars or another example drawing on the child's background experiences/interests
- 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



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**Step 5: Develop instructional activities**



- Develop a systematic plan for teaching basic concepts
- Use target concepts frequently during activities
- Emphasize basic concepts as tools to follow directions
- Build on basic concepts as tools of thinking
- Scaffold learning by expanding on what children say and making connections to previous learning
- Ask open-ended questions that elicit language

*“Why do you think that happened (in the story)?”* *“How would you change the story or picture?”*  
*“Tell me about your picture”*

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**Building Teaching Activities to Help 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 picked, or the ball rolling *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 more difficult for many children. Revisit concepts over time as they are applied in math, science, reading, problem-solving, and expressing feelings and ideas.

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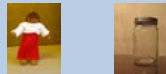
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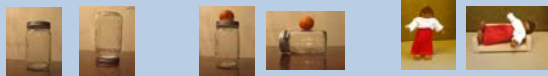
**Research-Based Points to Consider When Planning Basic Concept Intervention**

- There is an order of concept difficulty
- There are systematic, sequential stages of acquiring concepts
- The orientation of objects influences their difficulty

Real life examples of *top* and *bottom*



After these are learned, begin to place objects with a *top* and *bottom* in different positions




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### Common steps in acquiring concepts

- Child is unfamiliar with both members of a concept pair such as *top-bottom*
- Child knows something about the concept but not the concept term
- Child learns one member of the concept pair such as *top*
- Child confuses the concept with its opposite such as *bottom*
- Child learns both members of the concept pair
- Child uses concept at different levels of complexity

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Some basic concepts present additional challenges for students in relation to certain objects

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




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### 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 practice the concept in the child's immediate environment, at school and at home. Also, introduce the concept of opposites.

"put the doll on *top* of the bed" "find the box on the *bottom* shelf"




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A Comprehensive Approach to Teaching Basic Concepts

### Move to two-dimensional



- Use photos or pictures to illustrate the concept
- Read books that illustrate the target concepts
- Ask children to draw pictures and then ask them questions that include concepts: "Show me what is on *top* of the ---- you drew." "What is at the *bottom* of your picture?"

\*\*Some concepts such as *soft* and *fast* when presented in two-dimensional form require prior experience with the objects or situations represented

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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 adults engaging in play activities (such as using puppets or toys of interest) and asking concept-related questions
- **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 help describe relationships

Boxes may be the *same* or *alike*  
Child is at the *beginning* of a line or is *first*  
Child is standing in the *center* or the *middle* of a circle

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### Developing Representations in Memory

**Imagery or Mental "Pictures"** are encouraged. Make the concept stand out for the child.

- 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 pictured
- Continue by asking children to close their eyes and picture 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.**

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### Using Concepts to Express Feelings, Ideas, and Opinions

#### Emotions and Ideas:

- Expressing many feelings, needs, and ideas involves basic concepts such as “I liked the story *a lot*” or “I feel a *little* tired”
- Things that you can not see such as “Grandma and grandpa live *far away*.”

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### 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 mathematics (ex. *Open your books and begin at page 10*)

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### 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




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### 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*”

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### 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.”



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### A Comprehensive Approach to Teaching Basic Concepts

**Used in combination with other concepts:**

The ability to respond to multiple-part directions is essential for a student's school learning and cognitive development

“*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”

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## A Comprehensive Approach to Teaching Basic Concepts

### Emotional Regulation

- Taking turns & Sharing
- Following directions
- Verbalizing emotions



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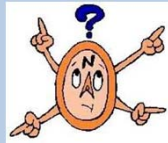
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### Following Directions

The directions we need to follow in life can be simple one- or two-step directions or much more difficult directions that involve only one step that are challenging for many adults such as "Turn *left* at the *second* traffic light."



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### Following Directions

- Children may be told to engage in an action (or be given a visual signal) related to following classroom rules, such as, limiting 4 people to a work area
- By first grade, children might take timed tasks as they gain fluency with addition and subtraction of single digit numbers and respond to directions when given a problem page, such as, "Stop. Circle the *last* problem you did ."



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**More Points to Consider**

- Transfer is more likely to occur if the child uses the concept name **and** can manipulate objects
- Feedback facilitates learning - use 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 lots of practice with concepts in different contexts
- A major goal is the use of basic concepts across different contexts and in everyday language
- Learning basic concepts facilitates learning of new concepts and is an important component of problem solving
- Check out benchmarks you are working on and monitor progress in a portfolio or work sampling system
- Scaffold with modeling, coaching, praise, feedback, and lots of fun activities!

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

- Clearly identify concepts the child is missing that will impede academic success
- Used over time can help educators track progress
- Provide a road map for intervention and developing IEP goals
- Contribute to documentation related to state and local learning standards

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**Basic Concepts as Building Blocks  
Six Big Ideas**



1. Many basic concepts are learned in concrete ways during the child's preschool years, but they continue to develop in more sophisticated ways during first & second grade and beyond.
2. Concepts can be used to describe positions in space, quantities, time, sounds, feelings and ideas. Learning in one of these contexts does not necessarily transfer to another.
3. Children may be able to use a basic concept to describe a familiar event before they can apply it to pictures that are not related to a familiar set of experiences.

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### Basic Concepts as Building Blocks Six Big Ideas



- 4. Concepts can be applied at many levels of difficulty from concrete to those involving more complex thinking skills.
- 5. Basic concepts are fundamental to understanding and following directions at home, school and other activities— sports, dance, navigating in daily life.
- 6. Basic concepts are an important part of what is often referred to as “emotional regulation” such as taking turns, and expressing feelings wants, and needs.

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