

Conceptual System /

Shappe

Conceptual Vocabulary /

Shappe & Round

CONCEPT TEACHING MODEL

Acknowledgments /

These Concept Teaching Model lessons are based on the theories and framework for teaching and learning originally developed by Dr. Magne Nyborg (1993) in Norway, together with the subsequent expansion and refinement of these ideas by his colleague Dr. Andreas Hansen (2002, 2009) who brought these learning theories and concepts to a broader range of educational professionals. Of special note is Dr. Hansen's Curriculum for the Teaching of Basic Conceptual Systems (BCS) and related Basic Concepts in Kindergarten and Primary School (2009). His expanded framework for teaching of Basic Conceptual Systems is foundational to these lessons

01
Selective Association

Tasks are presented in order to facilitate the student's ability to associate a given conceptual label with the properties that define a category.
Learning associations.

When asked what shape a key item has, the student will be able to associate the conceptual label "a round shape" with that key object by verbalizing the phrase "it has a round shape".

When asked what shape each of several items has, the student will be able to associate the conceptual label "a round shape" with each object by verbalizing the phrase "it has a round shape".

When asked to create something that has a round shape as one of its properties, the student will be able to produce something with a round shape and verbalize that property with the phrase "it has a round shape".

02
Selective Discrimination

Tasks are presented in order to facilitate the student's ability to identify items that do/do not share the properties that define a member of a category.
Learning differences.

When asked to identify which object in a group has a round shape, the student will be able to point to the object in the group that has a round shape as one of its properties.

When asked to identify which picture in a group has a round shape, the student will be able to point to the picture in the group that has a round shape as one of its properties.

When asked to identify the part of an item that has a round shape, the student will be able to point to the part of an object or picture that has a round shape.

When asked to identify something in the school, home or community that has a round shape, the student will be able to point to or name the item and verbalize that it has a round shape.

03 Preliminary

Tasks are presented in order to reinforce the student's understanding of the concepts of partial similarity and complete similarity.

When asked if a pair of items are completely similar, the student will be able to identify the similarities that the two objects or pictures share and label these similarities with the phrase "these items are completely similar".

When asked how a pair of items are similar, the student will be able to identify the partial similarity that the two objects or pictures share and label this partial similarity with the phrase "these items are similar in having a round shape".

03
Selective Generalization

Tasks are presented in order to facilitate the student's ability to identify the partial similarity that items in a conceptual system share and verbalize this similarity using specific conceptual vocabulary.

When asked how a group of items are similar, the student will be able to identify the partial similarity that each group of objects or pictures share and label this partial similarity with the phrase "these items are similar in having a round shape" or "these items are similar in having a part with a round shape".

When asked to identify which items in a pictured group are similar in having a round shape, the student will be able to point to the correct items in the group that have a round shape as one of their properties.

Phase 01
Selective Association

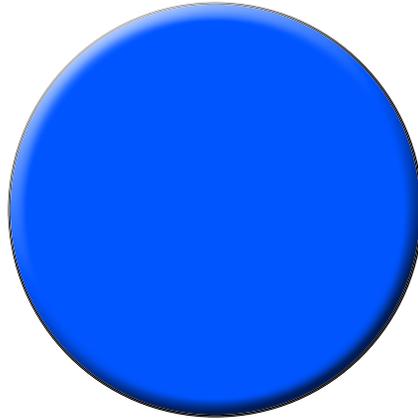
Several simple round shapes of cardboard, plastic or other material.

Section 01
Simplified Opening Tasks

Tasks are presented in order to facilitate the student's ability to associate a given conceptual label with the properties that define a category.

Learning associations.

Note: It is crucial throughout this lesson to adjust the number of tasks as well as vary the kinds of items presented within each Phase in direct relation to the specific needs of the student(s) in question. As the student(s) respond to the teaching, your ongoing assessment of their responses will indicate the level of adjustment needed. Some students might need fewer stimuli/tasks to acquire this targeted concept/conceptual system. Other students might need a higher number of tasks to achieve mastery. Therefore, the critical variables to adjust in light of your ongoing assessment are the number of tasks and the kinds of items presented. However, each Phase, with its various subsections, together with the Cumulative and Follow-up tasks, must be addressed, regardless of the struggling students' age and prerequisites for learning in that specific conceptual area. Cf. Chapter 3 in Hansen and Morgan (2019), the subchapter, "Balancing an appropriate number and kind of tasks in each Phase when making your lessons."



T: The Teacher holds up a piece with a round shape, gives the student a similar piece. Using the example of the blue circle pictured to the left, the Teacher says and models,

"Today we're going to learn about a special kind of shape.
Trace your finger along the edge of this shape all the way around it like this."

The Teacher traces around the edge of the round shape.

S: The student traces their finger along the edge of her/his piece.

T: The Teacher points to the round shape and says,
"This shape is curved all the way around and has no corners or straight line shapes along the edges so it has a round shape. Please look at your shape and say with me, 'It has a round shape'."

S: and T: "It has a round shape."

T: The Teacher responds,
"You listened well and remembered that I said that it has a round shape. Good looking and listening. We know that if this shape is curved all the way around and has no corners or straight line shapes along the edges, we can say that it has a round shape."

While holding up the round shape the Teacher asks,
"What shape does this piece have? "

S: The student looks at the shape and replies,
"It has a round shape."

T: The Teacher responds,
"You listened well and remembered that I said that it has a round shape. Good looking and listening."

Reinforce the student throughout this program with positive and guiding feedback.

Phase 01
Selective Association

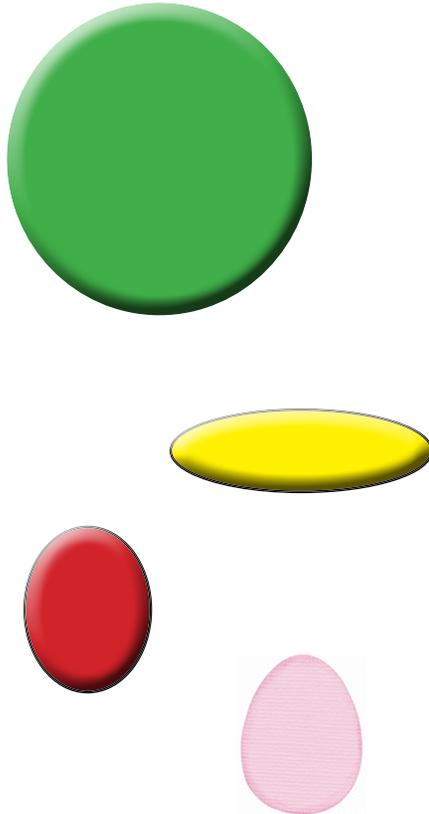
Section 01
 Simplified Opening Tasks
 continued

Tasks are presented in order to facilitate the student's ability to associate a given conceptual label with the properties that define a category.

Learning associations.

* Throughout this lesson, use the specific name of each item when talking with the student. The use of the term object/shape/letter/numeral is only meant as a reference point for sample dialogue purposes.

More simple round shapes made of cardboard, plastic or other material that include circles, ellipses, ovals and egg shapes of different sizes and colors.



Continue the teaching dialogue using the same basic principles with additional round shapes made of cardboard, plastic or other material that include circles, ellipses, ovals and egg shapes of different sizes and colors.

T: The Teacher continues the teaching dialogue using additional round shaped pieces of paper, cardboard, plastic or other material. While holding up another round shape the Teacher says,

"Look at this shape.

Trace your finger all around the edge of this shape.

Because this shape is curved all the way around and has no corners or straight line shapes along the edges, we can say that it has a round shape just like the first round piece.

What shape does this object have?"

S: The student looks at the shape and replies,
 "It has a round shape."

T: The Teacher responds,

"You listened well and looked carefully at this shape and saw that it is curved all the way around and has no corners or straight line shapes along the edges, so we can say that it has a round shape.

Good looking and listening."

Note: It is extremely important that the student look at the examples of groups of objects that have a triangle shape at the same time as s/he is hearing the phrase "having a round shape" and as s/he is saying the phrase themselves. Remember that the student is just beginning to form the concept of "having a round shape" mentally and needs to verbally label all of the learning examples to help form the mental image and associated conceptual vocabulary.

Phase 01
Selective Association

Section 02
More Complex Tasks

Tasks are presented in order to facilitate the student's ability to associate a given conceptual label with the properties that define a category.

Learning associations.

* Throughout this lesson, use the specific name of each item when talking with the student. The use of the term object/shape/letter/numeral is only meant as a reference point for sample dialogue purposes.

More association tasks of the same kind, using objects that have a round shape (circle, ellipse, oval, egg shaped).

Examples: coin, button, small plate, round lid, round candies, etc.



T: The Teacher places several objects with a round shape in front of the student. Using the example of the penny (coin) pictured on the left, the Teacher says,

"Look at this penny (coin).

Watch while I trace my finger along the edge of the penny (coin)."

The Teacher traces a finger all along the edge of the penny (coin) and says,

"You can trace your finger along the edge of this penny (coin)* and, because it curves or bends all the way around, we can say it has a round shape.

While pointing at the penny (coin)*the Teacher says,

"Look at this penny (coin)*.

What shape does this part (or edge) of the penny (coin)* have?"

S: The student looks at the penny (coin) and replies,

"It has a round shape."

T: While pointing at the penny (coin) the Teacher says,

"You listened well and looked carefully at this penny (coin) and saw that, because this edge curves or bends all the way around, it has a round shape.

Good looking and listening.

Continue the teaching dialogue using the same basic principles with additional objects that have a round shape (circle, ellipse, oval, egg shaped). Begin with items that have a clear, consistent round shape and then introduce items with variations in thickness, color, surface patterns, etc. The systematic variation of irrelevant features and properties, while keeping "a round shape" as the constant similarity, will help the student to focus on and more easily associate the conceptual vocabulary of "a round shape" with the relevant partial similarity between the different items.

Note: It is extremely important that the student looks at the examples of the objects that have a curved line shape at the same time as they are hearing the phrase "a round shape" and as they are saying the phrase themselves. Remember that the student are just beginning to form the concept of "a round shape" mentally and need to verbally label all of the learning examples to help form the mental image and associated conceptual vocabulary.

Phase 01
Selective Association

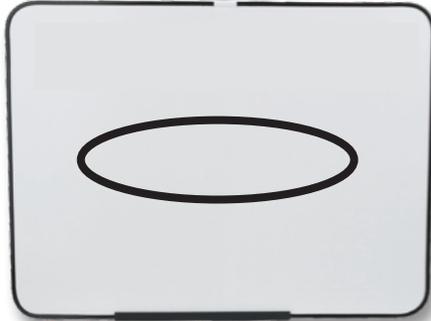
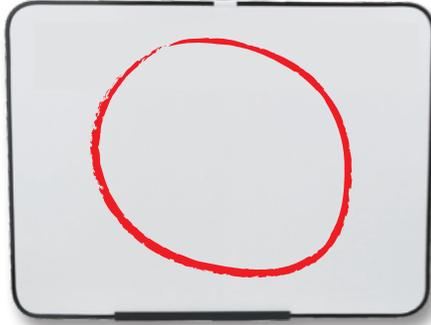
Section 02
More Complex Tasks

Tasks are presented in order to facilitate the student's ability to associate a given conceptual label with the properties that define a category.

Learning associations.

* Throughout this lesson, use the specific category name of the object/shape/letter/numeral groups when talking with the student. The use of the term object/shape/letter/numeral is only meant as a reference point for sample dialogue purposes.

Whiteboard and dry erase markers of various colors. This can also be done using markers or crayons and paper.



T: The Teacher takes some dry erase markers and goes to the whiteboard. Using the example of the red circle pictured to the left, the Teacher takes a red marker and says,

"Watch while I draw a round shape (circle, ellipse, oval, egg shaped) on the whiteboard."

The Teacher then draws a circle on the whiteboard using a red colored marker (or crayon on paper) and describes the shape as he/she is drawing it saying,

"To make a round shape I need to make a curved line shape all the way around with no corners or straight line shapes like this.

I made a round shape."

While pointing at the circle that he/she has drawn, the Teacher asks,

"What shape does this drawing have?"

S: The student looks at the red circle and replies,

"It has a round shape."

T: The Teacher responds,

"You listened well and looked carefully at this shape and saw that it curves or bends all the way around the edge, so we can say that it has a round shape.

Good looking and listening.

The Teacher then says,

"Watch while I draw more round shapes on the whiteboard."

The Teacher continues the teaching dialogue using the same basic principles with additional round shapes (circle, ellipse, oval, egg shaped) on the whiteboard using various colored markers (or crayons on paper) and describing the shapes as he/she is drawing.

Phase 01
Selective Association

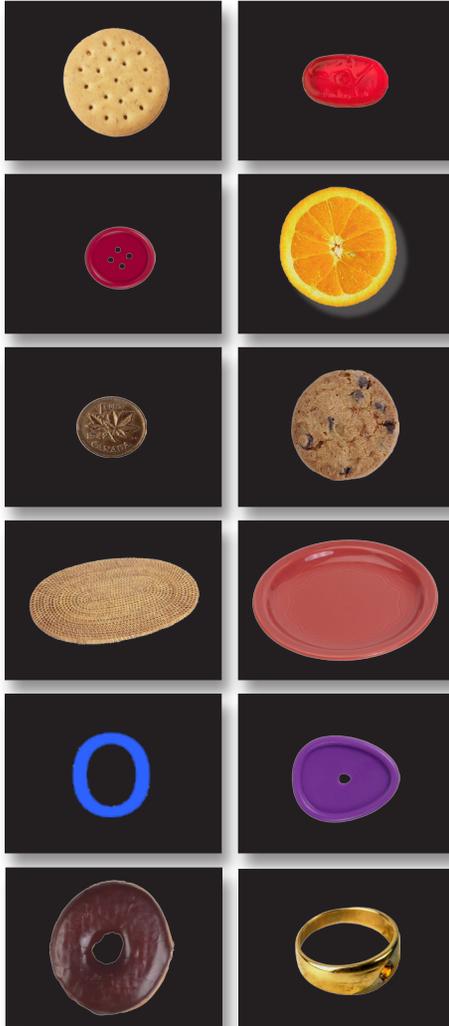
Section 02
More Complex Tasks
continued

Tasks are presented in order to facilitate the student's ability to associate a given conceptual label with the properties that define a category.

Learning associations.

* Throughout this lesson, use the specific category name of the object/shape/letter/numeral groups when talking with the student. The use of the term object/shape/letter/numeral is only meant as a reference point for sample dialogue purposes.

More association tasks using individual pictures of items having a round shape.



Slides: 03-14

T: The Teacher shows the student a picture of an object that has a round shape. Using the example of the cracker pictured on Slide 03 to the left, the Teacher and says,

"Look at this picture.
What shape does this cracker have?"

S: The student looks at the picture of the cracker and replies,
"It has a round shape."

T: If needed, the Teacher can use the dialogue from the previous activity saying,
"Look this picture of a cracker.

You can trace your finger along the edge of this cracker and, because it curves all the way around and has no corners or straight line shapes on it, we can say that it has a round shape just like the shapes we saw before.

What shape does this cracker have?"

S: The student looks at the picture of the cracker and replies,
"It has a round shape."

T: While pointing at the picture of the cracker the Teacher says,

"You listened well and looked carefully at this cracker and saw that it is curved all the way around and has no corners or straight line shapes along the edges, so we can say that it has a round shape. Good looking and listening.

Continue the teaching dialogue using the same basic principles with additional pictures. It is important to use a variety of pictures of things that have a round shape. Continue until you feel that the student are able to more spontaneously associate the label "a round shape" with the pictured items.

Note: It is extremely important that the student looks at the examples of the objects that have a curved line shape at the same time as s/he is hearing the phrase "a round shape" and as s/he are saying the phrase themselves.

Remember that the student is just beginning to form the concept of "a round shape" mentally and needs to verbally label all of the learning examples to help form the mental image and associated conceptual vocabulary.

Phase 01
Selective Association

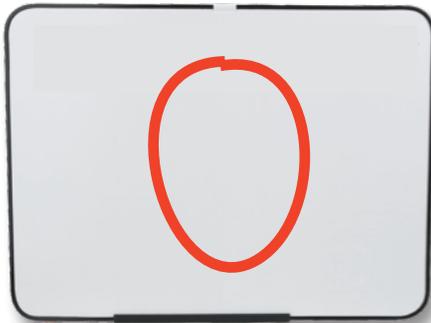
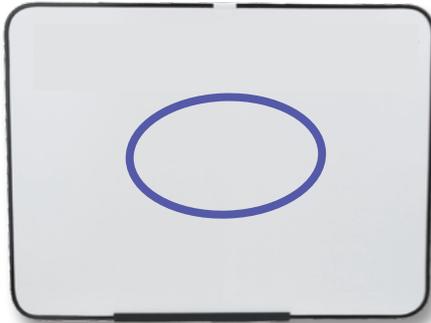
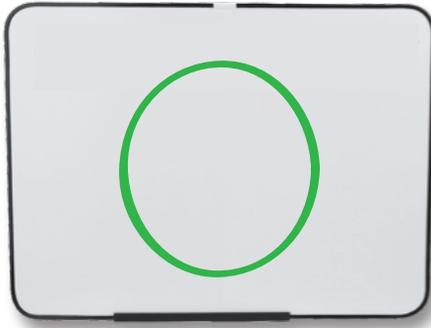
Section 03
Self - Production Tasks

Tasks are presented in order to facilitate the student's ability to associate a given conceptual label with the properties that define a category.

Learning associations.

* Throughout this lesson, use the specific name of each item when talking with the student. The use of the term object/shape/letter/numeral is only meant as a reference point for sample dialogue purposes.

Whiteboard and different color dry erase markers. This can also be done using crayons or markers on paper.



T: Continue the teaching dialogue using dry erase markers to draw round shapes on a whiteboard. Using the example of the green round shape pictured to the left, the Teacher takes some different color dry erase markers and says,

"Watch while I draw a round shape on the whiteboard".

The Teacher then draws a simple round shape on the whiteboard.

Intervention Note: If needed, the Teacher can again demonstrate drawing a round on the whiteboard using a colored marker (or marker or crayon on paper), using the language from Section 02 to describe the shape as he/she is drawing it saying,

"To make a round shape I need to make a curved line shape all the way around with no corners or straight line shapes like this.

Now I want you to come to the board and draw (or trace) some different of round shapes for me. Make sure they have different colors and different sizes."

S: The student comes to the board and draws several round shapes on the whiteboard.

T: After the student has completed their drawing, the Teacher points to one of the shapes and asks, "What shape does your drawing have?"

S: The student looks at their project and replies, "It has a round shape."

T: While pointing at the drawing, the Teacher responds, "You are right. You listened well and very carefully drew a round shape. Good remembering and drawing."

Intervention Note: If the student struggle with creating a round shape, the teacher can use a dot to dot format to help the student learn how to create the shape. Simply place a line of dots on the board in a configuration that lends itself to the creation of a round shape, and have the student connect the dots in a sequence to create various round shapes. If needed, a light colored marker can be used to highlight a track that the student can use to trace a round shape. If this is still too difficult, the student can be given a template or stencil to trace various round shapes on a whiteboard or piece of paper.

Phase 01
Selective Association

Section 03
Self - Production Tasks

Tasks are presented in order to facilitate the student's ability to associate a given conceptual label with the properties that define a category.

Learning associations.

* Throughout this lesson, use the specific name of each item when talking with the student. The use of the term object/shape/letter/numeral is only meant as a reference point for sample dialogue purposes.

Engage the student in self-production tasks using markers, paint, colored pencils, modeling clay (Playdoh), pipe cleaners, paper, the student's own fingers, etc.

The student is asked to create something that has a round shape, as well as verbally label their project as having a round shape.

T: The Teacher says,

"I want you to make something that has a round shape."

After the student has completed their project, the Teacher asks,

"What shape does your project have?"

S: The student looks at their project and replies,

"It has a round shape."

If the student can't seem to make something on their own, you can suggest activities such as the following:

- Draw/paint me some Easter eggs that have a round shape.
 - Draw/paint me a page of round shapes that are all different colors and sizes.
 - Draw/paint me some balloons that have a round shape.
 - Draw/paint me a page of someone blowing bubbles that all have a round shape.
 - Draw/paint me a picture of a caterpillar or snowman that is made up of round shapes.
- Make a round shape by placing all your fingertips against the tip of your thumb. You can also do this activity by placing the tip of your index or middle finger against the tip of your thumb. What shape does the opening between the thumb and your finger(s) have when you put the tips together?
- Here are some pipe-cleaners. Could you please bend them and attach the ends together so that they form a round shape? What shape have you made with the pipe-cleaner?
 - I want you to make some round shape cookies out of clay (Playdoh).
 - I want you to make a bracelet out of clay (Playdoh).

Another possibility is that the Teacher could ask two or three children to lie down on the floor and together form a round shape with their bodies.

Phase 01
Selective Association

Section 03
Self - Production Tasks
continued

Tasks are presented in order to facilitate the student's ability to associate a given conceptual label with the properties that define a category.

Learning associations.

* Throughout this lesson, use the specific name of each item when talking with the student. The use of the term object/shape/letter/numeral is only meant as a reference point for sample dialogue purposes.

Review of the terms for the concept "a round shape" verbally with the Teacher, facilitating the student's development of inner verbalization from outer verbalization (Hansen, 2006). This activity can be done individually or with a group of students.

T: The Teacher places something in front of the student that has a round shape and says,

- a. "Look at this item and with your regular voice say with me, 'It has a round shape'. (The Teacher models for the student.)

Optional visual cues: You can use an optional visual cueing system to help the student remember what kind of voicing to use during the 3 sections of this activity. For section a., you would give the following directions,

"Put your left hand on your throat.

(The Teacher models putting his/her left hand on their throat for the student.)

Now look at this item and with your regular voice say with me,

'It has a round shape'."

- b. Now whisper,
'It has a round shape'. (The Teacher models for the student.)

Optional visual cues: For section b., you would give the following directions,

"Now make a 'whisper cone' with your hands.

(The Teacher models for the student putting 2 hands together in front of their mouth to make a small megaphone.)

Now whisper,

'It has a round shape'."

- c. Now say it in your mind using your inner voice,
'It has a round shape'.
You can move your lips, but don't make any sound." (The Teacher models for the student.)

Optional visual cues: For section c., you would give the following directions,

"Put one finger on your lips and one finger on your head.

(The Teacher models for the student by putting one finger on their lips in the traditional "sh" or "quiet" position and one finger on top of their head.)

Now say it in your brain / mind using just your inner voice.

'It has a round shape'."

You can move your lips, but don't make any sound."

Optional section d. It is fun to use either an electric megaphone that alters the student voices or a non-electric echo microphone for a final voicing of the phrase.

"Hold the megaphone / microphone in front of your mouth. (The Teacher models for the student.)

Now look at this item and with your regular voice say,

'It has a round shape'."

Phase 02
Selective Discrimination

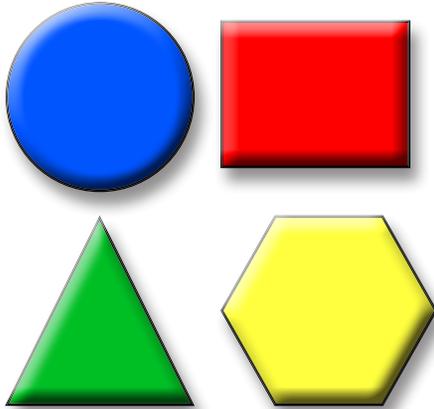
Section 01
 Simultaneous Discrimination
 Tasks

* See Appendix C in the
Practitioner's Manual for a detailed
 description of the Learning Panel.

Tasks are presented in order to
 facilitate the student's ability to
 identify the partial similarities that
 items in a conceptual system share
 and verbalize these similarities
 using specific conceptual
 vocabulary.
 Learning differences.

** Throughout this lesson, use the
 specific name of the object/shape/
 letter/numeral when talking with
 the student. The use of the term
 object/shape/letter/numeral is only
 meant as a reference point for
 sample dialogue purposes.

Discrimination tasks using three to four
 individual geometric shapes of which only one
 has a round shape.



T: The Teacher shows the student a group of various geometric shapes of which only one has a round shape. Using the example of the geometric shapes pictured to the left, the Teacher says,

"Let's look carefully at these shapes.
 Point to the one that has a round shape."

S: The student points to the blue circle.

T: The Teacher responds,

"You are right. I like the way you listened well and remembered that if the shape is curved all the way around and has no corners or straight line shapes along the edges, we can say that it has a round shape. You are really using your eyes and your brain well. Good thinking and good work."

Intervention Note: Throughout the Phase 2 section, if needed, have the student describe each piece in terms of shape, tracing the various shape edges with their finger. This is dependent on what they have learned previously in terms of the concept of shape. Guide them to see that only one has a round shape.

• **Follow-up questions for Phase 02, Section 01 Simultaneous Discrimination Tasks:** From this point on in the lesson, the follow-up questions should be introduced where appropriate to facilitate more awareness in the student as to how they are thinking in reference to the target concept. This can be especially important in helping the Teacher to get a sense of what the student is thinking in terms of their development of the key concept if they are struggling with discriminating a round shape from non-round shapes.

T: While pointing at the blue circle that the student selected the Teacher asks,
 "Why did you point at this blue circle?"

S: The student looks at the blue circle and replies,
 "I pointed at this blue circle because it has a round shape."

T: While pointing at the blue circle that the student selected the Teacher asks,
 "How do you know that this blue circle has a round shape?"

S: The student looks at the blue circle and replies,
 "Because it is curved all the way around the edge and has no straight line shapes or corners, we can say that it has a round shape."

T: The Teacher responds,

"You are right. You looked carefully and saw that only this blue circle in the group has a round shape. You are really using your eyes and your brain well. Good thinking and good work."

Phase 02
Selective Discrimination

Section 01
Simultaneous Discrimination
Tasks
continued

* See Appendix C in the *Practitioner's Manual* for a detailed description of the Learning Panel.

Tasks are presented in order to facilitate the student's ability to identify the partial similarities that items in a conceptual system share and verbalize these similarities using specific conceptual vocabulary.
Learning differences.

** Throughout this lesson, use the specific name of the object/shape/letter/numeral when talking with the student. The use of the term object/shape/letter/numeral is only meant as a reference point for sample dialogue purposes.

More discrimination tasks using groups three to four objects of different shapes of which only one has a round shape. Nyborg's *Learning Panel or similar format can be useful here. See examples of object groupings below.

Example group using quarter, Post-it Note pad and ruler.



Example group using eraser, button and stamp.



T: Continue the teaching dialogue with additional groups of common school and home items that have a round shape. The Teacher gives the student a set of objects, only one of which has a round shape. Using the Example Group 1 set of objects pictured to the left, the Teacher says,

"Look at these objects.
There is a quarter, a Post-it Note pad and a ruler here.
Can you show me the one that has a round shape?"

S: The student points to the quarter that has a round shape.

T: The Teacher responds,
"You are right.
I like the way you looked carefully at all of these items and saw that only this quarter has a round shape.
You are really using your eyes and your brain well. Good thinking and good work."

• **Follow-up questions for Phase 02, Section 01 Simultaneous Discrimination Tasks:** Use your professional judgment as to when to use the follow-up question format presented previously.

If the student appear to still be unsure of the concept in this context, continue the same dialogue format with additional object groups to build their discrimination skills. If the student continue to struggle, you may need to take a step back and redo previous association tasks.

Phase 02
Selective Discrimination

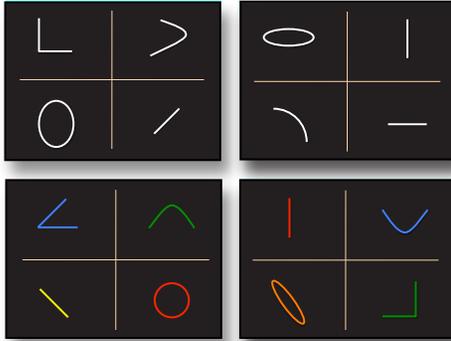
Section 01
Simultaneous Discrimination
Tasks
continued

* See Appendix C in the *Practitioner's Manual* for a detailed description of the Learning Panel.

Tasks are presented in order to facilitate the student's ability to identify the partial similarities that items in a conceptual system share and verbalize these similarities using specific conceptual vocabulary.
Learning differences.

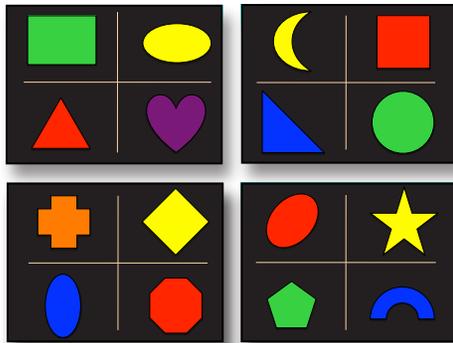
** Throughout this lesson, use the specific name of the object/shape/letter/numeral when talking with the student. The use of the term object/shape/letter/numeral is only meant as a reference point for sample dialogue purposes.

More discrimination tasks using groups of four different open and closed line shapes of which only one has a round shape. Nyborg's Learning Panel* or similar format can be useful here.



Slides: 16-19

More discrimination tasks using groups of four different pictures of solid geometric shapes of which only one has a round shape. Nyborg's Learning Panel* or similar format can be useful here.



Slides: 20-23

T: The Teacher shows the student a multi-element line shape card. Using the example of the line shapes pictured on Slide 16 to the left, the Teacher says,

"Look at these line shapes*.
Show me the one that has a round shape."

S: The student points to the third shape (the oval line shape) in the line/row that has a round shape.

T: The Teacher responds,

"You are right.
I like the way you looked carefully at all of these line shapes and saw that only this oval has a round shape.
Good thinking and good work."

• **Follow-up questions for Phase 02, Section 01 Simultaneous Discrimination Tasks:** Use your professional judgment as to when to use the follow-up question format presented previously.

If the student appears to still be unsure of the concept in this context, continue the same dialogue format with additional multi-element line shape cards to build their discrimination skills. If the student continues to struggle, you may need to take a step back and redo previous object tasks or even association tasks.

T: The Teacher shows the student a multi-element geometric shape card. Using the example of the solid geometric shapes pictured on Slide 20 pictured to the left, the Teacher says,

"Look at these geometric shapes.
Can you show me the one that has a round shape."

S: The student points to the yellow oval that has a round shape.

T: The Teacher responds,

"You are right.
I like the way you looked carefully at all of these shapes and saw that only this yellow oval* has a round shape. Good thinking and good work."

• **Follow-up questions for Phase 02, Section 01 Simultaneous Discrimination Tasks:** Use your professional judgment as to when to use the follow-up question format presented previously.

If the student appears to still be unsure of the concept in this context, continue the same dialogue format with additional geometric shape cards to build their discrimination skills. If the student continues to struggle, you may need to take a step back and redo previous association tasks.

Phase 02 Selective Discrimination

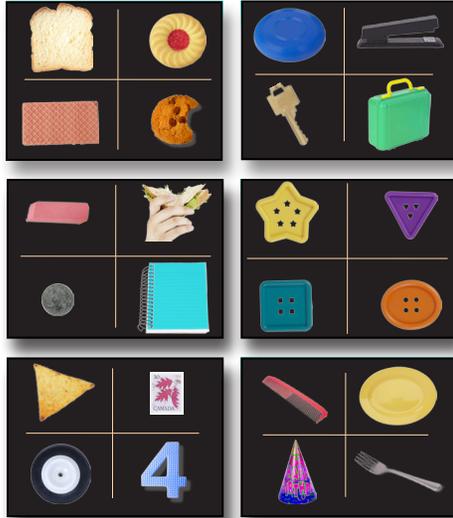
Section 01 Simultaneous Discrimination Tasks continued

* See Appendix C in the *Practitioner's Manual* for a detailed description of the Learning Panel.

Tasks are presented in order to facilitate the student's ability to identify the partial similarities that items in a conceptual system share and verbalize these similarities using specific conceptual vocabulary.
Learning differences.

** Throughout this lesson, use the specific name of the object/shape/letter/numeral when talking with the student. The use of the term object/shape/letter/numeral is only meant as a reference point for sample dialogue purposes.

More discrimination tasks using groups of four pictures of different items of which only one has a round shape. Nyborg's Learning Panel* or similar format can be useful here.



Slides: 24-29

T: The Teacher shows the student a multi-element object* card of which only one has a round shape. Using the example of the group of objects pictured on Slide 24, the Teacher says,

“Look at these objects.

Can you show me the one that has a round shape.”

S: The student points to the cookie that has a round shape.

T: The Teacher responds,

“You are right.

I like the way you looked carefully at all of these objects* and saw that only this cookie* has a round shape.
Good thinking and good work.”

• **Follow-up questions for Phase 02, Section 01 Simultaneous Discrimination Tasks:** Use your professional judgement as to when to use the follow-up question format presented previously.

If the student appears to still be unsure of the concept in this context, continue the same dialogue format with additional object picture groups to build their discrimination skills. If the student continues to struggle, you may need to take a step back and redo previous association tasks.

Phase 02
Selective Discrimination

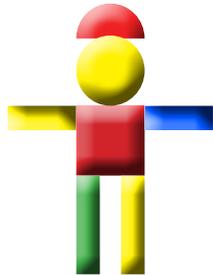
Section 02
Successive Discrimination
Tasks

Tasks are presented in order to facilitate the student's ability to identify the partial similarities that items in a conceptual system share and verbalize these similarities using specific conceptual vocabulary.

* Throughout this lesson, use the specific name of the object/shape/letter/numeral when talking with the student. The use of the term object/shape/letter/numeral is only meant as a reference point for sample dialogue purposes.

Discrimination tasks using individual objects that have a round shape as part of a more complex whole.

Examples: toy train, paint box, cup, glasses, plastic numbers or letters, spoon, pattern and construction block designs, etc.



T: The Teacher shows the student an object that has a part with a round shape. Using the example of the toy train pictured on the left, the Teacher says,

"Student, sometimes an object can have one or more **parts** with a round shape. Look at this train engine. Show me the part (OR, parts) of this train engine that has a round shape?"

S: The student points to the wheel(s) on the train engine that has(have) a round shape.

T: The Teacher responds,

"You are right.
I like the way you looked carefully at all the parts of this train engine and saw that this wheel has a round shape. Good thinking and good work."

• Follow-up questions for Phase 02, Section 02 Successive Discrimination Tasks:

From this point on in the lesson, the follow-up questions should be introduced where appropriate to facilitate more awareness in the student as to how they are thinking in reference to the target concept. This can be especially important in helping the Teacher to get a sense of what the student is thinking in terms of their development of the key concept if they are struggling with discriminating a round shape from non-round shapes.

T: While pointing at the wheel on the train engine that the student selected the Teacher asks,
"Why did you point at this part of the train?"

S: The student looks at the wheel on the train engine and replies,
"I pointed at this wheel because it has a round shape."

T: While pointing at the wheel on the train engine that the student selected the Teacher asks,
"How do you know that this wheel has a round shape?"

S: The student looks at the wheel on the train engine and replies,
"Because this wheel is curved all along the edge with no straight line shapes or corners, so we can say that it has a round shape."

T: The Teacher responds:

"You are right.
You looked carefully and saw that only this part, the wheel on the train, has a round shape. You are really using your eyes and your brain well. Good thinking and good work."

Continue the teaching dialogue using the same basic principles with additional complex objects until you feel that the student is able to spontaneously compare, discriminate and label the part with a round shape.

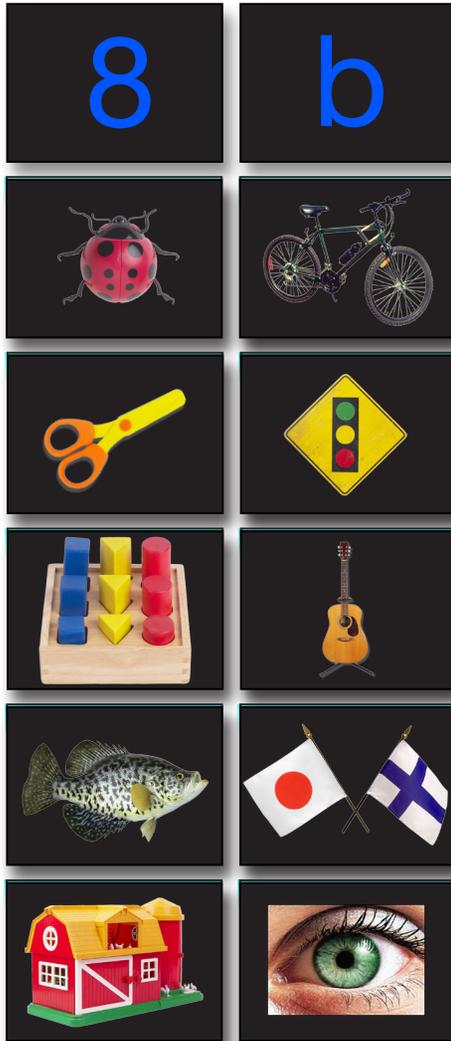
Phase 02
Selective Discrimination

Section 02
Successive Discrimination
Tasks
continued

Tasks are presented in order to facilitate the student's ability to identify the partial similarities that items in a conceptual system share and verbalize these similarities using specific conceptual vocabulary.

* Throughout this lesson, use the specific name of the object/shape/letter/numeral when talking with the student. The use of the term object/shape/letter/numeral is only meant as a reference point for sample dialogue purposes.

More discrimination tasks using individual pictures of items that have a round shape as **part** of a more complex whole.



Slides: 31-42

T: The Teacher gives the student a picture of an object that has a **part** with a round shape. Using the example of the numeral "8" pictured on Slide 31 to the left, the Teacher says,

"Look at this numeral "8"*.

We've been finding out that things can have one or more parts with a round shape.

Show me the part(s) of this numeral 8* that has/have a round shape?"

S: The student points to the part of the numeral 8* that has a round shape.

T: The Teacher responds,

"You are right.

I like the way you looked carefully at all the parts of this numeral 8* and saw that this part has a round shape.

Good thinking and good work."

• **Follow-up questions for Phase 02, Section 02 Successive Discrimination Tasks:** Use your professional judgment as to when to use the follow-up question format presented previously.

Continue the teaching dialogue using the same basic principles with additional complex picture cards to build their discrimination skills. If the student appears to still be unsure of the concept in this context, you may need to take a step back and redo previous object discrimination tasks or even association tasks.

Phase 02
Selective Discrimination

Section 02
 Successive Discrimination
 Tasks
 continued

*This Optional Task is designed to provide the students with a different type of task within their skill level that requires the use of their newly learned conceptual knowledge. As such, this task is optional within the framework of this lesson.

Optional Tactile Discrimination task: You will need a cloth bag and three to four different plastic or wooden basic geometric shapes of which only one has a round shape. Place the shapes into the bag. Have the student try to find the piece with a round shape using only their fingers to identify it.

Note: For some student, it might be helpful to lessen the complexity of the task by having a separate bag for each individual shape, instead of one bag containing all of the shapes.

T: The Teacher puts a cloth bag (or several cloth bags) on the table in front of the student that contains a variety of geometric shapes in it, only one of which has round shape, and says,

“Now I want you to reach inside this bag and try to find the one piece that has a round shape.

You can’t look inside or pull them all out.

Use your fingers to try and feel the edges of each shape. Make sure you feel all of the edges on each shape and then take out only the one that has a round shape.”

Intervention Note: It can be helpful to demonstrate to the student how to explore the edges of various geometric shapes using their fingers. Place two identical shapes on the table in front of the student and then pick it up with one hand and feel the edges with the other hand, talking about what you are feeling with your fingers. Have them mirror what you are doing with the other identical shape. Use specific conceptual language while feeling the shapes.

For example:

Holding a a shape with curved edges: “I can feel the way this edge curves along this side.”

Holding a round shape: “I can feel the way this edge curves all the way around.”

Holding a shape with an edge with a straight line shape: “I can feel the way this edge goes straight across and doesn’t bend or curve at all.”

Holding a triangle (triangular) shape: “I can feel three straight sides and three corners and it doesn’t bend or curve at all.”

S: The student reaches in and touches each piece individually, feeling around the outside edges, taking out the one piece that has a round shape after exploring all of the pieces. For the student who struggles with this task, it can be helpful for the Teacher to guide the student’s fingers with their own hands to help the student focus on the edges of each object, describing the edges that they are feeling.

T: While pointing at the actual object the student has selected out of the cloth bag, the Teacher asks,
 “What shape does this piece have?”

S: While looking at the shape they have selected, the student replies,
 “It has a round shape.”

T: The Teacher responds,
 “I like the way you used your fingers, thought carefully and found the one shape that has round shape. Good thinking and good work.”

Phase 02
Selective Discrimination

Section 02
Successive Discrimination
Tasks
continued

Tasks are presented in order to facilitate the student's ability to identify the partial similarities that items in a conceptual system share and verbalize these similarities using specific conceptual vocabulary.

* Throughout this lesson, use the specific name of the object/shape/letter/numeral when talking with the student. The use of the term object/shape/letter/numeral is only meant as a reference point for sample dialogue purposes.

Items in the immediate classroom / school environment. This activity can be done individually or with a group of students.

Items in the home or community environment. This activity can be done individually or with a group of students.

Optional: True/False and/or Yes/No evaluations. Use a combination of objects and pictures from the previous steps as well as additional ones that don't have a round shape or parts with a round shape. This activity can be done individually or with a group of students.

T: The student is now asked to find, point to or touch items with a round shape in the classroom/school environment and say (verbal coding) that it has a round shape. The Teacher could have previously set up several easily noticeable items that have a round shape throughout the classroom environment.

The Teacher asks,

"Can you look around and show me something in the room that has a round shape?"

S: The student points correctly, possibly accompanied by the correct verbalization.

T: While pointing at the actual object the student identified, the Teacher asks,

"What shape does this object have?"

S: While looking at the item, the student replies,

"It has a round shape."

T: The Teacher responds,

"I like the way you looked carefully and found something that has a round shape."

In order to bridge or generalize the concept to other settings and materials, the Teacher might also ask the student if they know of something that has a round shape or a part with a round shape, outside the school environment, such as at home or in other places in the community. This is definitely a harder task than the previous one.

The Teacher asks,

"Can you think of something in your home or in the community that has a round shape or a part with a round shape?"

An alternative is to give the children as homework the assignment to find examples of things that have a round shape in their homes or in the larger community and, if possible, bring some of these round shaped items back to school or draw them in a homework booklet titled, "Things In My Community". A "Community booklet" is simply a booklet made of several sheets of blank paper stapled together with the goal written on the front. The goal in this activity is "Draw pictures of things you found in your home or community that have a round shape."

Note: This activity is designed to not just help student transfer current learning to other contexts, but more importantly, to provide the student with an opportunity to demonstrate whether their learned experiences have been effectively integrated and organized for accurate recall and use in the coding of new sensations, integration of new experiences and in the comparing of experiences (Nyborg, 1993).

An optional type of task that Nyborg tends to place towards the end of the Selective Discrimination phase is the use of true/false and yes/no questions as evaluations of validity.

True/False questions -

T: "Is it true or false that this object has a round shape?"

T: "Is it true or false that this object has a part with a round shape?"

Yes/No questions -

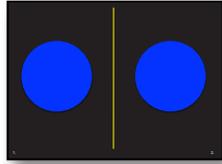
T: "Does this object have a round shape? "

T: "Does this object have a part with a round shape?"

Phase 03 Preliminary Tasks

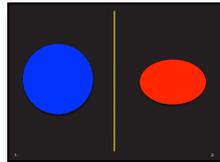
Tasks are presented in order to reinforce the student's understanding of the concepts of partial similarity and complete similarity.

Task 1 - Two identical objects or pictured items that are the same subject, size, color and have the same round shape are displayed. They are in other words completely similar.



Slide: 44

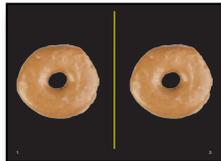
Task 2 - Slide 45 or one of the objects or pictured groups from Task 1 is presented along with a new object or pictured group that contains different items, but is similar in terms of placement. They are not completely similar, but are similar in having a group that is larger in number than another item.



Slide: 45

Additional slide set for Preliminary to Phase 3.

Task 1



Task 2



Slides: 46-47

T: The Teacher shows the student either Slide 44, a picture card with two identical pictured items on it or, two identical real objects. Using the example of the two blue circles pictured on Slide 44 to the left, the Teacher says,

"Let's compare these two shapes.

Do you think that these two shapes are completely similar/alike?"

If needed, have the student describe the pictures while holding them close to each other. Guide them to see that they each have the same subject, color, size and number and are completely similar/alike.

Then ask them the question again, guiding them to answer using the phrase,

"They are completely similar/alike".

S: The student looks at the pictures carefully and replies,

"They are completely similar/alike."

T: The Teacher shows the student either Slide 45, a second picture containing one pictured item from Task 1 together with a new pictured item or, a real object from Task 1 together with a new object.

Using the example of the two shapes pictured in Slide 45 to the left, the Teacher says,

"Now let's look at these two shapes. Do you think that these two shapes are completely similar/alike?"

Usually the immediate answer would be: "They are not completely similar. (One is a circle and one is an oval)"

If needed, have the student describe the two shapes while looking at them closely. Guide them to see that the shapes are different in size, color, but that both have a round shape. The Teacher responds,

"These shapes are not completely similar, one is a circle and one is an oval, but can you see in what way the two shapes are similar/alike?"

Think about what we have been learning and look at the two shapes carefully."

S: When such a question is asked, the student often looks at the shapes carefully and replies,

"They are similar in having a round shape."

T: The Teacher responds,

"You are right. I like the way you looked carefully at these shapes and saw that they are similar in having a round shape. Good thinking and good work."

If this doesn't happen spontaneously, the Teacher provides guidance to help the student discover and verbalize the key concept of partial similarity in shape.

Use the previous Task 1 and 2 formats for this slide set, modifying the dialogue to match the slide contents.

... The Teacher responds,

"These pictures are not completely similar, they have different items, but can you see in what way the donut and the quarter (coin) are similar/alike?"

Think about what we have been learning and look at them carefully."

S: When such a question is asked, the student often looks at the pictures carefully and replies,

"They are similar in having a round shape."

Phase 03
Selective Generalization

Section 01
 Discovering and Verbalizing
 Similarities

Tasks are presented in order to facilitate the student's ability to identify the partial similarities that items in a conceptual system share and verbalize these similarities using specific conceptual vocabulary.

Discovering and verbalizing similarities.

* Throughout this lesson, use the specific name of the object/shape/letter/numeral when talking with the student. The use of the term object/shape/letter/numeral is only meant as a reference point for sample dialogue purposes.

Groups of three to four objects that all have a round shape but with different shapes, sizes and colors, etc.

Examples: a button, a cookie / cracker, a plastic plate, a coin, M&M, roll of tape, etc.



T: The Teacher shows the student several objects that all have a round shape. Using the example of the groups of objects pictured on the left, the Teacher says,

"Let's compare all of these objects.

In what way are all of these objects similar or alike?

Think about what we have been discovering and discussing so far."

S: The student looks at the objects and replies,

"They are similar in that they all have a round shape."

T: The Teacher responds,

"You are right. I like the way you looked carefully at these objects and saw that they are similar in having a round shape. Good thinking and good work."

Intervention Note: Throughout the Phase 3 section, if needed, have the student describe each object or picture in terms of shape, tracing the edges with their finger. This will be dependent on what the student has previously learned in terms of the concept of shape. Guide them to see that they all have a similar round shape.

Follow-up questions for Phase 03, Section 01 Discovering and Verbalizing Similarities: At this point in the lesson, follow-up questions should continue to be introduced where appropriate to facilitate continued awareness in the student as to how they are thinking in reference to the target concept. This can be especially important in helping you to get a sense of what the student is thinking in terms of their development of the key concept and if they are struggling with identifying and verbalizing the partial similarities of several round shapes.

T: While pointing at the objects the Teacher asks,

"How do you know that these objects are similar in having a round shape?"

S: The student looks at the objects and replies,

"Because they are curved all the way around the edge and have no straight line shapes or corners, so we can say that they are similar in having a round shape."

If the student appear to still be unsure of the concept in this context, continue the same dialogue format with additional object groups to build their discrimination skills. If the student continue to struggle, you may need to take a step back and redo previous discrimination and even association tasks.

Phase 03
Selective Generalization

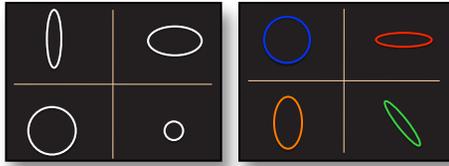
Section 01
 Discovering and Verbalizing
 Similarities
 continued

Tasks are presented in order to facilitate the student's ability to identify the partial similarities that items in a conceptual system share and verbalize these similarities using specific conceptual vocabulary.

Discovering and verbalizing similarities.

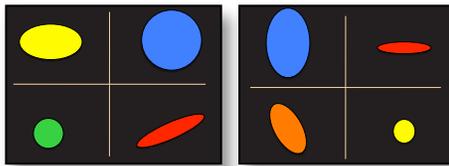
* Throughout this lesson, use the specific name of the object/shape/letter/numeral when talking with the student. The use of the term object/shape/letter/numeral is only meant as a reference point for sample dialogue purposes.

Groups of four pictures of various closed line shapes each having a round shape but with different styles, sizes, colors, orientation, etc.



Slides: 49-50

Groups of four pictures of various solid geometric shapes each having a round shape but with different styles, sizes, colors, orientation, etc.



Slides: 51-52

T: The Teacher shows the student a multi element picture card showing groups of closed line shapes that all have a similar round shape. Using the example of the group of closed line shapes pictured on Slide 49 to the left, the Teacher says,

“Let’s compare these line shapes. In what way are these shapes similar or alike?”
 Think about what we have been discovering and discussing so far.”

S: The student looks at the shapes and replies,
 “They are similar in having a round shape.”

Note: If the student struggle with this task, the Teacher can trace the edges of the shapes as a focusing tool.

T: The Teacher responds,
 “You are right. I like the way you looked carefully at these shapes and saw that they are similar in having a round shape. Good thinking and good work.”

• **Follow-up questions for Phase 03, Section 01 Discovering and Verbalizing Similarities:** Use your professional judgement as to when to use the follow-up question format presented previously.

If the student appears to still be unsure of the concept in this context, continue the same dialogue format with additional multi-element line shape cards to build their discrimination skills. If the student continues to struggle, you may need to take a step back and redo previous association tasks.

T: The Teacher shows the student a multi element picture card showing groups of geometric shapes* that all have a similar round shape. Using the example of the group of geometric shapes pictured on Slide 51 to the left, the Teacher says,

“Let’s compare these shapes. In what way are these shapes similar or alike?”
 Think about what we have been discovering and discussing so far.”

S: The student looks at the shapes and replies,
 “They are similar in having a round shape.”

Note: If the student struggle with this task, the Teacher can trace the edges of the shapes as a focusing tool.

T: The Teacher responds,
 “You are right. I like the way you looked carefully at these shapes and saw that they are all similar in having a round shape. Good thinking and good work.”

• **Follow-up questions for Phase 03, Section 01 Discovering and Verbalizing Similarities:** Use your professional judgement as to when to use the follow-up question format presented previously.

If the student appears to still be unsure of the concept in this context, continue the same dialogue format with additional multi-element geometric shape cards to build their discrimination skills. If the student continues to struggle, you may need to take a step back and redo previous association tasks.

Phase 03 Selective Generalization

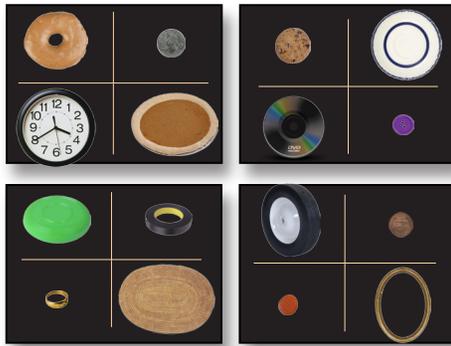
Section 01 Discovering and Verbalizing Similarities continued

Tasks are presented in order to facilitate the student's ability to identify the partial similarities that items in a conceptual system share and verbalize these similarities using specific conceptual vocabulary.

Discovering and verbalizing similarities.

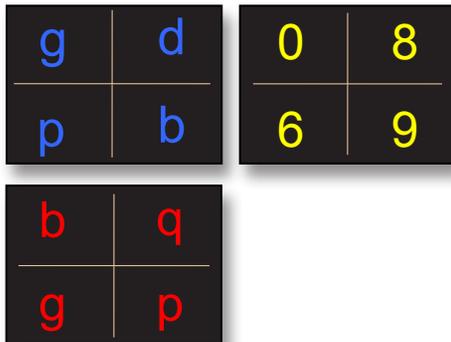
* Throughout this lesson, use the specific name of the object/shape/letter/numeral when talking with the student. The use of the term object/shape/letter/numeral is only meant as a reference point for sample dialogue purposes.

Groups of 4 to 5 pictures of items each having a round shape but having different styles, sizes, colors, materials, etc.

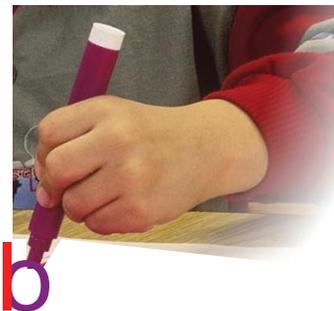


Slides: 53-56

Groups of four letters / numerals each having a **part** with a round shape.



Slides: 57-59



T: The Teacher shows the student a multi element picture card showing lines/rows of various objects* that all have a round shape. Using the example of the group of objects pictured on Slide 53 to the left, the Teacher says, "Let's compare these objects. In what way are these objects similar or alike?"
Think about what we have been discovering and discussing so far."

S: The student looks at the objects and replies, "They are similar in having a round shape."

Note: If the student struggles with this task, the Teacher can have the student trace the edges of the shapes as a focusing tool.

T: The Teacher responds, "You are right. I like the way you looked carefully at these objects and saw that they are similar in having a round shape. Good thinking and good work."

• **Follow-up questions for Phase 03, Section 01 Discovering and Verbalizing Similarities:** Use your professional judgement as to when to use the follow-up question format presented previously.

If the student appears to still be unsure of the concept in this context, continue the same dialogue format with additional multi-element object picture cards to build their discrimination skills. If the student continues to struggle, you may need to take a step back and redo previous discrimination or association tasks.

T: The Teacher shows the student a multi element letter/numeral card containing letters / numerals that all similar in having a part with a round shape. Using the example of the group of letters pictured in Slide 57 on the left, the Teacher says,

"Let's compare these letters. In what way are **parts** of these letters similar or alike?"
Think about what we have been learning and look at all of the letters carefully"

S: The student looks at the letters and replies, "They are similar in having a part with a round shape."

Intervention Note: If the student seems to struggle with seeing the similarity in having a part with a round shape that these letters/numerals share, the teacher can trace the round parts with his/her finger or a dry erase marker providing a focus on the key attribute of the letters/numerals for the student.

T: The Teacher responds, "You are right. I like the way you looked carefully at these letters and saw that they are similar in having a part with a round shape. Good thinking and good work."

• **Follow-up questions for Phase 03, Section 01 Discovering and Verbalizing Similarities:** Use your professional judgement as to when to use the follow-up question format presented previously.

If the student appears to still be unsure of the concept in this context, continue the same dialogue format with additional multi-element letter / numeral cards to build their discrimination skills. If the student continues to struggle, you may need to take a step back and redo previous discrimination or association tasks.

Phase 03
Selective Generalization

Section 01
Discovering and Verbalizing
Similarities
continued

Tasks are presented in order to facilitate the student's ability to identify the partial similarities that items in a conceptual system share and verbalize these similarities using specific conceptual vocabulary. Discovering and verbalizing similarities.

* Throughout this lesson, use the specific name of the object/shape/letter/numeral when talking with the student. The use of the term object/shape/letter/numeral is only meant as a reference point for sample dialogue purposes.

Review of the expected learned concept "a round shape" verbally with the Teacher, facilitating the student's development of inner verbalization from outer verbalization. (Hansen, 2006)

T: The Teacher places a group of items in front of the student that all have a round shape or shows them a pictured group of items that all have a round shape and says,

- a. "Look at these items and with your regular voice say with me, 'They are similar in having a round shape'. (The Teacher models for the student.)

Optional visual cues: You can use an optional visual cueing system to help the student remember what kind of voicing to use during the 3 sections of this activity. For section a., you would give the following directions,

"Put your left hand on your throat.
(The Teacher models putting his/her left hand on their throat for the student.)
Now look at this item and with your regular voice say with me, 'They are similar in having a round shape'."

- b. Now whisper,
'They are similar in having a round shape'. (The Teacher models for the student.)

Optional visual cues: For section b., you would give the following directions,
"Now make a 'whisper cone' with your hands.

(The Teacher models for the student putting 2 hands together in front of their mouth to make a small megaphone.)
Now whisper,
'They are similar in having a round shape'."

- c. Now say it in your mind using your inner voice,
'They are similar in having a round shape'.
You can move your lips, but don't make any sound." (The Teacher models for the student.)

Optional visual cues: For section c., you would give the following directions,
"Put one finger on your lips and one finger on top of your head.

(The Teacher models for the student by putting one finger on their lips in the traditional "sh" or "quiet" position and one finger on top of their head pointing at their brain.)
Now say it in your brain / mind using just your inner voice.
'They are similar in having a round shape'."
You can move your lips, but don't make any sound."

Optional section d. It is fun to use either an electric megaphone that alters the student voices or a non-electric echo microphone for a final voicing of the phrase.

"Hold the megaphone / microphone in front of your mouth. (The Teacher models for the student.)
Now look at this item and with your regular voice say,
'They are similar in having a round shape'."

Phase 03
Selective Generalization

Section 02
 Discovering Similarities
 Accompanied by Discrimination

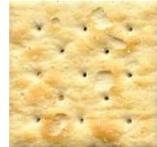
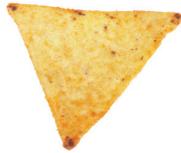
* See Appendix C in the *Practitioner's Manual* for a detailed description of the Learning Panel.

Tasks are presented in order to facilitate the student's ability to identify the partial similarities that items in a conceptual system share and verbalize these similarities using specific conceptual vocabulary. Discovering and verbalizing similarities and differences.

** Throughout this lesson, use the specific name of the object/shape/letter/numeral when talking with the student. The use of the term object/shape/letter/numeral is only meant as a reference point for sample dialogue purposes.

Groups of four to five objects with only two to three having a round shape in relation to the other items in the groups. Nyborg's Learning Panel* or similar format can be useful here.

Example group using a tortilla chip, cracker, nickel, dollar and cookie.



T: The Teacher shows the student a group of objects of which only two to three have a round shape. Using the example group that contains a tortilla chip, cracker, nickel, dollar and cookie pictured to the left, the Teacher says,

"Let's look carefully at these objects.

Can you to point to the objects in this group that are similar in having a round shape*?"

S: The student looks at the objects and point at the nickel and cookie that have a round shape.

T: The Teacher responds,

"You are right. I like the way you looked carefully at these objects and found the ones that are similar in having a round shape. Good thinking and good work."

Intervention Note: Throughout the Phase 3 section, if needed, have the student describe each object or picture in terms of its shape. This will be dependent on what the student has previously learned in terms of the concept of shape. Guide them to see that 2 of the items in the line/row are similar in having the same round shape.

Follow-up questions for Phase 03, Section 02 Discovering Similarities Accompanied by Discrimination: Follow-up questions should continue to be introduced where appropriate to facilitate continued awareness in the student as to how they are thinking in reference to the target concept. This can be especially important in helping you to get a sense of what the student is thinking in terms of their development of the key concept at this stage and if they are struggling with discriminating items that share the partial similarity of having a round shape or parts with a round shape from items that don't share the partial similarity of having round shapes.

T: While pointing at the items that the student selected, the Teacher asks,
 "Why did you point at these objects?"

S: The student looks at the round shaped objects they selected and replies,
 "I pointed at these because they are similar in having a round shape."

T: While pointing at the items that the student selected, the Teacher asks,
 "How do you know that these items have a round shape?"

S: The student looks at the round shaped objects they selected and replies,
 "Because these objects curve or bend all the way around their edge with no straight line edges or corners, we can say that they are similar in having a round shape."

T: The Teacher responds,

"You are right. I like the way you looked carefully at these things and found the ones that are similar in having a round shape. Good thinking and good work."

Continue the same dialogue format with any additional similar object groups until you feel that the student is able to spontaneously compare, discriminate and label the concept of "a round shape".

Phase 03 Selective Generalization

Section 02

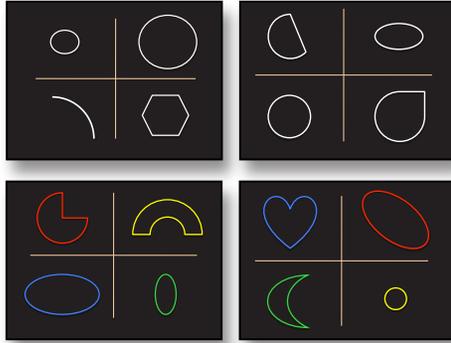
Discovering Similarities
Accompanied by Discrimination
continued.

* See Appendix C in the
Practitioner's Manual for a detailed
description of the Learning Panel.

Tasks are presented in order to
facilitate the student's ability to
identify the partial similarities that
items in a conceptual system share
and verbalize these similarities us-
ing specific conceptual vocabulary.
Discovering and verbalizing
similarities and differences.

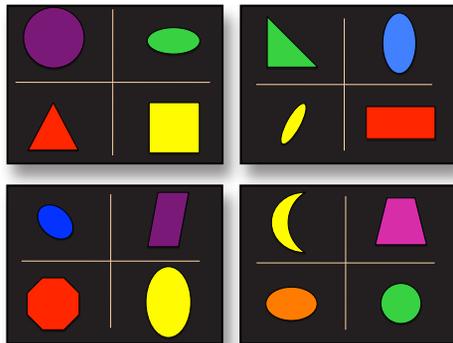
** Throughout this lesson, use the
specific name of the object/shape/
letter/numeral when talking with
the student. The use of the term
object/shape/letter/numeral is only
meant as a reference point for
sample dialogue purposes.

Groups of four pictured closed line shapes of
which only two have a round shape.



Slides: 61-64

Groups of four pictured solid geometric shapes
of which only two have a round shape.



Slides: 65-68

T: The Teacher shows the student a multi element picture card containing a group of four closed line shapes of which only two are similar in having a round shape. Using the example of the group of line shapes pictured on Slide 61 to the left, the Teacher says,

“You have been doing a great job of looking closely and comparing all the different objects to see where they are similar and where they are different.

Now let's compare this group of line shapes.

Point to the shapes that are similar in having a round shape.”

S: The student looks carefully at the various lines and point to the ones that are similar in having a round shape.

Intervention Note: If the student appears to struggle with this task, the Teacher can have the student trace the lines as a focusing tool.

T: The Teacher responds,

“You are right. I like the way you looked carefully at these lines and found the ones that are similar in having a round shape. Good thinking and good work.”

• **Follow-up questions for Phase 03, Section 02 Discovering Similarities Accompanied by Discrimination:** Use your professional judgement as to when to use the follow-up question format presented previously.

Continue the same dialogue format with any additional multi-element geometric shape cards until you feel that the student is able to spontaneously compare, discriminate and label the concept “a round shape”.

T: The Teacher shows the student a multi element picture card containing groups of solid geometric shapes of which only two are similar in having around shape. Using the example of the group of geometric shapes pictured on Slide 65 to the left, the Teacher says,

“You have been doing a great job of looking closely and comparing all the different shapes to see where they are similar and where they are different.

Now let's compare this group of geometric shapes.

Point to the geometric shapes that are similar in having a round shape.”

S: The student looks carefully at the various geometric shapes and point to the ones that are similar in having a round-shape.

Intervention Note: If the student appears to struggle with this task, the Teacher can have the student trace the edges of the shapes as a focusing tool.

T: The Teacher responds,

“You are right. I like the way you looked carefully at these shapes and found the ones that are similar in having a round shape. Good thinking and good work.”

• **Follow-up questions for Phase 03, Section 02 Discovering Similarities Accompanied by Discrimination:** Use your professional judgement as to when to use the follow-up question format presented previously.

Continue the same dialogue format with any additional multi-element geometric shape cards until you feel that the student is able to spontaneously compare, discriminate and label the concept “a round shape”.

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Phase 03 Selective Generalization

Section 02

Discovering Similarities
Accompanied by Discrimination
continued.

* See Appendix C in the
Practitioner's Manual for a detailed
description of the Learning Panel.

Tasks are presented in order to
facilitate the student's ability to
identify the partial similarities that
items in a conceptual system share
and verbalize these similarities us-
ing specific conceptual vocabulary.
Discovering and verbalizing
similarities and differences.

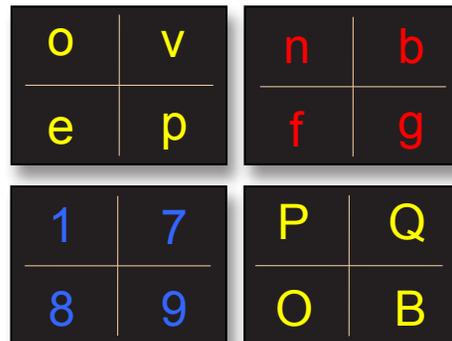
** Throughout this lesson, use the
specific name of the object/shape/
letter/numeral when talking with
the student. The use of the term
object/shape/letter/numeral is only
meant as a reference point for
sample dialogue purposes.

Groups of four pictured items of which only two
have a round shape.



Slides: 69-74

Groups of four different letters or numerals of
which only two have **parts** with a round shape.



Slides: 75-78

T: The Teacher shows the student a multi element picture card containing lines/rows of various objects of which only two are similar in having a round shape. Using the example of the group of objects pictured on Slide 69 to the left, the Teacher says,

"Now let's compare these pictured objects to see how they are similar and different.
Point to the objects that are similar in having a round shape."

S: The student looks carefully at the various objects and point to the coin and the cookie that have a round shape.

Intervention Note: If the student appears to struggle with this task, the Teacher can trace the edges of the shapes as a focusing tool.

T: The Teacher responds,

"You are right. I like the way you looked carefully at these objects and found that only the coin and the cookie are similar in having a round shape. Good thinking and good work."

• **Follow-up questions for Phase 03, Section 02 Discovering Similarities Accompanied by Discrimination:** Use your professional judgement as to when to use the follow-up question format presented previously.

Continue the same dialogue format with any additional multi-element object cards until you feel that the student is able to spontaneously compare, discriminate and label the concept "a round shape".

T: The Teacher shows the student a multi element letter/numeral card containing letters / numerals of which only two are similar in having a part with a round shape. Using the example of the group of letters pictured on Slide 75 to the left, the Teacher says,

"You have been doing a great job of looking closely and comparing all the different geometric shapes and objects to see where they are similar and where they are different.
Now let's compare these groups of letters to see how they are similar and different.
Point to the letters that are similar in having a part with a round shape."

S: The student looks carefully at the various letters and points to the "o" and the "p" that are similar in having a part with a round shape.

Intervention Note: If the student appears to struggle with this task, the Teacher can trace the edges of the round shaped parts of the target letters as a focusing tool.

T: The Teacher responds,

"You are right. I like the way you looked carefully at these letters and found that only the "o" and the "p" are similar in having a round shape. Good thinking and good work."

• **Follow-up questions for Phase 03, Section 02 Discovering Similarities Accompanied by Discrimination:** Use your professional judgement as to when to use the follow-up question format presented previously.

Continue the same dialogue format with any additional multi-element letter / numeral cards until you feel that the student is able to spontaneously compare, discriminate and label the concept of a part with "a round shape".

Phase 03
Selective Generalization

Section 02
 Discovering Similarities
 Accompanied by Discrimination
 continued

Reflection tasks. This can be done individually or with a group of students.

Reflecting on what has been learned: A first step to helping students to become aware of their newly acquired knowledge, how this knowledge relates to previous learning and to possible future applications, cf. "Practitioner's Manual ...", Chapter 3, Figure 3.4 with its Additional Procedures 1 and 2 to the CTM.

Cf. also the idea of "Retrieval Practice", which is a learning strategy where teachers focus on getting information out of the students' heads, and not only into their heads (retrievalpractice.org).

T: The Teacher presents questions like:

1.
 - a. "Tell me what you learned in this lesson OR what you believe this lesson was all about."
 - b. "How did you learn about the concept of a Round Shape?"
 - c. "Can you tell me some of the things that we talked about that has a Round Shape?"

If it seems appropriate, the teacher should continue with more questions like:

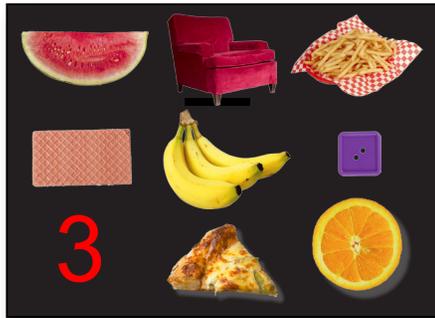
2. Does this concept of a Round Shape remind you of something you already know about (and if so, how is it similar to or different from what it reminds you of)?
3. How can what you have learned today be useful in other activities/situations (the teacher prompts) – at school, while playing, on a trip/vacation, when you are doing homework, celebrating your birthday, running errands, etc.?

Note: This procedure must of course be adjusted in relation to the students' age, language skills and cognitive levels.

Cumulative Task

* See Chapter 4, the subsection entitled *Analytic Coding (AC)* and proposals for exercises in *Analytic Coding in the Practitioner's Manual* for a detailed description of *Analytic Coding*.

*Grid task: The concept that is named as having "a round shape" should be developed further by activities focused on the understanding and use of the concepts and conceptual vocabulary of the BCSs needed to solve a **series of clues** related to color, size, shape, number, position, place, direction, surface pattern, etc. (BCSs) that require *Analytic Coding**. This activity can be done individually or with a group of students.*



Slide: 80

T: The Teacher shows the student the picture grid on Slide 80 pictured to the left or cuts the grid into 9 individual cards and places them in front of the student and says,

"Tell me the names of all of these pictures." (The student names the pictures.)
 "Now I'm going to give you some clues."
 I want to see if you can figure out which picture I'm talking about."

As always, have the student explain their thinking as much as possible. If the Teacher is using a group of students for this task, an alternative is to give one student three cards numbered 1 to 3 with the clues pictured or written on them and then have that student tell the clues to the other students.

1. "Here's the first clue: **It's something you eat.**"

"Which ones could it be? How do you know that?" Circle the one(s) the student thinks fits the clue.
 "Which ones don't fit that clue? How do you know that?" Cross out the one(s) the student thinks doesn't fit the clue.

2. "Here's the second clue: **It's a kind of fruit.**"

"Which ones could it be? How do you know that?" Circle the one(s) the student thinks fits the clue.
 "Which ones don't fit that clue? How do you know that?" Cross out the one(s) the student thinks doesn't fit the clue.

3. "Here's the last clue: **It has a round shape.**"

"Which one is it?"

The student then points to the correct picture, the slice of orange.

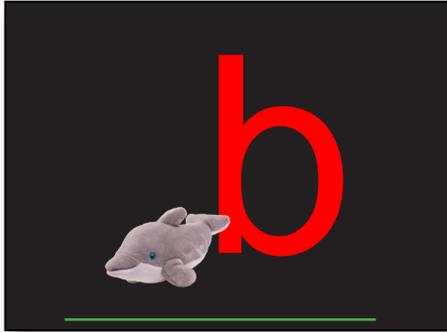
After the student has selected the correct item, the Teacher can ask the following questions to facilitate continued awareness in the student as to how they are thinking in reference to the target concept of shape.

"How did you know it was this one (the slice of orange)?
 Then go back to the previous slide items and ask,
 "Why can't it be this one (the bananas or the slice of watermelon)?"

Follow-up ActivitiesActivity Task 01
Analytic Coding

* See Chapter 4, the subsection entitled “Analytic Coding (AC) and proposals for exercises in Analytic Coding” in the *Practitioner’s Manual* for a detailed description of Analytic Coding.

Picture 1



Slide: 83

Activity Task 02 - Analysis and Description: The concept that is named as having a “round shape” should be developed further by activities in which the students are challenged to tell as much as possible about selected materials such as an object, a picture or an event using the concepts and conceptual vocabulary of the BCSs.

Activity Task 02
Analysis and Description

Activity Task 01 - Analytic Coding: The concept that is named as having a “round shape” should be developed further by activities focused on the understanding and use of the concepts and conceptual vocabulary of the BCSs to answer **targeted questions** related to color, size, shape, number, position, place, direction, surface pattern, etc. (BCSs) that require Analytic Coding*.

The Teacher helps the student to define/describe a picture that contains elements that have a round shape by using targeted questions to elicit the major conceptual systems and conceptual vocabulary.

Note: The Teacher should evaluate what level of description to require from each student and what BCSs to elicit based on their linguistic skills and what BCSs they have previously been taught. The questions are listed in the order that the BCSs are taught, with this lesson’s target BCS highlighted in bold.

Picture Card 1 - The letter “b” and a toy dolphin.

T: The Teacher shows the student Slide 83 and asks,

“What do you see on this slide?” (Object or event class membership) S: “There’s a letter ‘b’ and a toy dolphin.”

T: “What color does this letter ‘b’ have?” (Color) - S: “It has the color red.”

T: “What colors does this dolphin have?” (Color) - S: “It has the colors gray, white and blue.”

T: “What parts does this picture have?” (Number of Parts) - S: “It has a dolphin toy and the letter ‘b’.”

T: “What parts does this dolphin have?” (Number of Parts) - S: “It has an eye, a tail, a fin, a mouth and a nose.”

T: “What parts does this letter have?” (Number of Parts) - S: “It has ..(the student points to the two parts of the letter).”

T: “What shape does this part (straight line shape) of the letter have?” (Shape) - S: “It has a straight line shape.”

T: “What shape does this part (round shape) of the letter have?” (Shape) - S: “It has a round shape.”

- Supplemental Questions that can be used later when other BCSs have been taught •

T: “What size is this ‘b’ in relation to the dolphin?” (Size) - S: “It is big in size.”

T: “What size is the dolphin in relation to the ‘b’?” (Size) - S: “It is small in size.”

T: “What height is the straight line shape in relation to the round shape?” (Size -Height) - S: “It is tall in height.”

T: “What height is the round shape in relation to the straight line shape?” (Size -Height) - S: “It is short in height.”

T: “What number of dolphins are in the picture?” (Number) - S: “There is (the number) 1 dolphin.”

T: “What position is this straight line shape in?” (Position) - S: “It is in a vertical position.”

T: “What position is the green line in?” (Position) - S: “It is in a horizontal position.”

T: “What is a ‘b’ used for?” (Use/Function) - S: “It stands for the speech sound /b/. You use it to spell words like ‘bat’.”

T: “What place does the ‘b’ have in relation to the green line?” (Place) - S: “It is placed on the green line.”

T: “What place does this straight line shape of the ‘b’ have in relation to the round shape of the ‘b’?” (Place) - S: “It’s (placed) on the left side of the round shape.”

T: “What place does this round shape have in relation to the straight line shape?” (Place) - S: “It’s (placed) on the right side of the straight line shape.”

Activity Task 02 - Analysis and Description: The Teacher challenges the students to define/describe a picture that contains elements that have a round shape using major conceptual systems and conceptual vocabulary. The students themselves have to flexibly shift their attention from one attribute to another and describe their “findings” regarding what they know of the picture in question by means of Basic Conceptual Systems: number (of parts), color, shape, size, surface properties, place, function, etc. where appropriate.

Note: The Teacher should evaluate what level of description to require from each student and what BCSs to elicit based on their linguistic skills and what BCSs they have previously been taught.

T: The Teacher shows the student Slide 83 and says,

“Tell me everything you can about this picture. Describe to me what you see.”

Follow-up ActivitiesActivity Task 01
Analytic Coding

* See Chapter 4, the subsection entitled “Analytic Coding (AC) and proposals for exercises in Analytic Coding” in the *Practitioner’s Manual* for a detailed description of Analytic Coding.

Picture 2



Slide: 85

Activity Task 02
Analysis and Description

Activity Task 02 - Analysis and Description: The concept that is named as having a “round shape” should be developed further by activities in which the students are challenged to tell as much as possible about selected materials such as an object, a picture or an event using the concepts and conceptual vocabulary of the BCSs.

Activity Task 01 - Analytic Coding: The Teacher helps the student to define/describe a picture that contains elements that have a round shape by using targeted questions to elicit the major conceptual systems and conceptual vocabulary.

Note: The Teacher should evaluate what level of description to require from each student and what BCSs to elicit based on their linguistic skills and what BCSs they have previously been taught. The questions are listed in the order that the BCSs are taught, with this lesson’s target BCS highlighted in bold.

Picture Card 2 - A plate of donuts.

T: The Teacher shows the student Slide 85 and asks,

“What is this?” (Object or event class membership) - S: “It’s a plate with donuts on it.”

T: “What parts does this picture have?” (Parts) - S: “It has some donuts and a plate.”

T: “What colors do you see in this picture?” (Color) - S: “It has the colors red, yellow, blue, green, orange, white, tan.”

T: “What shape do the donuts have?” (Shape) - S: “They have a round shape.”

T: “What shape does the plate have?” (Shape) - S: “It has a round shape.”

- Supplemental Questions that can be used later when other BCSs have been taught •

T: “What size does this donut (large) have in relation to these donuts (small)?” (Size) - S: “This donut is big in size.”

T: “What size do these donuts (small) have in relation to this donuts (large)?” (Size) - S: “These donuts are small in size.”

T: “What number of donuts does this picture have?” (Number of Parts) - S: “It has 4 donuts.”

T: “What are donuts?” OR “What is a donut?” (Use/Function) - S: “It’s a kind of food.”

T: “What do you do with a donut?” OR “What is a donut for?” (Use/Function) - S: “You eat it.”

T: “What is a plate?” (Use/Function) - S: “It’s a kind of dish.”

T: “What do you use a plate for?” (Use/Function) - S: “You put food on it.” OR “You eat off of it.”

T: “What place do the donuts have in relation to the plate?” (Place) - S: “The donuts are (placed) on/on top of the plate.”

T: “What place does the plate have in relation to the donuts?” (Place) - S: “The plate is (placed) under the donuts.”

T: What number of donuts are in he plate? (Number) - S: “There are the number four donuts.”

Activity Task 02 - Analysis and Description: The Teacher challenges the students to define/describe a picture that contains elements that have a round shape using major conceptual systems and conceptual vocabulary. The students themselves have to flexibly shift their attention from one attribute to another and describe their “findings” regarding what they know of the picture in question by means of Basic Conceptual Systems: number (of parts), color, shape, size, surface properties, place, function, etc. where appropriate.

Note: The Teacher should evaluate what level of description to require from each student and what BCSs to elicit based on their linguistic skills and what BCSs they have previously been taught.

T: The Teacher shows the student Slide 85 and says,

“Tell me everything you can about this picture. Describe to me what you see.”

Follow-up Activities

**Activity Task 03 -
Home Practice Sheets**

Home Practice sheet focused on the concept of having a “round shape”. Home Practice sheets can be located on the SCTR website that coordinates with this program.

Activity Task 03 - Home Practice Sheets: The concept that is named as having a “round shape” compared to other elements should be developed further by homework activities that the students and their parents can do together. It is important that the teacher not send any Home Practice sheets home before the students have mastered the tasks reviewed on the worksheets. This is particularly important when it comes to students who struggle with learning. The rationale for this is that, by means of collaboration between students and parents based on the worksheets, the students will have repeated opportunities to demonstrate mastery and some of their concept learning for their parents. This can help the parents become aware of their own students’ increased performance and developing competence. At the same time, the intention for this arrangement is also to give parents a chance to become (even more) conscious about the Basic Conceptual Systems their students are learning, so that they, hopefully, start to make use of them when helping their students with their homework, cf. Chapter 7 with introduction of Systematic Concept Teaching for parents, and Chapter 11 with Case Study One comments on the collaboration between students and parents.

Home Practice - Round Shape
(Hansen, Morgan 2015)

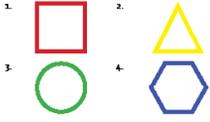
Name _____
Date _____

We have worked with the basic concept and conceptual system named “round shape”. The students learned that when an object has an edge that is curved all the way around and has no straight line shapes or corners, it has a “round shape”. We use (and want you to use) the term “a round shape” for this type of physical structure.
The students first learned to identify and say that a specific object had “a round shape”. Next, they learned to identify and say that an object has “a round shape”. In relation to seeing items with similar types of round shapes and eventually to items with different types of round shapes. Then, the students learned to identify and say that objects in a group were similar in having “a round shape”, as well as identify objects that had “a round shape” from among large groups of objects that contained both round and non-round shapes. Also we drew items that had a “round shape”. Finally, we looked around the classroom and school surroundings to find objects that had “a round shape”.
In order to help the students integrate this knowledge into their learning, it would be helpful if you, as the Parent (P), would work with your child (C) on this home practice activity. Parents, it is important for both of you to have fun in this learning experience. Remember to give encouragement throughout this homework lesson.

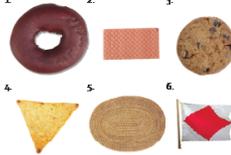
TASK 1:
P: “Here is a penny (coin). This penny has a round shape. Trace around the edge of the picture with your finger.
What shape does the penny have?”
C: “This penny has a round shape.”
P: “You are absolutely right.
Draw a line around this penny.”



TASK 2:
P: “Here are four different geometric shapes. Point to the one that has a round shape.”
C: The child points to the correct shape.
P: “Why did you point at this one?”
C: “Because it is curved all the way around its edge and has no straight line shapes or corners/angle shapes, so it has a round shape.”
P: “Good looking.
Draw a line around that shape.”



TASK 3:
P: “Look at these pictures. Draw a line around the pictures that are similar in having a round shape.”
C: The child circles the correct pictures.
P: “Why did you circle these pictures?”
C: “Because they are curved all the way around the edge and have no straight line shapes or corners or angle shapes, so they have a round shape.”
P: “You are absolutely right. I like the way you looked carefully at all of these and saw that only these pictures have a round shape.”



TASK 4 - Detective Assignment

P: “Go around the room and point out three different objects that have a round shape.”
When the child points to an item, it is important that you ask them,
“What shape does this (name of item) have?”
C: The child replies, “This (name of item) has a round shape.”
Example: “This plastic counter has a round shape.”

TASK 5 - Drawing Task

P: “Draw two different things that have a round shape.”
After the child has finished the drawing, ask, “What did you draw?”
C: The child replies, “I drew a ... (name of item) and a ... (name of item).”
P: Point to one of the pictures that the child has drawn and ask,
“What shape does this (name of item) have?”
C: The student replies, “The (name of item) has a round shape.”



Follow-up Tasks**Activity Task 04 - Similarities and Differences.**

Two different objects or pictured items that are similar in having a “round shape” as one of their features.

Activity Task 04: Similarities and Differences. In this task, the students are presented with two or more concrete or pictured objects and challenged to analyze and describe the similarities and differences between the two items using the conceptual vocabulary of the BCSs. As in previous tasks, the teacher supports the students to the extent deemed necessary. It is important to note that this type of task should only be introduced after the students have mastered a sufficient number of BCSs and their respective vocabularies. In this way, the students will be equipped with a base of conceptual knowledge and vocabulary that they can then use to more precisely describe and compare items. This is an exceptional activity for helping students learn to apply their learned conceptual knowledge to classroom/curriculum activities and themes such as in reading, science, social studies, etc. For example, the teacher can guide the students in analyzing and describing the similarities and differences (comparison) between two or more different stories, story characters, types of plants and animals, historical events, forms of transportation, etc. Examples of tasks involving analytic coding that provide students with opportunities for expanded application and learning of basic conceptual systems and conceptual vocabulary can be found on the Flash drive that accompanies this program under the heading Analytic Coding Exercises – Expanded formats, including both Mind maps and Similarities and Differences.

T: The Teacher shows the student 2 objects or pictured items that are similar in having a “round shape” compared to other elements as one of their features and says,

“Tell me all the ways that these two items are similar and how they are different.” OR

“Are these two items similar or different in shape? How do you know that?”

S: “They are similar in shape because they both have a round shape.”

T: The teacher continues by asking this question again in relation to other BCSs that are relevant to the two items.

“Are these two items similar or different in ... (size, color, material, etc.). How do you know that?”

It can be helpful for the students to have visual reminders of the language that they should be using in describing similarities and differences. Both small hand held student versions as well as full sheet table versions have been effective . The teacher should model the use of the visuals and precise conceptual language.

●● They are
similar in _____
because
they both _____ .

●■ They are
different in _____
because
one is _____ and the
other one is _____ .