Conceptual System

CONCEPT TEACHING MODEL

Conceptual Vocabulary

General

Part of a Whole

/ Conceptual Vocabulary
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 colleagues Dr. Andreas Hansen (2002, 2009) and Gunvor Sønnesyn and Morten Hem (2002) 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.
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Phase 01  
Selective Association

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.

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Materials /  
A simple toy or item that is made of parts that can be taken apart and put back together. Examples are: Lego cars, puzzle, Mr. Potato Head®, Automoblox®, Velcro puppets, etc.

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T: The Teacher puts a toy in front of the students that is composed of several parts that can be removed and put back together. Using the example of the Mr. Potato Head® pictured to the left, the Teacher says,

“Here I have a Mr. Potato Head® that is made up of lots of parts. Watch carefully while I take one of the parts off.”

The Teacher takes an ear piece off of the Mr. Potato Head® and says,

Look at this ear piece I took off of the Mr. Potato Head®. It is part of the whole Mr. Potato Head®. Say with me, ‘This ear is part of a whole Mr. Potato Head.'”

Note: This can be done with any part of the toy.

S: and T: “This ear is part of a whole Mr. Potato Head®.”

T: The Teacher points to the ear piece and asks,

What is this ear a part of?”

S: The students respond,

“This ear is part of a whole Mr. Potato Head®”

T: The Teacher responds,

“You listened well and remembered that I said that this ear is part of a whole Mr. Potato Head®. Good looking and listening.”

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

Continue the teaching dialogue with several additional pieces from the Mr. Potato Head®.

The Teacher takes the nose piece off of the Mr. Potato Head® and says,

Look at this nose piece I took off of the Mr. Potato Head®. It is part of the whole Mr. Potato Head®. Say with me, ‘This nose is part of a whole Mr. Potato Head.’”

S: and T: “This nose is part of a whole Mr. Potato Head®.”

T: The Teacher points to the nose piece and asks,

What is this nose a part of?”

S: The students respond,

“This nose is part of a whole Mr. Potato Head®”

T: The Teacher responds,

“You listened well and remembered that I said that this ear is part of a whole Mr. Potato Head®. Good looking and listening.”

Note: It is extremely important that the students look at the examples of items that are part of a more complex object at the same time as they are hearing the phrase “this (name of piece) is part of a whole (name of item)” and as they are saying the phrase themselves. Remember that the students are just beginning to form the concept of “part of a whole” 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 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.

Example using a simple puzzle that is composed of parts that can be taken apart and put back together.

Example using a simple toy car that is composed of parts that can be taken apart and put back together.

Materials /

More simple toys or items that are composed of several parts that can be taken apart and put back together.

Procedure & Dialogue /

T: The Teacher continues the teaching dialogue with additional common school and home item objects that can be taken apart and put back together. Puts a small completed puzzle in front of the students. Using the example of the puzzle pictured to the left, the Teacher takes a piece of the puzzle off, holds it up and says,

“Here I have a piece of the puzzle.
It is a part of the whole puzzle.
Now I want you to take one piece off of the puzzle.”

S: The students take a piece of the puzzle off.
T: The Teacher points at the piece of the puzzle that the student has taken off and asks,

“What is this piece a part of?”

S: The students respond,

“This piece is part of a whole puzzle.”

T: The Teacher responds,

“You listened well and remembered that this piece is a part of a whole puzzle.
Good looking and listening.”

Intervention Note: This can be continued for several turns to give many students the opportunity to engage in this activity.

T: Using the example of the toy car pictured to the left that can be taken apart and put back together, the Teacher takes a piece of the car off, holds it up and continues the teaching dialogue saying,

“Here I have a piece of the car.
It is a part of the whole car.
Now I want you to take off one of the pieces of the car.

S: The students take a piece of the car off.
T: The Teacher points at the part of the car that the students have taken off and asks,

“What is this piece a part of?”

S: The students respond,

“This piece is part of a whole car.”

T: The Teacher responds,

“You listened well and remembered that this piece is a part of a whole car.
Good looking and listening.”

Note: As before, it is extremely important that the students look at the examples of items that are part of a more complex object at the same time as they are hearing the phrase “this (name of piece) is part of a whole (name of item)” and as they are saying the phrase themselves. Remember that the students are just beginning to form the concept of “part of a whole” mentally and need to verbally label all of the learning examples to help form the mental image and associated conceptual vocabulary.

Continue the teaching dialogue using the same basic principles with additional objects that can be taken apart and put back together. The systematic variation of irrelevant features and properties, while keeping “part of a whole ...” as the constant similarity, will help the students to focus on and more easily associate the conceptual vocabulary of “part of a whole ...” with the relevant partial similarity between the different items.
**Phase 01 Selective Association**

Section 02

**More Complex Tasks**

More association tasks using a whiteboard and various colored dry erase markers. This can also be done with paper and regular colored markers.

T: The Teacher takes two or three different colored dry erase markers, a student hand held whiteboard or goes to the classroom whiteboard and then writes a letter of the alphabet, writing each part of the letter using a different color marker. Using the example of the letter “b” pictured to the left, the Teacher says to the students,

“Watch while I write a letter on this board.”

The Teacher draws a letter “b” on the whiteboard using one color for the straight line shape part and another color for the round shape part and says,

“Here I have the letter “b”. It is made up of two different parts.”

The Teacher points to the parts of the “b” and says,

“This letter ‘b’ is made up of a straight line shape part here and a round shape part here.”

The Teacher points to part of the letter “b” and asks,

“What is this straight line shape a part of?” OR “What is this round shape a part of?”

S: The students respond,

“This shape is part of the whole letter ‘b’.”

T: The Teacher responds,

“You listened well and remembered that I said that this shape is part of the whole letter ‘b’. Good looking and listening.”

Note: This exercise can also be done with wooden letter pieces that can be combined to form the letters of the alphabet such as those made for the program Handwriting Without Tears®, or with line shapes made of colored modelling clay or Wikki Stix® pieces.

Continue the teaching dialogue using the same basic principles with additional letters that are formed from two or three parts. The systematic variation of irrelevant features and properties, while keeping “part of a whole ...” as the constant similarity, will help the students to focus on and more easily associate the conceptual vocabulary of “part of a whole ...” with the relevant partial similarity between the different items.

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**Example using the letter “b”**

![Example using the letter “b”](image1)

**Example using the letter “a”**

![Example using the letter “a”](image2)

**Example using the letter “n”**

![Example using the letter “n”](image3)
Phase 01
Selective Association

Section 02
More Complex Tasks

Association tasks using a slide containing parts of letters that slide together to form whole letters when activated.

T: The Teacher shows the students a slide containing various open and closed line shapes that, when combined, form letters of the alphabet. Using the example of the line shapes pictured on slide 3 to the left, the Teacher says to the students,

“Look at these two parts of a letter.”
“Look at what letter these parts form when you put them together.”

The Teacher activates the slide, the students watch as the two parts move together to form the letter “b”, and the Teacher says,

“These two shapes are part of the whole letter ‘b’.”

The Teacher points to one of the parts of the whole letter “b” and asks,

“What is this straight line shape a part of?” OR
“What is this round shape a part of?”

S: The students respond,

“This shape is part of the whole letter ‘b’.”

T: The Teacher responds,

“You listened well and remembered that I said that this shape is part of the whole letter ‘b’. Good looking and listening.”

Note: A fun variation within this task is to present the slide to the students, and then say,

“Look at these two parts of a letter.”
“What letter do you think these two parts will form when you put them together?”

S: The students respond,

“I think these parts will form the whole letter ... (name of letter).”

T: The Teacher then activates the slide and the students watch as the two parts move together to form a letter.
**Phase 01**

**Selective Association**

**Section 02**
More Complex Tasks continued

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**Materials /**

More association tasks using individual pictures of items that have only a “part of the whole ...” revealed at first, and then the whole item revealed secondly.

**Example using part/whole cat images from Slide 11.**

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**Procedure & Dialogue /**

**T:** The Teacher shows the student a picture in which only part of an object is showing. Using the example of the cat pictured on Slide 11, in which only part of the cat - the nose - is revealed at first, the Teacher says,

“Look at this picture. What do you think this is a part of?”

**S:** The students look at the picture that has only part of the cat showing and then reply, “It is part of a whole cat.”

**T:** After the students respond correctly, the Teacher activates the slide and the object is revealed. The Teacher says, “You are right. I like the way you looked carefully at this and saw that this is a only part of a whole cat.”

*Good looking and listening.*

The Teacher then goes back to the previous slide image and says, “At first you only saw a nose. But you knew that it was part of a whole cat.”

The Teacher then reactives the slide to reveal the whole cat.

“And you were right. Good looking and listening.”

**T:** If needed, the Teacher can use the dialogue from the previous activity saying, “Here I have a picture that shows only a part of something. Now I want you to look carefully at this part and see if you can figure out what it is a part of. Look closely now.”

If the students seem to struggle, the teacher can flash the whole object slide briefly and then return to the partial picture. The Teacher would then ask again, “What do you think this is a part of?”

**S:** The students look at the partial picture and then reply, “It is part of a whole ... ”

**T:** The Teacher goes forward to the whole object picture and while pointing at the picture says, “You are right. I like the way you looked carefully at this and saw that this is a part of a whole ... . 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 parts of items. Continue until you feel that the student is able to more spontaneously associate the label “part of a whole ...” with the pictured items.

**Note:** It is extremely important that the students look at the examples of the items that are part of whole items at the same time as they are hearing the phrase “it is part of a whole ...” and as they are saying the phrase themselves. Remember that the students are just beginning to form the concept of “part of a whole ...” mentally and need to verbally label all of the learning examples to help form the mental image and associated conceptual vocabulary.

**Slides:** 11-20
Phase 01  
Selective Association

Section 02  
More Complex Tasks continued

Optional association task using a series of slide images containing pictures of students or staff members in which, only “part of a whole” student is revealed in each successive image, until gradually the entire student or staff member picture is shown. / 

Example using a series of slide images containing a picture of a student.

Procedure & Dialogue / 

An fun optional association task is to use pictures of the students pasted into the optional Part/Whole student picture slide series format of the Power Point slides, and gradually reveal who the student is, only showing “part of the whole” student at a time.

Directions: Take digital pictures of the students and paste them onto either the vertical slide format (see Slide 22) or horizontal slide format (see Slide 23). Select the current slide picture on either Slide 22 or 23 by clicking on the portion visible on the slide. Delete this image. Then paste and format the student picture to fit onto the slide, select the picture and send it to the back of the slide. This should allow the black cover elements to hide all but a part of the picture (see the examples to the left). Do this for as many student and staff pictures as desired. Then follow the same dialogue procedures as in the previous task.

T: The Teacher shows the student a slide in which only part of a student is showing and says, 
“Look at this picture. Who do you think this is a part of?”

S: The students look at the picture that has only part of the student showing and then reply, 
“It is part of (a whole) ... (name of student or staff member).” OR 
“We can’t tell.”

Note: At first, not enough of the student’s picture is revealed for the students to make an educated guess.

T: The Teacher then activates the slide, revealing more parts of the student picture saying, 
“Who do you think this is a part of now?”

S: The students look at the picture that has more parts of the student revealed and reply, 
“It is part of (a whole) ... (name of student or staff member).”

This dialogue continues until the entire student picture is revealed.
Engage the students in self-production tasks using markers, paint, colored pencils, modeling clay (Playdoh), pipe cleaners, paper, etc.

The students are asked to create something in which only a part of something is showing, as well as verbally label their project as being part of something.

T: The Teacher gives each student a piece of paper and says,
“ I want you to make a picture that shows only part of something.
It must be only part of something, not the whole object.
Be creative."

After the student has completed their project, the Teacher asks,
“What is this a part of?”

S: Looks at their project and replies,
“This is part of a whole ....”

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

First I want you to draw something in the middle of the paper. Now I want you to cut out a rock from a piece of brown colored paper and cover what you have drawn so that only a part of it is sticking out from behind or behind the rock. It can be anything as long as only a part of it is sticking out from behind the rock.

Draw a dog's or cat's tail showing from behind a rock or house.
Draw a fish's tail showing from behind a rock in the sea or in a fish tank.
Draw a snake's head or tail showing from under a rock or out of a hole.

For students who don't like to draw you can try the following:

Make a couple of snakes out of Playdoh and put them under different colored Playdoh rocks or a book so that only part of the whole snake (the heads or tails) are showing.

Pick a student at random and ask them to hide behind a door or cabinet and have only an arm or leg showing. Then see if the students can identify which student is behind the door/cabinet by seeing only their arm or leg.
Review of the terms for the concept “part of a whole ...” verbally with the Teacher, facilitating the student’s development of inner verbalization from outer verbalization. (Hansen, 2006)

T: The Teacher places an item in front of the students that is a part of something else and says,

a. “Look at this and with your regular voice say with me, ‘This is part of a whole ...’.” (The Teacher models for the students.)

Optional visual cues: You can use an optional visual cueing system to help the students 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 students.)

“Now look at this item and with your regular voice say with me, ‘This is part of a whole ...’.”

b. “Now whisper, ‘This is part of a whole ...’.” (The Teacher models for the students.)

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 students putting 2 hands together in front of their mouth to make a small megaphone.)

“Now whisper, ‘This is part of a whole ...’.”

c. “Now say it in your mind using your inner voice, ‘This is part of a whole ...’.”

You can move your lips, but don’t make any sound.” (The Teacher models for the students.)

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 students 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, ‘This is part of a whole ...’.”

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 students 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 students.)

“Now look at this item and with your regular voice say into the megaphone, ‘This is part of a whole ...’.”
Discrimination task using a group of several items placed on the table in front of the students of which only one is a part of something. It can be helpful to begin with groups that contain similar whole items together with a part of a whole similar item. Examples are: Lego cars, puzzles, Mr. Potato Heads©, Automoblox©, Velcro puppets, etc.

Example group using a two whole Mr. Potato Heads© and a shoe part that goes on a Mr. Potato Head©.

T: The Teacher shows the students a group of several similar items placed on the table in front of the students of which only one is a part of a similar whole object from the group. Using the example of the group pictured to the left, the Teacher says,

“Let’s look carefully at this group of objects. Can you point to the one that is only a part of something else?”

S: The students point to the plastic shoe part.

T: While pointing at the shoe part the students selected the Teacher says,

“You are right. You looked carefully and saw that only this shoe is a part of a whole Mr. Potato Head©. Good looking and listening.”

Intervention Note: Throughout the Phase 2 section, if needed, have the students describe each item in terms of being a part of something else or being a whole object. This is dependent on what they have learned previously in terms of the concept of “part of a whole”. Guide them to see that only one is a part of something else.

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 students as to how they are thinking in reference to the target concept of “part of a whole”. This can be especially important in helping the Teacher to get a sense of what the students are thinking in terms of their development of the key concept if they are struggling with discriminating a part of an object from a whole object.

T: While pointing at the plastic shoe part that the student selected the Teacher asks,

“Why did you point at this plastic shoe part?”

S: The students look at the item and reply,

“I pointed at this plastic shoe is a part of a whole Mr. Potato Head©.”

T: While pointing at the shoe part that the student selected the Teacher asks,

“How do you know that this plastic shoe is a part of a whole Mr. Potato Head©?”

S: The students look at the item and reply,

“Because this is only a shoe, only one piece of a whole Mr. Potato Head©, so it is only a part of a whole Mr. Potato Head©.”

T: The Teacher responds,

“You are right. You looked carefully and saw that this shoe is only a part of a whole Mr. Potato Head©. Good looking and thinking.”
**Phase 02**  
**Selective Discrimination**

**Section 01**  
**Simultaneous Discrimination Tasks**

Tasks are presented in order to facilitate the students’ ability to identify items that do or do not share the properties that define a member of a category. 

*Learning Differences.*

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**Materials /**  

Discrimination tasks using a pictured group of four different objects, only one of which is a part of something else.

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**Procedure & Dialogue /**

T: The Teacher shows the students a multi-element picture card containing various items, only one of which is a part of something else. Using the example of the group pictured on Slide 24 to the left, the Teacher says,

“Look at these items. Can you show me the one that is only a part of something else.”

S: The students point to the branch that is a part of a tree / bush.

Note: Throughout this lesson, if the images are projected onto a whiteboard, it can be helpful to have the student not only point to the correct item, but also circle the target item with a dry erase marker.

T: The Teacher responds,

“You are right. I like the way you looked closely and saw that only this branch is a part of something else. It is part of a whole tree / bush. Good looking and thinking.”

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*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 students 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 students continue to struggle, you may need to take a step back and redo previous association tasks.

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Slides: 25-30
Phase 02
Selective Discrimination

Section 02
Successive Discrimination Tasks

Discrimination tasks using individual objects that are composed of several parts comprising the more complex whole.
Example: calculator, Mr. Potato Head©, puzzle, toy car, etc.

Example using a calculator.

Example using a Mr. Potato Head ©.

T: The Teacher shows the students an object that is composed of several parts comprising a more complex whole. Using the example of the calculator pictured to the left, the Teacher says,

“Students, sometimes an object is made up of many parts. Look at this calculator. Can you show me just a part of this calculator?”

S: The students looks carefully at the calculator and point to a part of it. (Or, take off a part of the object)

T: The Teacher responds,

“You are right. I like the way you looked carefully at this calculator and found just a part of it. Good thinking.”

A fun alternative task for students is to use an object like a Mr. Potato Head© in which the pieces/parts can be removed. In this type of task the Teacher asks the student to take a part of the item off, like taking off the nose of the Mr. Potato Head©.

T: “Can you take off just a part of this Mr. Potato Head©?”

Follow-up questions for Phase 02, Section 01 Simultaneous Discrimination Tasks: Follow-up questions should continue to be introduced where appropriate to facilitate more awareness in the students as to how they are thinking in reference to the target concept of “part of a whole”. This can be especially important in helping the Teacher to get a sense of what the students are thinking in terms of their development of the key concept if they are struggling with discriminating a part of an object from a whole object.

T: While pointing at the part of the calculator that the students selected the Teacher asks,

“Why did you point at this ... (name of part)?”

S: The students look at the part the Teacher is pointing to and reply,

“I pointed at this (name of part) because it is part of a whole calculator.”

T: While pointing at the item that the students selected the Teacher asks,

“How do you know that this (name of part) is a part of a whole calculator?”

S: The students looks at the part and reply,

“Because this is only a (name of specific part) so it is only a part of a whole calculator.”

T: The Teacher responds,

“You are right. You looked carefully and saw that this (name of part) is only a part of a whole calculator. Good looking and great work. You are really using your eyes and your brain well.”

Continue the teaching dialogue using the same basic principles with additional objects/object constructions until you feel that the students are able to spontaneously compare, discriminate and label parts that are part of a more complex object.
**Phase 02**

**Selective Discrimination**

Section 02

Successive Discrimination Tasks continued

More discrimination tasks using individual pictures that have a part of an object as part of a more complex whole.

T: The Teacher gives the students a picture that has a part of an object showing as part of a more complex whole. Using the example pictured on Slide 32 pictured to the left, the Teacher says,

“Look at this picture. We’ve been finding out that things can be made up of many parts or that sometimes we can only see a part of something. Can you show me the part of this picture that has only a part of something showing?”

S: The students look carefully at the picture and point to the tail and hindquarters in the picture that are part of a whole dog.

T: The Teacher responds:

“You are right. I like the way you looked carefully at all of this picture and saw that this tail and hindquarters are part of a whole dog. Good thinking.”

**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.

Continue the teaching dialogue using the same basic principles with additional picture cards to build their discrimination skills. If the students appear 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.

Slides: 32-40
Phase 02
Selective Discrimination

Section 02
Successive Discrimination Tasks continued

Items in the immediate classroom / school environment.

T: The student is now asked to find, point to or touch things that are a part of something else or that they can only see a part of in the classroom/school environment and say (verbal coding) that it is a part of something else or that they can only see a part of it. The Teacher could have previously set up several easily noticeable items throughout the classroom environment. The Teacher asks:
   “Can you look around and show me something in the room that is a part of something else or that you can only see a part of?”
S: The student points correctly, possibly accompanied by the correct verbalization.
T: While pointing at the items the student selected the Teacher asks:
   “Why did you pick this item?”
S: While looking at the item the student replies,
   “Because it is only a part of a whole ....” OR “I can only see part of it. I can’t see the whole thing.”
T: The Teacher responds:
   “I like the way you looked carefully and found something that is only part of something else OR that you could only see a part of. Good work.”

Items in the home or community environment.

In order to bridge or generalize the concept to other settings and materials, the Teacher might also ask the students if they know of something that is made up of different parts, 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 is made up of different parts? ”

An alternative is to give the children as homework the assignment to find examples of things that have the number four (quantity) in their homes or in the larger community and, if possible, bring some of these 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 are made up of different parts.”

Note: This activity is designed to not just help students transfer current learning to other contexts, but more importantly, to provide the students 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).

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 aren’t a part of something else.

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 is part of a something else?”
   T: “Is it true or false that this is part of a whole .... ?”

Yes/No questions -
   T: “Is this object part of a something else?”
   T: “Is this object part of a whole ... ? ”
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 - Slide 41** or two identical objects or pictured objects that contain the same subjects, size, color, number, position and placement are displayed. They are in other words completely similar.

![Slide 41](image)

**Task 2 - Slide 42** or one of the objects or pictured objects from Task 1 is presented along with a new object or pictured object that contains a different item, but is similar in terms of being a part of something else. They are not completely similar, but are similar in being a part of a whole something else.

![Slide 42](image)

Procedure & Dialogue /

T: The Teacher shows the students either Slide 41, a picture card with two identical objects on it or, two identical real objects. Using the example of the identical cat heads pictured on Slide 41, the Teacher says, “Let’s compare these two pictures. Do you think that these two pictures are completely similar/alike? “

If needed, have the students 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 students look at the pictures carefully and reply, “They are completely similar/alike.”

T: The Teacher shows the students either Slide 42, a second picture containing one of the pictured items 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 items pictured on Slide 42 to the left, the Teacher says, “Now let’s look at these two items. Do you think that these two items are completely similar/alike?”

Usually the immediate answer would be: “They are not completely similar. (They are different items.)”

If needed, have the students describe the two items while looking at them closely. Guide them to see that the pictures are composed of different elements, but that both are part of a whole cat. The Teacher responds,

“These items are not completely similar, they are different items, but can you see in what way the cat head and the cat feet are similar/alike? Think about what we have been learning and look at the two items carefully.”

S: When such a question is asked, the students often look at the pictures carefully and reply, “They are both part of a whole cat.”

T: The Teacher responds, “You are right. I like the way you looked carefully at these groups and saw that both the head and the feet are part of a whole cat. Good thinking and good work.”

If this doesn’t happen spontaneously, the Teacher provides guidance to help the students discover and verbalize the key concept of partial similarity in place.

Additional slide set for Preliminary to Phase 3.

**Task 1**

![Slide 43-44](image)

**Task 2**

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 legs and seat are similar/alike? Think about what we have been learning and look at these two items carefully.”

S: When such a question is asked, the students often look at the items carefully and reply, “They are both part of a whole chair.”
PHASE 03
Selective Generalization

Section 01
Discovering and Verbalizing Similarities

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

Materials /

Groups of three to four objects that are all part of another more complex object that is composed of parts that can be assembled and taken apart. Examples: parts of a Mr. Potato Head®, parts of a Lego® or Automoblox® car, parts of a toy sandwich, or any toy that can be taken apart and put back together.

Example group using Mr. Potato Head® parts.

Example group using toy sandwich parts.

Example group using Automoblox® car parts.

Procedure & Dialogue /

T: The Teacher shows the students a group of three to four objects that are all part of another object that is composed of parts that can be assembled and taken apart. Using the example of the group of Mr. Potato Head® parts, the Teacher says,

“Let’s compare these objects. In what way are these objects similar or alike?”

S: The students look at the group of Mr. Potato Head® parts and reply,

“They are similar in that they are all part of a whole Mr. Potato Head®.”

T: The Teacher responds,

“You are right. I like the way you looked carefully at these objects and saw that they are all part of a whole Mr. Potato Head®. Good thinking.”

Intervention Note: Throughout the Phase 3 section, if needed, have the students describe each item in terms of being a part of something else or being a whole object. This will be dependent on what the student has previously learned in terms of the concept of “part of a whole”. Guide them to see that they are all similar in being part of a whole object.

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 students as to how they are thinking in reference to the target concept of “part of a whole”. 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 items being “part of a whole ... .”

T: While pointing at the Mr. Potato Head® parts the Teacher asks,

“How do you know that these are all part of a whole Mr. Potato Head®?”

S: The students look at the group of Mr. Potato Head® parts and reply,

“Because I can see that they all go on a Mr. Potato Head®, so they are all part of a whole Mr. Potato Head®.”

If the students 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 students continue to struggle, you may need to take a step back and redo previous discrimination and even association tasks.
More generalization tasks using picture cards containing four items that are all part of another more complex object.

T: The Teacher shows the students a multi-element picture card containing four items that are all part of a more complex object. Using the example of the body parts pictured on Slide 46 to the left, the Teacher and says,

“You did a great job of looking closely and comparing all the different parts in the previous task and saw that they were all part of more complex objects. Now look carefully at all of these items. In what way are all these all similar or alike?”

S: While looking at the pictures the students reply,

“They are all similar in being part of a (whole) body.”

T: The Teacher responds,

“You are right. I like the way you looked carefully at these items and saw that they are similar in each one being part of a whole body.”

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

Slides: 46-53
Phase 03
Selective Generalization

Section 01
Discovering and Verbalizing Similarities
continued

Review of the terms for the concept “a part of a whole ...” verbally with the Teacher, facilitating the student’s development of inner verbalization from outer verbalization. (Hansen, 2006)

T: The Teacher places a group of three to four items in front of the students that are each part of a more complex whole object and says:

a. “Look at these objects and with your regular voice say with me, ‘They are all part of a whole ... (name of whole object) ’.” (The Teacher models for the students.)
Optional visual cues: You can use an optional visual cueing system to help the students 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 students.)
“Now look at this item and with your regular voice say with me, ‘They are all part of a whole ... ’.”

b. “Now whisper, ‘They are all part of a whole ... ’.” (The Teacher models for the students.)
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 students putting 2 hands together in front of their mouth to make a small megaphone.)
“Now whisper, ‘They are all part of a whole ... ’.”

c. “Now say it in your mind using your inner voice, ‘They are all part of a whole ... ’.”
You can move your lips, but don’t make any sound.” (The Teacher models for the students.)
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 students 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.
‘They are all part of a whole ... ’.”
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 students 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 students.)
“Now look at this item and with your regular voice say into the megaphone, ‘They are all part of a whole ... ’.”
**Phase 03**  
**Selective Generalization**  

Section 02  
Discovering Similarities  
Accompanied by Discrimination


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**Materials /**

Discrimination tasks using three to four items of which only one to two are part of a whole more complex item and the others are whole objects by themselves. Nyborg’s Learning Panel* or similar format can be useful here.

Example group using whole Mr. Potato Heads© and Mr. Potato Head © parts.

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**Procedure & Dialogue /**

T: The Teacher shows the student a group of objects of which only one to two are part of a whole more complex item and the others are whole objects by themselves. Using the example of the group using Mr. Potato Head © items pictured to the left, the Teacher says,

“You have been doing a great job of looking closely and comparing all the different groups of items to see which ones are part of more complex objects. Can you point to the items in this group that are a part of something else.”

S: The student points at the objects that are part of a Mr. Potato Head ©.

T: The Teacher says,

“You are right. I like the way you looked closely at these different items and saw that only these are part of something else, a Mr. Potato Head © toy. Good thinking and good work.”

**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 students as to how they are thinking in reference to the target concept of “part of a whole”. 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 being part of a more complex whole item from items that don’t share the partial similarity of being part of another item.

T: While pointing at the parts that the students selected, the Teacher asks,

“Why did you point at these items?”

S: The students look at the parts and reply,

“I pointed at these because they are all parts of a whole Mr. Potato Head ©.”

T: While pointing at the parts that the students selected, the Teacher asks,

“How do you know that these are all part of a whole Mr. Potato Head ©.”

S: The students look at the groups and reply,

“Because I can see that each of them are something you can put on the Potato Head body to create a Mr. Potato Head ©, so we can say that these are all part of a whole Mr. Potato Head ©.”

T: The Teacher responds,

“You are right. I like the way you looked carefully at all of these parts and found the ones that are part of a whole Mr. Potato Head ©. Good thinking and good work.”

Continue the same dialogue format with any additional similar object groups until you feel that the students are able to spontaneously compare, discriminate and label the concept of “part of a whole ...”.

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**PHASE 03**  
**Selective Generalization**  

**Section 02**  
Discovering Similarities  
Accompanied by Discrimination

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Nyborg’s Learning Panel* or similar format can be useful here.

Example group using whole Automoblox© cars and Automoblox© car parts.

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Example group using whole Mr. Potato Heads© and Mr. Potato Head © parts.
More discrimination tasks using pictures of four items of which only one to two are a part of a more complex object and the others are whole objects that are not part of something else.

T: The Teacher shows the students a group of four pictured items of which only one to two are a part of a more complex object and the others are whole objects by themselves. Using the example of the items pictured on Slide 55 to the left, the Teacher says,

“You did a great job of looking closely and comparing all the different items in the previous task, and saw that only some were part of a more complex object. Let’s compare these items in the same way we compared the previous objects. Point to the items that are similar in being a part of something else.”

S: The students look at the various items and point to the parts of the banana.

T: The Teacher responds,

“You are right. I like the way you looked carefully at these different items and saw that only these are part of something else, part of a whole banana. Good thinking and good work.”

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 students as to how they are thinking in reference to the target concept of “part of a whole”. 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 being part of a more complex whole from items that don’t share the partial similarity of being part of something else.

T: While pointing at the parts that the students selected, the Teacher asks,

“Why did you point at these items?”

S: The students look at the items and reply,

“I pointed at these because they are all a part of a (whole) banana.”

T: While pointing at the items that the students selected, the Teacher asks,

“How do you know that these are a part of a whole banana?”

S: The students look at the items and reply,

“Because these parts are each just a piece of a banana, so we can say that these are a part of a (whole) banana.”

T: The Teacher responds,

“You are right. I like the way you looked carefully at these things and found the ones that are a part of a whole banana. Good thinking and good work.”

Continue the same dialogue format with any additional multi-element cards until you feel that the student is able to spontaneously compare, discriminate and label the concept of “part of a whole...”. 
Phase 03
Selective Generalization

Discussion tasks:

T: The Teacher asks,

“Tell me what we learned about in this lesson OR what you believe this lesson was all about.”

“How did you learn about the idea of ‘parts of a whole’ object?”

“Can you tell me some of the things that we talked about that you saw parts of?”

“Where in school might we use the concept of ‘part of a whole’ something?”

Cumulative Task


Grid task: The concept that is named as being “part of a whole ...” 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*

Slide: 64

Procedure & Dialogue /

T: The Teacher shows the student either Slide 64, a printed picture grid of the slide or cuts the printed grid into 9 individual cards, 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 children explain their thinking as much as possible. An alternative task is to give one student 3 cards numbered 1 to 3 with the clues pictured or written on them and then have them tell the clues to the other students.

1. “Here’s the first clue: It’s something you see outside.”

   “Which ones could it be? How do you know that?” Circle the one(s) the students think fit the clue.
   “Which ones don’t fit that clue? How do you know that?” Cross out the one(s) the students think don’t fit the clue.

2. “Here’s the second clue: It has the color green”

   “Which ones could it be? How do you know that?” Circle the one(s) the students think fit the clue.
   “Which ones don’t fit that clue? How do you know that?” Cross out the one(s) the students think don’t fit the clue.

3. “Here’s the last clue: It is part of a whole tree (or branch).”

   “How did you know it was this one (the leaf)? Then go back to the previous slide items and ask:
   “Why can’t it be this one (the snake or the cactus)?
Follow-up Activities

Activity Task 01
Analytic Coding


Process / Materials / Procedure & Dialogue /

Follow-up Tasks
Application tasks: The concept that is named as being “part of a whole ...” 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*.

Procedure & Dialogue /
The Teacher helps the students to define/describe a picture that contains elements that are part of another item compared to the other elements 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 - A TV and a snake.

T: The Teacher shows the student Slide 67 and asks, “What is this a picture of?” OR “What do you see in this picture?” (Object or event class membership) S: “It’s a snake, a TV and a remote control.”
T: “What colors does this picture have?” (Color) - S: “It has the colors yellow, tan, black, gray and white.”
T: “What can you see in this picture that is only a part of something else?” (Parts of a Whole) - S: “I can only see part of the snake.”

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

T: “What shape does the TV have?” (Shape) - S: “It has a 4 sided shape.”
T: “What size is this remote in relation to the TV?” (Size) - S: “It is small in size.”
T: “What size is this TV in relation to the remote?” (Size) - S: “It is large/big in size.”
T: “What number of TVs are in the picture?” (Number) - S: “There is (the number) one TV in the picture.”
T: “What position is the snake’s head in?” (Position) - S: “It is in a horizontal position.”
T: “What place does the snake have in relation to the TV?” (Place) - S: “It is (placed) behind/in back of the TV.”
T: “What place does the remote have in relation to the TV?” (Place) - S: “It’s (placed) in front of the TV.”
T: “What direction is the snake’s head pointing in?” (Direction) - S: “It is pointing to the left in direction.”
T: “What do snakes do?” (Use/Function) - S: “They slide on the ground. They hiss. They bite.”
T: “What are TVs used for?” (Use/Function) - S: “You watch shows on them. You turn them on and off.”
T: “What is a remote control used for?” (Use/Function) - S: “You use it to turn things on and off.”
Follow-Up Activities

Activity Task 01
Analytic Coding

Process / Materials / Procedure & Dialogue / Follow-Up Activities

Follow-up Tasks

Application tasks: The concept that is named as being “part of a whole ...” 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*.


T: The Teacher shows the student Slide 69 and asks, “What is this a picture of?” OR “What do you see in this picture?” (Object or event class membership) S: “A box and some rabbits.”

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

T: “What can you see in this picture that is only a part of something else?” (Parts of a Whole) - S: “I can see some ears that are part of a rabbit.”

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

T: “What shape does these box have?” (Shape) - S: “It has a 4 sided or cube shape.”

T: “What size are the rabbits in relation to the box?” (Size) - S: “They are small(er) in size.”

T: “What size is the box in relation to rabbits?” (Size) - S: “It is large/big in size.”

T: “What number of rabbits are in the picture?” (Number) - S: “There are (the number) 4 rabbits.”

T: “What position are this rabbit’s (the rabbit behind the box) ears in?” (Position) - S: “They are in a diagonal position.”

T: “What place does this brown rabbit have in relation to the box?” (Place) - S: “It is (placed) in front of the box.”

T: “What place does this black and white rabbit have in relation to the box?” (Place) - S: “It’s (placed) behind the box.”

T: “What are boxes for?” (Use/Function) - S: “They are for putting things in.”

T: “What are rabbits for?” (Use/Function) - S: “You can have one for a pet.”

Procedure & Dialogue /

The Teacher helps the students to define/describe a picture that contains elements that are part of another item compared to the other elements 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 box and some rabbits.

T: The Teacher shows the student Slide 69 and asks, “What is this a picture of?” OR “What do you see in this picture?” (Object or event class membership) S: “A box and some rabbits.”

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

T: “What can you see in this picture that is only a part of something else?” (Parts of a Whole) - S: “I can see some ears that are part of a rabbit.”

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

T: “What shape does these box have?” (Shape) - S: “It has a 4 sided or cube shape.”

T: “What size are the rabbits in relation to the box?” (Size) - S: “They are small(er) in size.”

T: “What size is the box in relation to rabbits?” (Size) - S: “It is large/big in size.”

T: “What number of rabbits are in the picture?” (Number) - S: “There are (the number) 4 rabbits.”

T: “What position are this rabbit’s (the rabbit behind the box) ears in?” (Position) - S: “They are in a diagonal position.”

T: “What place does this brown rabbit have in relation to the box?” (Place) - S: “It is (placed) in front of the box.”

T: “What place does this black and white rabbit have in relation to the box?” (Place) - S: “It’s (placed) behind the box.”

T: “What are boxes for?” (Use/Function) - S: “They are for putting things in.”

T: “What are rabbits for?” (Use/Function) - S: “You can have one for a pet.”
Home Practice sheet focused on the concept of “part of a whole”.

The concept that is named as being “part of a whole ...” should be developed further by homework activities that the students and their parents can do together.