

Cognitive Flexibility  
Category Sorts  
&  
Multiple Classification Tasks  
for Closed Syllables

by  
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# Acknowledgments

The activities in this unit are based upon the work of Kelly B. Cartwright and her book [\*Executive Skills and Reading Comprehension: A Guide for Educators, Second Edition\*](#) - Guilford Press, 2023. See her book for additional activities and strategies as well as the second edition coming soon.

Thanks to Kelly B. Cartwright for her input in creating these lists, as well as her guidance in creating the assessment that accompanies these activities. A similar list exploring open versus closed syllables is part of a current study being conducted by Cartwright and Dean.

## Additional Resources

Watch for additional activities for cognitive flexibility as well as related activities, books, and resources at [www.wordtravelpress.com](http://www.wordtravelpress.com) coming soon for:

1. Digraphs
2. Open versus closed syllables
3. Vowel Y
4. Closed (VR) Versus R-controlled Syllables

**Level 1 – Category Sort & Multiple Classification Task for Closed Syllable** corresponds to the Level 1 [Scope and Sequence](#) of the Hot Rod Decodable Book Series.

# About the Author

Carolee Dean, M.S., CCC-SLP, CALT, Speech-Language Pathologist and Certified Academic Language Therapist, specializes in the treatment of dyslexia and other language-based learning differences,. With more than 20 years of experience in the public schools, she now focuses on teletherapy, consultation, and resource development. She has served as the Western Region Advisor for the International Dyslexia Association and as a former president of the Southwest Branch of IDA. She is the author of the educational resource [Story Frames for Teaching Literacy: Enhancing Student Learning Through the Power of Storytelling](#) (Brookes Publishing, 2021) as well as the HOT ROD Series (Higher Order Thinking through the Reading of Decodables), available at [www.wordtravelpress.com](http://www.wordtravelpress.com).

Dean is also the award-winning author of the young adult fiction titles below:

*Comfort* (HMH. Books for Young Readers)

*Take Me There* (Simon Pulse, 2010), a YALSA Quick Pick for Reluctant Readers

*Forget Me Not* (Simon Pulse, 2012).

Dean frequently combines her knowledge of story structure and learning differences to speak at national and international conferences on the subjects of narrative intervention, reading comprehension, written language, optimizing decodable books, and more.

# Rationale

## What Is Cognitive Flexibility?

Cognitive flexibility is a vital executive functioning skill that is needed for many abilities, including reading. Cognitive flexibility requires a person to be able to switch between two different tasks or to think about more than one concept at the same time.

Students need to use cognitive flexibility to be able to hold different possible pronunciations for a letter or combination of letters in mind while decoding unfamiliar words. They also need cognitive flexibility to consider both the pronunciation and the meaning of words at the same time.

By sorting words that belong to two different categories of closed syllables (/a/ vs. /o/, /u/ vs. /o/, etc.) students can work on cognitive flexibility within the context of their current reading intervention program or in the classroom. When the category sort expands to include four categories simultaneously (as described in the 2x2 Multiple Classification Task that follows later in this resource), students experience further challenges in working memory as they grow in their ability to juggle several pieces of information at the same time.

## Why Are Syllables Important?

Learning about the six syllable types is helpful to readers of all skill levels for several reasons:

- Understanding syllable division patterns helps students break down large words into more manageable chunks.
- Knowing the different syllable types helps us know how to pronounce letters that may have more than one sound. Vowels can make either open (long) or closed (short) sounds. They may also appear in vowel teams or function as silent letters. The way the vowel is pronounced will depend upon the syllable type.
- Students need to use cognitive flexibility to be able to hold different possible pronunciations for letters in mind while decoding unfamiliar words.

# Prerequisite Skills

Students should have previously been introduced to the concept of closed syllables, initial and final consonant blends, and words that include the floss rule (doubling f,l,s at the end of a one-syllable word after a closed vowel.)

## Multiple Meaning Words

The student will need to be instructed about some of the words with lesser-known multiple meanings as they arise. The definitions used in the word sorts are in bold. Remind them as necessary about these word meanings.

### Drill

1. (noun) a tool used to make holes. *He used a drill to make a hole.*
2. (verb) the act of making a hole. *She drilled a hole in the wood.*
3. (noun) an exercise or practice. *Go outside during the fire drill.*
4. (verb) to go through an exercise or practice. *The teacher drilled us on our vocabulary words.*
5. **(noun) an animal that is a type of baboon. *The drill lives in the forest.***

### Crest

1. (noun) The highest part of a mountain or hill. *The eagle flew down from the crest.*
2. (verb) To reach the top of a high point. *We crested the mountain on our hike.*
3. **(noun) A crown. *The bird had a crest of feathers on top of its head.***
4. (verb) To provide with a crown. *He crested her hair with flowers.*

# Objective

The purpose of the cognitive flexibility activities that follow is to improve students' ability to distinguish between words that contain various closed/ short vowel sounds and to flexibly shift between words that contain these sounds.

Eight different word sets to be administered over eight separate sessions have been created to work on recognizing the difference between these vowel sounds.

In addition to sorting words according to vowel sounds, each set of words can be sorted into two additional categories as described below as well as in more detail on the following page.

Set 1: animals and actions

Set 2: actions and body parts.

Set 3: animals and habitats

Set 4: body parts and actions

Set 5: animals and actions

Set 6: Nonwords; one and two-syllable words

Set 7: birds and mammals

Set 8: animals and actions

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# Word Sets

Based on closed/short vowel sounds and the following categories:

**Set 1: /ă/and /ǒ/; animals and actions**

cat, bass, rat, hog, fox, grab, clap, flap, trot, hop, drop

**Set 2: /ĭ/and /ŭ/; actions and body parts**

flip, lift, swim, jump, run, hunt, gill, lip, rib, tusk, hump, gut

**Set 3: Sentences - /ă/and /ĭ/; animals and habitats**

asp, crab, bat, pig, \*drill,\* krill, dam, sand, grass, hill, cliff, rim

**Set 4: /ě/and /ĭ/; actions and body parts**

Leg, \*crest, \*\*neck, skin, gill, fin, rest, help, smell, sniff, spit, grin

**Set 5: /ǒ/ and /ŭ/; animals and actions**

ox, frog, cod, pug, cub, pup, stomp, rob, got, grunt, bump, rub

**Set 6: Nonwords - /ě/ and /ǒ/; one and two-syllable words**

brell, demp, fleg, hennet, metrel, pendem, rost, grop, plog, boscon, sossot, fottom

**Set 7: birds and mammals; one and two-syllable words**

pig, dog, rat, kitten, rabbit \*jackal, gull, \*swift, \*brant, falcon, \*kestrel, \*linnet

**Set 8: Review - /ă/ and /ŭ/; – animals and actions**







Cat, bass, crab, grab, clap, flap, pig, cub, pup, grunt, bump, rub

\* Words with asterisks may need to be defined. See the definitions that accompany the word sets. \*\*Students may need help with “neck” if digraph CK has not been introduced.



# Six Syllable Types - Review

## Six Syllable Types – General Review

	Closed	C	red, dog, cat, tent, strict,	When a vowel is followed by one or more consonants, it makes its closed (short) sound.
	Final Stable Syllable	L	purple, apple, future, lesion, nation	Final stable syllables appear at the end of basewords. The most common is Cle (consonant-le). Others include –tion, sion, ture, tious, cian
	Open	O	fuschia, he, go we, no, bacon, open, pilot	When a vowel does not have any other letter coming after it in that syllable, it makes its open (long) sound.
	Vowel Team	V	green, book, sail, boy, cow, light	When two or more letters combine to make one vowel sound (ee, oo, ai, ea, igh, eigh), or diphthong (oi, oy, ou, ow) they form a vowel team.
	Vowel-consonant -silent e	E	white, name, compete, rope, cube	When a vowel and a final silent e are separated by one consonant, the first vowel makes its naming (long) sound.
	R-Controlled	R	orange, car, bird, fern, turn	When an r comes after a vowel, it often changes or controls the sound of that vowel.

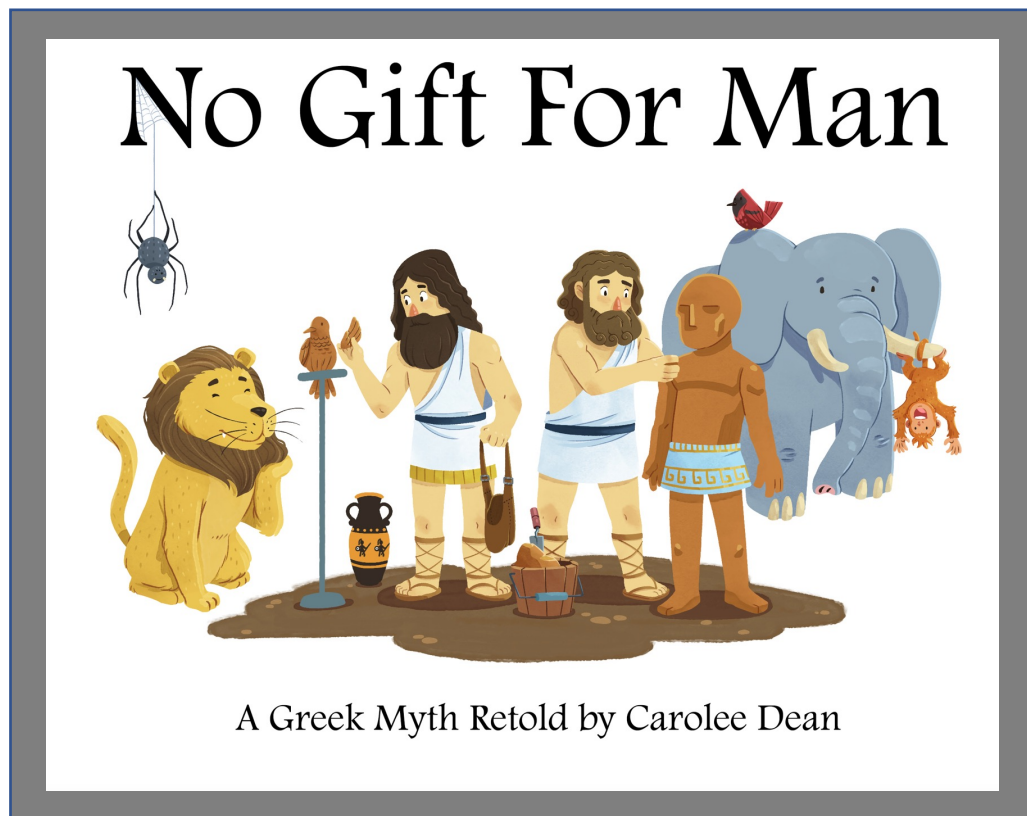
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# Additional Resources

Many of the words in this unit are found in the first book of Level 1 of the HOT ROD Series of Decodable books as well as the supplementary resources that accompany it.

Book 1 – *No Gift for Man*

Visit [www.wordtravelpress.com](http://www.wordtravelpress.com) for details.



# Directions for Category Sorts

1. To determine baseline word reading skill and the ability to switch between words with similar spelling patterns, give the Pretest for the *Test of Cognitive Flexibility for Reading Closed Syllables*. Contact [info@wordtravelpress.com](mailto:info@wordtravelpress.com) for a copy of that test or create your own baseline.
2. Cut out the word sets on the pages that follow and instruct students to read each word aloud as they place it in the correct category.
3. Whenever needed, explain the meaning of unfamiliar words or words with multiple meanings.
4. If students have difficulty pronouncing a word correctly, say the word for them. Then circle back to the word and ask them to read it before moving on.
5. Sort words into two categories at a time, reading each word aloud. Discuss how the same words can be sorted according to different features:

## Category Sort #1 –(from Set #1)

<u>/ă/</u>	VERSUS	<u>/ö/</u>
cat		fox

## Category Sort #2 (from Set #1)

<u>Animals</u>	VERSUS	<u>Actions</u>
cat		grab

# Example of Completed Category Sort #1 (from Word Set #1)

/ă/	/ö/
cat	hog
bass	trot
clap	dog
rat	fox
flap	hop
grab	drop

# Example of Completed Category Sort #2 (from Word Set #1)

Animals	Actions
cat	clap
bass	flap
hog	trot
fox	grab
rat	hop
dog	drop

# Directions for 2x2 Multiple Classification Task

1. When the student can accurately sort words according to the category sets, show them how these same words can be sorted according to different features **AT THE SAME TIME** in the 2x2 - Multiple Classification Task using the blank four-square grid that follows. Samples of the sorts are found on the next few pages.
2. Discuss the steps for **SODAS** (study, observe, deduce, assess/add, select) to help students figure out what type of word they need to fill in the missing square in the 2x2 grid. Do this before they search the remaining words to find one that fits. Don't ask students to memorize the acronym unless needed. Alternatively, they may be able to simply look at the three words to decide what is missing.
3. After discussing the examples, the educator uses the blank grid to set up additional 2x2 sorts.
4. When the student completes four correct Multiple Classification Tasks in a row, ask them to read all twelve words. If they mispronounce any words, discuss the error. Shuffle the cards and have them read all the words again. If they continue to make errors in pronunciation, they should complete another 2x2 sort and then read all 12 words again.
5. Do not penalize students for dialect or regional variations.
6. Do not penalize students for articulation errors when determining their ability to perform sorting and multiple categorization tasks. Although this activity includes many target words that could be useful for speech therapy intervention, that application does not apply when calculating accuracy for sorting and classifying.
7. If a student does not complete four correct attempts in a row of the Multiple Classification Task, reattempt the same list on another day. If they continue to have difficulty, they may need preliminary work in sorting colors and shapes. See Kelly B. Cartwright's book, [\*Executive Skills and Reading Comprehension: A Guide for Educators\*](#) – Second Edition, Guilford Press, 2023, for suggestions.

# 2x2 Multiple Classification Task Example One

Word positions will vary with each turn. In this example:

Row A - /ă/

Row B - /ō/

Column 1 - **actions**

Column 2 - **animals**

	1	2
A	grab	bass
B	trot	dog

**Directions:** In the following examples, the teacher sets up 3 squares and the student completes the sets by inserting a word that meets the requirements of both the row and the column. See the example on the next page.

# 2x2 Multiple Classification Task Example Two

Instruct the student to:

1. **Study** the words.
2. **Observe** that Row A contains Two - **animal** words and Row B contains one **action** word.
3. **Deduce** that Row B is missing an **action** word.
4. Observe that Column 1 contains two /ă/ words and Column 2 contains one /ŏ/ word.
5. Deduce that Column 2 is missing an /ŏ/ word.
6. **Assess and Add** the two missing elements - B2 needs to be an /ŏ/ word that is an action.
7. **Select** the word that fits that pattern.
8. **Extra Help** - If the student needs further help at any time, write the two missing elements on the blank square on a sticky note.

	1	2
A	rat	dog
B	flap	

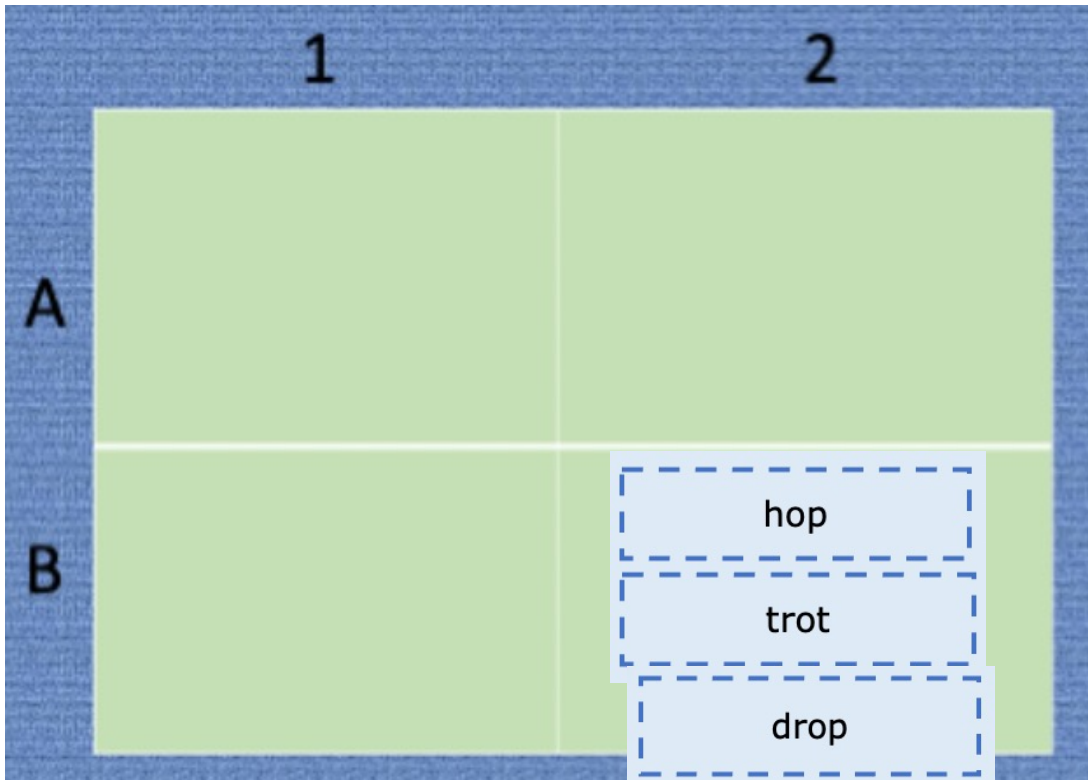
Word Bank:

- trot
- grab
- hog
- clap
- fox
- hop
- cat
- bass
- drop



# Answer

The three possible answers are below.  
The student only picks one.



# 2x2 Multiple Classification Task Matrix

Use for all 5 sets. Start with an example set.

	1	2
A		
B		

**Set 1: /ă/and /ǒ/; animals and actions**

cat, bass, rat, hog, fox, dog, grab, clap, flap, trot,  
hop, drop

**Directions:** Cut out the words and use them for the  
Set 1 Sorts.

cat

grab

bass

clap

rat

flap

hog

trot

fox

hop

dog

drop

**Set 1: /ă/ and /ō/; animals and actions**

cat, bass, rat, hog, fox, dog, grab, clap, flap, trot, hop, drop

**Directions:** Sort the words into the categories below.

<b>Animals</b>	<b>Actions</b>

**Set 1: /ă/ and /ö/; animals and actions**

cat, bass, rat, hog, fox, dog, grab, clap, flap, trot, hop, drop

**Directions:** Sort the words into the categories below.

/ă/	/ö/

Now fill in the missing word. We will do this several times. Try to get four correct in a row.

1

2

A


B


**Set 2: /ĭ/ and /ŭ/; actions and body parts**

flip, lift, swim, jump, run, hunt, gill, lip, rib, tusk, hump, gut

**Directions:** Cut out the sentences and use them for the Set 2 Sorts

flip

gill

lift

lip

swim

rib

jump

tusk

run

hump

hunt

gut

**Set 2: /ĭ/ and /ÿ/; actions and body parts**

flip, lift, swim, jump, run, hunt, gill, lip, rib, tusk, hump, gut

**Directions:** Sort words into the categories below

/ĭ/	/ÿ/



**Set 2: /ĭ/ and /ŭ/; actions and body parts**

flip, lift, swim, jump, run, hunt, gill, lip, rib, tusk, hump, gut

**Directions:** Sort words into the categories below

Actions	Body Parts

Now fill in the missing word. We will do this several times. Try to get four correct in a row.

1

2

A


B


**Set 3: /ă/and /ĭ/; animals and habitats**

asp, crab, bat, pig, \*drill,\* krill, dam, sand, grass, hill, cliff, rim. \*A drill is a type of baboon. \*A krill is a small crustacean that looks a bit like a shrimp.

**Directions:** Cut out the sentences and use them for the Set 3 Sorts.

The krill can swim.

Dan ran in the grass.

Sam had a pet pig.

Bill dug in the sand.

The drill can grin.

The log dam is wet.

Can an asp hunt?

Jan had a crab.

The bat slept.

The cliff is hot.

Do not step on the ant.

Ted is on the hill.

**Set 3: /ă/ and /ĭ/; animals and habitats**

asp, crab, bat, pig, \*drill,\* krill, dam, sand, grass, hill, cliff, rim.

**Directions:** Sort sentences into the categories below

/ă/	/ĭ/

**Set 3: /ă/ and /ĭ/; animals and habitats**

asp, crab, bat, pig, \*drill,\* krill, dam, sand, grass, hill, cliff, rim.

**Directions:** Sort sentences into the categories below

Animals	Habitats

Now fill in the missing word. We will do this several times. Try to get four correct in a row.

1

2

A


B


**Set 4: /ĕ/and /ĭ/; actions and body parts**

leg, \*crest, \*\*neck, skin, gill, fin, rest, help, smell, sniff, spit, grin \*A crest is a crown of feathers on a bird's head. \*\*Help students with "neck" if they are not familiar with ck = /k/.

**Directions:** Cut out the words and use them for the Set 4 Sorts.

leg

rest

crest

help

neck

smell

skin

sniff

gill

spit

fin

grin

**Set 4: /ĕ/ and /ĩ/; actions and body parts**

leg, \*crest, \*\*neck, skin, gill, fin, rest, help, smell, sniff, spit, grin

**Directions:** Sort words into the categories below

/ĕ/	/ĩ/



**Set 4: /ĕ/ and /ĭ/; actions and body parts**

leg, \*crest, \*neck, skin, gill, fin, rest, help, smell, sniff, spit, grin

**Directions:** Sort words into the categories below

Actions	Body Parts

Now fill in the missing word. We will do this several times. Try to get four correct in a row.

1

2

A


B


**5: /ŏ/ and /ŭ/; animals and actions**

ox, frog, cod, pug, cub, pup, stomp, rob, got, grunt, bump, rub

**Directions:** Cut out the words and use them for the Set 5 Sorts.

ox

stomp

frog

rob

cod

got

pug

grunt

cub

bump

pup

rub

## 5: /**ö**/ and /**ü**/; animals and actions

ox, frog, cod, pug, cub, pup, stomp, rob, got, grunt, bump, rub

**Directions:** Sort words into the categories below

/ö/	/ü/

**5: /ŏ/ and /ů/; animals and actions**

ox, frog, cod, pug, cub, pup, stomp, rob, got, grunt, bump, rub

**Directions:** Sort words into the categories below

animals	actions

Now fill in the missing word. We will do this several times. Try to get four correct in a row.

1

2

A


B
