Manipulating Morphemes

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To create a world-class educational system that gives students the knowledge and skills to be successful in college and the workforce, and to flourish as parents and citizens.

To provide leadership through the development of policy and accountability systems so that all students are prepared to compete in the global community.
1. **ALL Students Proficient and Showing Growth in All Assessed Areas**

2. **EVERY Student Graduates from High School and is Ready for College and Career**

3. **EVERY Child Has Access to a High-Quality Early Childhood Program**

4. **EVERY School Has Effective Teachers and Leaders**

5. **EVERY Community Effectively Uses a World-Class Data System to Improve Student Outcomes**

6. **EVERY School and District is Rated “C” or Higher**
Session Norms

• Silence your cell phones.
• Please check and/or reply to emails during the scheduled breaks.
• Be an active participant.
• Do not hesitate to ask questions.
Session Goals

• Explore the research behind morphology instruction as it relates to the science of reading.

• Define morphology and identify morphemes.

• Explore the classes of morphemes.

• Learn the importance of morphology instruction and how to implement instructional routines.

• Practice activities that can enhance morphology instruction.
Research and The Science of Reading
Simple View of Reading

- **Decoding**
  - Phonemic Awareness
  - Phonics
    - Advanced Phonics
    - Syllabication
  - Morphology

- **Language Comprehension**
  - Vocabulary
  - Text Comprehension

- **Fluency**
Instruction in morphemes leads to improvements in word decoding, spelling, and vocabulary; and because word decoding and vocabulary contribute to reading comprehension, there is evidence that morphology instruction leads to overall reading achievement.

Goodwin & Ahn, 2013; Lipsky & Ahn, 2021
According to scholars, understanding word meaning accounts for as much as 80% of reading comprehension.

Davis, 1972; Nagy & Scott, 2000

Since the same root morphemes are found in multiple words, learning a morpheme in one word can open the meaning to many new words that contain that morpheme.

Oakhill, Cain, & Elbro, 2014
| Definitions do the trick! | Weekly vocabulary lists are effective. | Teachers should teach ALL hard words (especially those printed in bold). | The study of Latin and Greek roots is too hard for young learners. | Word learning cannot be fun. |
Progression Through Grades

<table>
<thead>
<tr>
<th>Grade</th>
<th>Basic Phonological Awareness</th>
<th>Advanced Phonemic Awareness</th>
<th>Derivational Morphology: Anglo-Saxon and Latin Roots, Prefixes, Suffixes</th>
<th>Inflectional Morphology</th>
<th>Common Syllables, Syllabication</th>
<th>Fluent Recognition of Word Families (Rime Patterns)</th>
<th>300-500 Sight Words</th>
<th>Greek-Derived Morphemes</th>
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(LETRS 3rd Edition)
When explicitly teaching vocabulary, most students learn 8-10 words a week. However, “by learning just ONE root, students can easily add between 10 and 20 connected words.”

Rasinski et. al, 2008
interact

**morphemes**

inter + act

**syllables**

in + ter + act

**graphemes**

| i | n | t | e | r | a | c | t |

**phonemes**

/i/ /n/ /t/ /er/ /a/ /c/ /t/
Your Turn: Word Analysis

Instructions: With a partner, use a sticky note to break the given words into morphemes (M), syllables (S), graphemes (G), and phonemes (P). An example is provided.

**morpheme** the smallest unit of language that carries meaning

**syllable** a word part containing a vowel sound

**grapheme** a written representation of a single speech sound

**phoneme** a single speech sound

*(example)*

**legible**

M: leg + ible
S: leg-i-ble
G: l-e-g-i-b-le
P: /l/ě/j/i/b/l/
Identifying Morphemes
Therefore, *morphology* is the study of how words are formed, with a focus on the meaningful units, or morphemes.
The smallest unit of language *that carries meaning*
Submorphemes (Phonesthemes)

Many blends and digraphs can be identified as a submorpheme, a part of a morpheme that has a recurrent form and meaning.

Examples:

kn – knead, knee, kneel, knuckle, knock
sn – sneeze, sniff, snore, snot
gl – glitter, gleam, glimmer, glow, glint
er – shimmer, glimmer, patter, chatter
Activity: How Many Morphemes?

A word will appear on the screen.

1. Count the number of morphemes (meaningful parts) within the word.

2. When you hear the “ding,” show with your fingers the number of morphemes you identified.

Let’s Practice: reread (2) morphemes re + read
Activity: How Many Morphemes?

walked  (2) morphemes
walk + ed

cowriters  (4) morphemes
co + write + er + s

transcontinental  (3) morphemes
trans + continent + al
Morphological Family

A group of words that share a morphological unit

Example

mot (to move), from the Latin movere

automotive, commotion, demote, demotion, emote, emotion, locomotive, motel, motif, motion, motivate, motive, motocross, motor, promote, promotion, remote, motorcycle
Caution! Some words may include word parts that seem to be a morpheme but do not carry the same base meaning.

Examples

• The word “mother” does not have the morpheme “mot.”
• The word “fact” does not have the morpheme “act.”
Your Turn: Morphological Family

1. Divide into groups of two or three.
2. Use the index cards provided at your table to brainstorm additional words that include the underlined morpheme.
3. Create a circle map using the words.
4. Be prepared to share.
Classes of Morphemes
Morphemes

Classes of Morphemes

Free Bases
- Content
- Base Words & Compounds
- Function
- Grammatical “Glue” Words

Bound Bases
- Prefixes
- Roots
- Suffixes
- Inflections
- Derivations
Free or Bound Base

- Word part that holds the core meaning
- Every word has a base
- Free base – can stand alone, even when no additional word part is added (example: graph, act)
- Bound base – only appears in larger words; while it still holds meaning, it needs additional word parts (example: struct)
• Prefix: added to the beginning of a base or root word (ad-, inter-, trans-, super-)

• Inflectional suffix: added to the end of a word but does not change the part of speech (-ed, -s, -est, -ing, -en)

• Derivational suffix: added to the end of a word and marks the part of speech (-al, -ize, -ly, -ist, -ic, -ment)
Word Origins and the Vocabulary Triangle

Tier 3
Domain-specific; Many of Greek-origin

Tier 2
Academic; Many of Latin-origin

Tier 1
Everyday vocabulary; Often Anglo-Saxon words
Morphology in the Classroom
Why Teach Morphology?

• The goal of reading is comprehension.
• Morphological awareness (knowledge about the structure of words and how word parts relate to meaning) supports vocabulary development.
• Vocabulary is key to reading comprehension (Reading Rockets).
prefixes
## Phonics vs. Structural Analysis

As readers mature, they use structural analysis as both a word recognition and reading comprehension skill simultaneously.

<table>
<thead>
<tr>
<th>Phonics</th>
<th>Structural Analysis</th>
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<tbody>
<tr>
<td>• Based on graphology &amp; phonemic awareness</td>
<td>• Based on morphology</td>
</tr>
<tr>
<td>• Letter/sound relationships</td>
<td>• Units of meaning</td>
</tr>
<tr>
<td>• Generalizations for pronunciation and spelling</td>
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</tr>
<tr>
<td>• OUTCOME = PRONUNCIATION</td>
<td>• OUTCOME = PRONUNCIATION + Spelling + MEANING</td>
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</table>
## Word Learning Strategies

<table>
<thead>
<tr>
<th>Word Learning Strategy</th>
<th>Associated Questions</th>
</tr>
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| Morphology (inside word clues)              | • Do I know any roots, prefixes, or suffixes in the word and what they mean?  
  • Does the spelling of this word remind me of the spelling of any other words I know (in English or another language)?  
  • Can my knowledge help me guess a meaning for this word?                                                                      |
| Context (outside word clues)                 | • What does it seem like this word could mean from the words/sentences before and after it?  
  • Do the words and sentences around the word confirm the meaning I guessed when I looked at the word parts?  
  • Are there enough clues around the word for me to understand its meaning?                                                      |
| Resource (outside the text help)             | • What does the dictionary (print or online) say? Does a thesaurus help me understand its meaning?  
  • Do any of my classmates know the meaning?  
  • Does my teacher know the meaning?  
  • Does anyone in my family know this word?                                                                                                                                 |

### Additional Questions
- What does the dictionary (print or online) say? Does a thesaurus help me understand its meaning?
- Do any of my classmates know the meaning?
- Does my teacher know the meaning?
- Does anyone in my family know this word?
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Morphology Concepts to Teach

Every word is a base or contains a base.

Bases and affixes are the meaningful building blocks of words.

Words can be analyzed to determine morphological parts (word sums and matrices).

Morphemes are more consistently spelled than consistently pronounced.

We learn the phonology of morphemes (how a morpheme is pronounced) by studying morphological families.
Structured Word Inquiry (SWI)

**phonemes**

/i/ /n/ /t/ /er/ /a/ /c/ /t/

**morphemes**

inter + act

**etymology**

Latin *inter* (between) +
Latin *actus* (to set in motion)
Defining Vocabulary

Vocabulary is

Knowledge of, and memory for, word meanings, spoken and written

Vocabulary is NOT

Words that students can name or read in print, reciting a definition, or copying from a dictionary
<table>
<thead>
<tr>
<th>What Does It Mean to Know a Word?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Phonological form</strong> (sounds, syllables)</td>
</tr>
<tr>
<td><strong>Morphological form</strong> (meaningful parts)</td>
</tr>
<tr>
<td><strong>Spelling patterns (orthographic form)</strong></td>
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<tr>
<td><strong>Meanings and meaning networks</strong></td>
</tr>
<tr>
<td><strong>Syntactic roles</strong></td>
</tr>
<tr>
<td><strong>Linguistic history (etymological features)</strong></td>
</tr>
</tbody>
</table>
LETRS Unit 5: Vocabulary Routine for Introducing a New Word

1. **Pronounce** the new word. Have students pronounce the word. Write the words to read. Talk about syllables, morphemes, spelling, parts of speech, and etymology.

2. Define the word using a **student-friendly definition**. For a noun, use: ______________ is ______________ that has/is ________________.

3. Say more about the word. Use it in **different** examples.

4. Ask students "yes" or "no" **questions** about the word's meaning.

5. Elicit word use by **students**. (Think-Pair-Share)
   - What are some of examples of ______________?
   - Can you use the word in a sentence?
LETRS Unit 5: Vocabulary Routine for Introducing a New Word

responsibility

1. Pronounce, write, and read the word. responsibility (6 syllables) (2 suffixes -ible and -ity) (/ə/ sounds)
2. Responsibility is a noun. definition: something you are trusted to do. (chores, duties, jobs)
3. We show responsibility by taking care of our business.

4. Ask questions about the word.
   - Should a baby be given responsibility for chores?
   - Do you take responsibility for your behavior?

5. Allow for collaboration. (Think-Pair-Share) “Tell your friend about a responsibility you have at home.”
Developing Understanding Through Practice
A word sum is a multi-morphemic word that is represented as an addition equation.

Examples:

- re + heat = reheat
- under + act + ive = underactive
- con + verse + ate + ion = conversation
Your Turn: Word Sum

Using the words you created during the circle web activity, create word sums for the morphological family. Be prepared to share.

Example for the bound base **struct:**

- re + **struct** + ure = restructure
- in + **struct** = instruct
- de + con + **struct** = deconstruct
- ob + **struct** + ion = obstruction
• the representation of a morphological family using a matrix, or diagram
• can be created using the Mini Matrix-Maker website (currently available for free)
1. Go to http://www.neilramsden.co.uk/spelling/matrix/.
2. Click “Run Mini Matrix-Maker.”
3. In the “Spelling” box, choose your prefix, suffix, or base.
4. In the “Denotation” box, define the meaning of your prefix, suffix, or base.
5. In the “Word Sums” box, enter your words and separate by prefix, base, and suffix.

scan for website
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**scan for website**
Morpheme Matrix Analysis

Prefix | Base | Suffix | Meaning
--- | --- | --- | ---
"back, again" | cede | direct iterate make juvenile ate | |
### Morpheme Matrix Analysis

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Base</th>
<th>Suffix</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>re</td>
<td>cede</td>
<td></td>
<td>to move back</td>
</tr>
</tbody>
</table>

- **Prefix**: re
- **Base**: cede
- **Suffix**: 
- **Meaning**: to move back
### Morpheme Matrix Analysis

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<tr>
<td>re</td>
<td>direct</td>
<td></td>
<td>direct again</td>
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- **cede**: to move
- **iterate**: make
- **juven**: again

The prefix "re" indicates a movement back or again.
### Morpheme Matrix Analysis

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<tr>
<td>re</td>
<td>iterate</td>
<td></td>
<td>say again</td>
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- **cede** to move
- **direct** again
- **iterate** say
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<tr>
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**Diagram:**
- Prefix: `re`
- Base: cede, direct, iterate, make
- Suffix: "back, again"
- Meaning: to move back, direct again, say again, make again
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<td>juven</td>
<td>ate</td>
<td>make young again</td>
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Your Turn: Morpheme Matrix Analysis

1. Using the pre-created Morpheme Matrices at your table, work in partners or groups to complete a Matrix Analysis.

2. If time permits, think of other words that could be analyzed within the same morphological family.

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Morphological Word Wall

Prefixes: re, pre, de, un, mis, il

Roots: geo, bio, scope, hydro, therm, tele, ology, ped, cycl, man

Suffixes: able, ing, ed, ible, ment, ant, er, ies, ves, ly, less, es, s, ness, tion

Morphological Tree with branches and leaves.
bio
Greek - “life”
abiotic
amphibious
autobiography
biodiversity
biofeedback
biogenesis
biographer
biography
biologist
biology
biomass
biopsy
symbiosis

**Graphic Organizer: Sketch Notes**

**The Goldilocks Principle**
Based on the story of a girl who dislikes porridge that is either “too cold” or “too hot,” this principle is used to describe the “just right” conditions needed to support life. In planetary science, the ‘Goldilocks zone’ is a term for the band around a sun where temperatures are neither too hot nor too cold for liquid water to exist. Luckily for us, Earth falls in this zone and is therefore the only planet in our solar system to support life.

**Greek root for “life”**
- Related Words:
  - Meaning:
  - Doodle:

**Greek root for “far away”**
- Related Words:
  - Meaning:
  - Doodle:

**Tele**
- Greek - “far away”
- telecast
- telecommuting
- telegram
- telekinesis
- telepathic
- telepathy
- telephone
- telephoto
- teleport
- telescope
- telethon
- television
Additional Graphic Organizers: Greek & Latin Roots

**GREEK & LATIN**

Root Word Tree

**ROOT WORD GRAPHIC ORGANIZER**

**DIRECTIONS:**
1. Choose a Latin or Greek root and write it in the middle rectangle.
2. Find four different words that are derived from that root and write them in the outer rectangles.
3. Write the definition of each word in the circles.
4. Optional: color and cut out.

**ROOT:**

<table>
<thead>
<tr>
<th>Related Word</th>
<th>Definition</th>
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### Divide & Conquer

<table>
<thead>
<tr>
<th>Whole Word:</th>
<th>Word Parts:</th>
<th>Literal Definition:</th>
</tr>
</thead>
<tbody>
<tr>
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| Meanings of Word Parts: |
Key Takeaways

• Research informs us that morpheme knowledge supports the overall goal of reading comprehension.

• Morphemes are word parts that contain meaning.

• Morphology instruction, embedded in current phonics and vocabulary instruction, guides students in analyzing meaningful word parts.
"Links between **sound**, **symbol**, and **meaning** must be constructed like a layer-cake: **systematically** and **explicitly**."

*Louisa Moats*
• What information from today’s presentation is new to you?

• What is one idea or strategy that you are excited to take back to your classroom?

• What lingering questions do you have regarding manipulating morphemes?
Resources

- Vocabulary Instruction: Essentials for Proficient Readers
- Strong Readers All
- 3 Literacy Practices that Work
- LETRS: The Need For Research-Based Literacy Professional Development
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