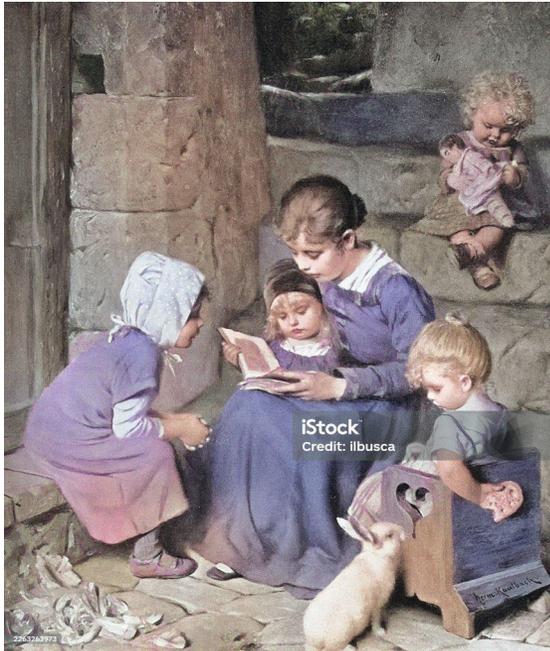
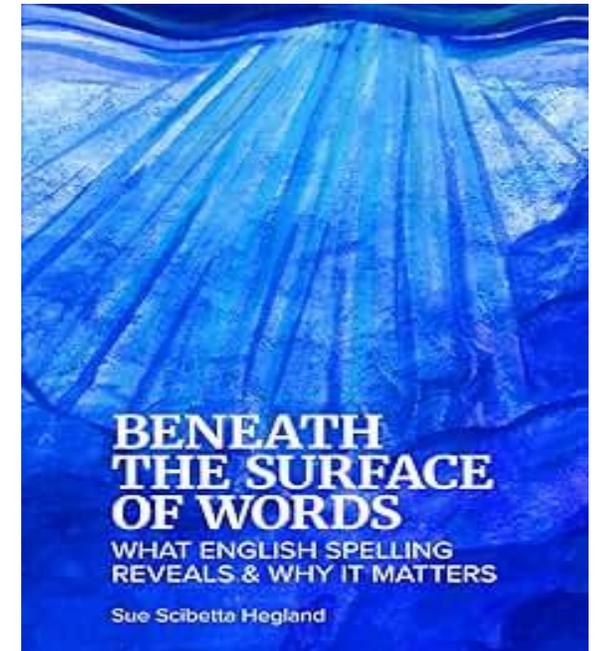


Orthographic Mapping: Using the Writing System to Bond Spellings to Pronunciations and Meanings in Memory for Sight Word Learning



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Sight Word Reading

Automatic word recognition

Enables reading comprehension

All words become sight words

Identities of sight words activated in memory when seen

- Spelling

- Pronunciation

- Meaning(s)

- Syntactic function in sentences

Orthographic Mapping

Explains how sight words get into memory

Requires knowledge of writing SYSTEM

Grapheme-phoneme relations

Onset and rime spelling-sound relations

Syllable spelling-sound relations

Morpheme spellings, pronunciations and meanings:

minimal units of meaning

More than orthographic learning

Explains **how learning occurs** through mapping spellings of individual words to their pronunciations and meanings in memory

Examples of orthographic mappings to bond spellings

to pronunciations

Grapheme-phonem

^e
B O A T



/b/ /o/ /t/

Onset-rime

STR ONG



/str/ /aŋ/

Syllable

SIS^s TER

spelling



mapping

/sɪs/ /tər/

pronunciation

Syllable

AN^s TE LOPE

spelling



mapping

/æn/ /tə/ /lop/

pronunciation

Examples of morphemic spelling units

Common Affixes

Prefixes Suffixes

in- -ed
re- -ing
un- -y
con- -ate
de- -er
 -ant
 -ive

Base Words Plus Affixes

Con-test Funn-y
Re-act Teach-er
Un-do Work-ing
De-odor-ant Educ-ate
In-act-ive Play-ed

Morphographic Families

Base = sign;

signature, signal, insignia, design, significant, assign

Base = tense (meaning stretch)

tension, extension, pretentious, intense, hypertension

Base = uni (meaning one)

unicorn, union, unit, unite, unification, uniform, unity, unique

Base = fine (meaning end, limit)

confinement, finite, finish, define, refine, finance, final

Base = struct (meaning to build)

construct, instruct, structure, destructive, unobstructed

Highlighted letters indicate phonemic shift from base

Value of knowledge of writing system for orthographic mapping

How to remember arbitrary strings of letters: Bdjm for “picture”

Without knowledge of writing system,

- Load on memory impossible

- How to distinguish thousands of words spelled with 26 letters

- Repeated exposure and practice required

Memory load much reduced when know how letter strings
organized

- Writing system provides super glue to store spellings in memory

- Spellings bonded to pronunciations using letter-sound relations

- Spellings bonded to meanings using morphographic knowledge



Learning Conditions for Orthographic Mapping: To Read Words Never Read Before

Transform spelling to a pronunciation of a meaningful word

Connect letters to sounds to store spelling in memory

Through decoding

Through predicting word from context - but spelling-sound connection must be processed rather than skipped over

Skilled readers can activate letter-sounds automatically, precludes skipping

One exposure may store word in memory

Beginners, struggling readers – decoding effortful, makes skipping attractive

Decodable books – “stop and figure it out” habit

Learning Conditions for Orthographic Mapping: To Read Words Never Read Before

Spellings must become associated with meanings and syntactic functions

Reading words in sentences and text

Essential for function words, prepositions, past tense verbs that have little meaning outside of sentences

Orthographic mapping is facilitated if students recognize morphemes within spellings of words and their connection to meanings of the words

Requires shifting attention from comprehending text to recognizing an unfamiliar word

Long enough to compute letter-sound relations, pronounce word, and determine its meaning.

Phases of Development

Learning to Read Words From Memory

Predominant types of connection to bond spellings of words to their pronunciations in memory

- **Pre-alphabetic phase:** children use visual, non-alphabetic connections
- **Partial alphabetic phase:** children use some letter-sounds in words to form connections
- **Full alphabetic phase:** children form more complete grapheme-phoneme connections
- **Consolidated phase:** children use multi-letter units to form connections
 - Spellings of syllables, morphemes, prefixed, suffixes, base words

Phases, not stages

- Transition from one phase to the next is gradual, so at any point, the child may be using more than one type of connection, but one type is most common.
- Movement influenced by instruction and amount of reading

Pre-Alphabetic Phase

Pre-readers – no use of letter-sounds to read or spell

Use salient visual contextual cues to “read” words

Pretend read story books

Begin learning letters

Spoken language, vocabulary grows rapidly

Predicts later literacy development, sight word growth

Listening to stories develops vocabulary, background knowledge,
text comprehension

Partial Alphabetic Phase

Move into partial phase when can use alphabetic knowledge

Letter learning continues – shapes, names, some sounds

Phoneme awareness – initial, final, salient sounds in words

Orthographic mapping to connect letters to sounds

Invents partial phonetic spellings of words

Examples: RM (arm), JRF (giraffe)

Remembers some of letter-sounds to read words

Lacks decoding skill, memory for correct spellings of words

Children just beginning to read, older struggling readers

Full Alphabetic Phase

Orthographic mapping – knowledge and skills needed

- Learning major grapheme-phoneme relations

- Learning to segment words into phonemes and spell with graphemes

- Learning to decode words by sounding out and blending graphemes

- Learning spellings of common morphemes

Application to store more complete spellings in memory

- To connect graphemes in spellings to phonemes in pronunciations

- To connect morpheme spellings to sounds and meanings

Application of morpheme spellings to learn words

Common suffixes appearing in beginning level words

- S, -ES in dog-s, fish-es (**plural**)
- S, -ES in play-s, miss-es (**verb 3rd person**)
- ER in fast-er (more), teach-er (**verb to noun**)
- ED in play-ed (**past tense**)
- Y in funn-y (**noun to adjective**)
- ING in play-ing (**verb progressive**)
- N'T in don't didn't (**negate**)

How morphemes make irregularities in spellings regular

Spelling plural with S when it sounds like Z in “dog^s”

How to read and spell ED in past tense verbs: HELPED

Read “helpt” not “help-ed;” Spell HELPED, not HELPT

Spellings or irregular words are regularized in morphemic families

Say, saying, **says, said**

Do, doing, does, done, don't

What, which, where, when, why, whether, **who, whom, whose (initial /h/)**

Distinguish homonyms: which from witch, whether from weather

Two (W is not sounded), twice, twin, twenty

Morphographic suffixing conventions – occur in beginning level words

E-convention for words ending in final unpronounced E when suffix

beginning with vowel added

E is dropped: MAK-ING (make), RID-ING RID-ER (ride)

Doubling convention in words ending in vowel + single consonant –

consonant doubled when adding suffix:

BIGGER, FUNNY, DOGGIE

Y-convention for words ending in Y changes to I when suffixes

added: HAPP(Y)-IER, PART(Y)-IES, PENN(Y)-IES, STOR(Y)-IES

Movement into the Consolidated Alphabetic Phase

- During the full alphabetic phase, many spellings of words bonded to their pronunciations and meanings in memory
 - **Grapheme-phonemes anchor the connections.**
- Same letter patterns repeated in different words, stored in memory,
 - RIMES: -amp, -ack, -eed, -ore, -ip
 - AFFIXES: -ing, -ed, -est, pre-, -tion,
 - SYLLABLES: sis-ter, cab-in
 - BASE WORDS: sign, uni, struct
- Grapheme-phonemes become **consolidated into multi-letter units.**
- Easier to read and remember spellings
 - Can decode **three or four letters as one unit**

Consolidated Phase

As children accumulate multi-letter spelling units, move into consolidated phase

Sight word learning facilitated

Connect written to spoken syllables to bond spellings to pronunciations

Connect written spellings of base words and affixes to spoken morphemes and meanings

Morphemic families: base spellings map onto meanings consistently across family members

Family Members Derived from **CAVE** – Base Word

Cave: A hollow

Cav er: A person who explores caves

Cav ing: The act of exploring cave

Cave-in: A collapse

Cave-man: A prehistoric Stone Age person living in a cave

Cav ern: A large, natural cave

Cav ern ous: Resembling a cavern in being large and hollow

Cav ity: A hollow place or space

Con cave: Curving inward, or hollowed out

Ex cav ate: To hollow out or remove material by digging

Ex cav at ion: The act of excavating or the resulting hollow



Family members of base morpheme **-JECT** with semantic sense 'throw'

Eject: to 'throw' out

Reject: to 'throw' back or out, discard, refuse

Object: to 'throw' in the way, oppose, dislike

Interject: to 'throw' between, insert

Subject: to 'throw' under, dominate

Projector: that which 'throws' forth, device throwing image on a screen

Injection: a 'throwing' in, insertion of fluid through a needle

Trajectory: 'thrown' across, a path, a curve of a projectile

Conjecture: 'thrown' together, a guess, an opinion without evidence

Dejected: 'thrown' down or off kilter, depressed

Word Matrix and word sums for morpheme base **-JECT**

con	ject <i>"throw"</i>	ed	
de		ion	
e		ure	
in			
inter			
ob			
pro		or	y
re			
sub			
tra			

Con + ject + ure □

conjecture

De + ject + ed □ dejected

E + ject □ eject

In + ject + ion □ injection

Inter + ject □ interject

Ob + ject □ object

Pro + ject + or □ projector

Re + ject □ reject

Sub + ject □ subject

Tra + ject + or + y □

trajectory

Base morpheme **EQU**- meaning same, even, equal

Family Members

Equal Equality

Equation Equitable

Equator Equivalent

Equinox Adequate

Equilibrium Equity

Equator: a circle dividing the earth into two equal halves.

Equinox: the point in time when the sun crosses the equator making the length of the day and night about equal around the world.

A man was called **Caver** because he was a thoughtful **caveman** who loved **caving**, wandering deeper each day into a stone world beneath his feet. One morning he reached a vast **cavern**, so **cavernous** that his voice echoed like a drum. Along one wall he noticed a strange hollow, a **cavity**, **concave** in shape, smooth as if shaped by time itself.

Curious, **Caver** decided to **excavate** around the edges, tapping carefully with his stone tools. He dreamed of turning the spot into a safe shelter, an extensive **excavation** that would protect his tribe from storms. But as he worked, a small **cave-in** of loose rocks rattled the floor, reminding him that the earth demanded patience and respect.

Caver stepped back, studied the rocks, and smiled. Learning when to dig and when to wait was part of surviving, and in that ancient **cavern**, **Caver** felt wiser than ever.

(Story and illustration generated by ChatGPT)

