

## Good Phonic Generalizations for Decoding

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In his classic article, Clymer (1963) discussed his analysis of the utility of 45 phonic generalizations culled from four popular basal readers. He reported that only 18 generalizations met his minimum standard of 75% utility. Four decades later, Johnston (2001) suggested that neither Clymer nor any subsequent researcher offered “a useful guide to what needs to be taught.” This begs the question: If previous approaches yielded limited guidance for teachers, would a methodical analysis of the letter-sound relationships in a relatively large word corpus yield a useful guide? The following shows that, indeed, such a systematic analysis unveiled remarkable phonic transparency within the English language, and that these results may be written as generalizations that serve as a useful and comprehensive phonic guide for teachers.

### The Letter-Sound Study

This study began with the selection of 16,928 words from the Zeno, Ivens, Millard, and Duvvuri (1995) word list; these selected words occurred at least once per million running words in children’s literature, exclusive of proper names, slang, dialectical, contracted, abbreviated, and hyphenated words. In addition to studying the single letter-sound combinations within this list, the methodical examination included every possible configuration of two- and three-letter as well as many four- and five-letter combinations.

Limitations of the study encompassed the following: (1) The analysis included only the first occurrence of any particular letter or letter combination, such as the first *m* in *mom*; (2) The study excluded all vowel-controlled situations—*car*, *care*, *ear*; (3) The research included vowel digraphs that occurred a minimum of 100 times in the word list; (4) The report excluded the medial *y*, which occurred only 174 times in the Zeno et al. study; and (5) The researcher referenced the *American Heritage Dictionary* for pronunciation.

In all, the study identified 88,641 distinct phonic elements within 104 reoccurring phonic cells—the smallest independently functioning phonic units. Three of these distinct cells, for example, are found in the word *caught*: *c-**au**-ght*. Of the 104 cells, 64 represent primary cells and, as subsets of 18 of these, 40 represent secondary cells. The double *o* in *moon* is, for instance, the primary cell for the digraph *oo*; its secondary cells include the root word *foot* as well as the letters *ook* in *book*. (It is these secondary cells that largely shrouded the incredible fitness of the language.) As in this example, each targeted letter or letter combination is identified in bold, and the primary sound or sounds for each phonic cell is found in italics; if the sound applied to only part of the letter combination, only this is italicized: *city*, *gym*.

The 104 combinations aligned within just six categories of primary and secondary phonic cells, including three categories of vowels and three of consonants: (1) single vowels: *cat*; (2) vowel digraphs: *sea* or *see*; (3) final single vowel-consonant-e (-VCe): *ape*; (4) single consonants: *mom*; (5) consonant di/trigraphs: *chip* or *catch*; and (6) consonant phonograms: *action*. The study showed 11 unfit and 93 fit or transparent cells among the 104 cells. Only one unfit cell occurred repeatedly—the single vowel *o*, which appeared 3054 times within the word list.

Collectively, the other 10 unfit cells appeared in just 842 words; these 10 cells included the unfit secondary single vowel: **wa**; three unfit primary vowel digraphs: **ia**, **io**, **ou**; two unfit secondary vowel digraphs: **ien**, and **ood**; three unfit *-VCe* secondary cells: **-ile**, **-ine**, **-ove**; and one unfit cell from the primary consonant digraphs: **gh**. On the other hand, the three transparent categories of vowels combined showed a ratio of 20,720/22,565 letter-sound situations for 92% fitness; the combined fit consonant ratio showed 61,665/62,180 situations for 99% fitness. Of the 93 fit cells, only one—the *fy* in *defy*—fell below 80% fitness to 78%; nine cells fell between 80 and 89% fit; 83 of the cells, however, met or exceeded the stringent goal of 90% fitness.

### From Research to Phonic Generalizations

As implied, phonic generalizations usually, but not always, identify specific letter-sound relationships. Nonetheless, some teachers may prefer to insert the word *usually* into each generalization. With this in mind, the following highly transparent generalizations form a useful guide to understanding the six fundamental categories of the phonic code.

1. *Generalizations for the 12 primary and secondary fit single vowel cells (16,632/18,208: 91% transparent).*

The single vowels *a*, *e*, and *i* have their own short sound heard in *rat*, *pen*, or *pig* or the schwa sound; except final *e*, as in *bake*, and the phonic cells in *ball*, *nation*, and *night*.

*Note:* The schwa sound (*animal*, *kitchen/kettle*, *pupil*, *mucus*) along with the occasional syllabic *l* (*pedal*), are included in the fitness ratio for the single vowels but excluded from the sample words. The ratio for the single vowel *e* includes the schwa sound in final consonant-*le* (*little*), and the occasional short *i* sound (*pretty*). The ratio excludes *e* in inflected *-ed* word endings (*added*, *fixed*); and it excludes the *e* in suffixed *-VCe* words if a syllable is not added (*fined*, *machines*).

A single vowel *u* has its short sound heard in *bug* or the schwa sound, except the open *u*-consonant-vowel pattern, which has a long *u* sound as heard in *super*.

*Note:* The open syllable *u*-consonant-vowel includes the sounds in *numerous* and *popular* but excludes the prefixes *un* and *sub*.

When a single vowel *y* ends a word, it has the sound heard in *kitty*, except one-syllable words ending in *y* have the sound heard in *fly*, and words ending in *fy* have the sound heard in *defy*.

*Note:* The letter *y* is usually a consonant when it begins a word (*yard*), and a vowel when it ends a word (*happy*).

2. *Generalizations for the 18 primary and secondary fit vowel digraphs (3182/3403: 94% transparent).*

The first vowel is heard and the second is silent in the digraphs *ai*, *ay*, *ee*, and *oa* as heard in *nail*, *hay*, *bee*, and *soap*.

The diphthongs *au* and *io* have their respective sounds heard in *auto* and *oil*.

The digraph *ea* has the sound heard in *tea* or, occasionally, *head*.

*Note:* This generalization includes the sound heard in *deal*.

The digraph *ie* has the sound heard in *chief*; except the sound for *iet* heard in *diet*, and the sound for *ie* when it ends a one-syllable word, such as *pie*.

*Note:* This generalization excludes *ie* when these letters form part of an inflected final vowel *y* (*cries*, *cried*).

While the primary cell *io* is unfit, its secondary cell, *ion*, has the sound heard in *mansion*.

The digraph *oo* has the sound heard in *moon*, except the word *foot* and the sound for *ook* heard in *book*.

Words with *oun*, words ending in *ous*, or words with *ouse* have their respective sounds heard in *hound*, *famous*, and *house* or, occasionally, *rouse*.

The digraph *ow* has the sound heard in *mow* or *cow*.

3. *Generalization for the 12 primary and secondary fit final single vowel-consonant-e (-VCe) cells (906/954: 95% transparent).*

The first vowel has a long sound and the *e* is silent in words ending in single vowel-consonant-*e*: *cake*, *eve*, *bike*, *bone*, *use/rule*, except: (1) The cells *-ace*, *-age*, *-ate*, and *-ice* have their respective sounds heard in either *face* or *palace*, *cage* or *cabbage*, *gate* or *chocolate*, and *ice* or *office*; (2) The cells *-sive* and *-tive* have the sound heard in *massive* and *captive*; and (3) Words ending in *-some* have the sound heard in *handsome*.

4. *Generalizations for the 30 primary and secondary single consonant cells (56,723/57,157: 99% transparent).*

Fourteen of the single consonants are represented by the sound heard in the following words: *bib*, *fan*, *hat*, *jug*, *kick*, *lip*, *mom*, *nun*, *pop*, *rat*, *vet*, *wet*, *yak*, and *zoo*.

The sound in *cat* is heard for the consonant *c*, except that, when followed by *e*, *i*, or *y*, the sound in *cent*, *city*, and *cycle* is heard.

The sound in *gag* is heard for the consonant *g*, except that, when followed by *e*, *i*, or *y*, the sound in *gem*, *magic*, and *gym* is heard.

The consonant *d* has the sound heard in **dad**, except for *ed* in word endings which have the sound heard in either added**ed** or fixed**ed**.

The consonant *t* has the sound heard in **tot**, except the sound heard for *t* in **partial** and the occasional sound heard for *tu* in **nature**.

The consonant *q* has the sound heard in **queen** or **torque**.

*Note:* Although it is represented as a single letter, *q* is usually found within the digraph **qu** (**queen**).

The consonant *s* has the sound heard in **see** or, occasionally, **easy**.

The consonant *x* has the sound heard in **tax** or **exit**.

5. *Generalizations for the 15 fit primary and secondary consonant di/trigraphs (4123/4190: 98% transparent).*

Nine of the primary consonant di/trigraphs are represented by the sound heard in the following words: **duck**, **judge**, **sign**, **taught**, **knit**, **phone**, **ship**, **match**, and **wreck**.

The digraph *ch* has the sound heard in **chin** or, occasionally, **chemist**.

The digraph *ng* has the sound heard in **hang** or, occasionally, **change**.

The digraph *th* has the sound heard in either **thin** or **this**.

The digraph *wh* has the sound heard in **whip**, except for the words **who** and **whole**.

6. *Generalization for the six consonant phonogram cells (819/833: 98% transparent).*

The six consonant digraphs—**cial**, **cian**, **cious**, **tious**, **tion**, and **sion**—have the sounds heard in **special**, **musician**, **precious**, **cautious**, **action**, and **pension** or, occasionally, **vision**.

**Selected References**

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