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Louis Gates
Prosser Public Schools, Washington

THE CONSONANT GENERALIZATIONS REVISITED

Louis Gates
Prosser Consolidated Schools
Prosser, Washington

It has been over twenty years since Clymer published his pioneer phonic generalization study. In this study Clymer selected four widely used basal reader manuals from which he culled over 150 consonant and other word attack generalizations, including some that had been used without question from the time that phonic generalizations were first introduced by Noah Webster.

An examination of this large number of generalizations revealed a confusing situation. Clymer found, for example, "(1) statements (that were) to be taught to the pupils, (2) statements (that were) to be derived by the pupils after inductive teaching, and (3) statements (that were presented) with no clear indication as to what was to be done."

Clymer deleted the unclear and less useful generalizations which pared the number down to 45 which he studied in depth. The results of his study revealed that only 18 of the final 45 generalizations could be used to predict letter-sound relationships with at least 75% accuracy. However, many of these remaining generalizations were of limited usefulness because they represented at best a shotgun approach to describing the letter-sound relationship of the English language.

I recently scanned the manuals of several popular basal readers to see if the confusion that Clymer noted had been eliminated from the consonant generalizations. (The vowel generalizations were left unexamined because they have been examined elsewhere; moreover, most of the information is too new to have impacted the basal readers (Burmeister, 1968; Gates, 1983 & 1985). Surprisingly,

I found the number of consonant generalizations remains so large that they would be inefficient to use. Many of them continue to lack research to support their inclusion in reading programs. Consider, for example, the following generalization: "The letter b usually has the sound heard in big but it may be silent as in the word climb," While on occasion the second part of this "rule" holds true, an examination of the letter-sound relationships of b shows that it is silent so rarely that mention of the fact as a part of a generalization is questionable. As I more closely examined this and other suspect consonant generalizations it became evident that it might be useful to examine the letter-sound relationships of a relatively large word list and then to use the data gleaned from this to rewrite the consonant generalizations.

With this objective in mind, I used a computer to help analyze the consonants in 17,211 words from the Stanford Spelling Word List (Hanna and others, 1966). I first clustered the consonants into three general categories: (1) consonants that appear in specific letter combinations or phonograms such as tion in action; (2) consonant di/trigraphs such as sh in ship; and (3) single consonants. Next, I examined the first letter-sound relationships falling under each category for each word in the word list. Amazingly, as is shown in the table, I found only 681 unpredictable letter-sound relationships of the 60,781 individual ones that I examined! More importantly, the large number of "rules" noted above was reduced to three by generalizing the data found in the table as follows:

> Either one of two sounds is usually heard for the phonogram sion while a single sound is usually heard for the phonograms cious, tion, and tious.
>
> Either one of two sounds is usually heard for the digraphs ch, dg, and th while a single sound is usually heard for the other di/trigraphs which include ck, ght, -gn, knm ph, sh, tch, wh, and wr (except the unpredictable digraph gh, and the words who, whole, and their inflections).
>
> Either one of two sounds or set of sounds is usually heard for the single consonants g, s, and x while a

single sound is usually heard for the remaining single consonants (except the special sounds of c or g followed by e, i, or y; c or t followed by ai; and t followed by u).

Teachers and curriculum developers will find the three consonant generalizations much easier to manage than the numerous ones that they previously encountered. Moreover, these three can be used with confidence knowing that they predict the consonant situations with the almost unbelievable accuracy of 99 percent.

Table 1
Letter-sound Correspondence
for the Consonant Categories

Consonant Categories	Examples	Total Corpus Conformations/ Total Words with the Combination	Percent
	Consonant Related Phonograms		
cious	precious	40/40	100
sion	pension/vision	136/136	100
tion	action	772/784	98
	Consonant Di/Trigraphs		
CH	church/ache	528/568	93
CK	back	296/297	99
DG	judge	57/57	100
GHT	night	128/128	100
GH (exc. GHT)	unpredictable	50 words	--
-GN	sign	18/18	100
KN	knife	35/38	92
NG	along/strange	550/583	94
PH	phase	229/230	99
SH	ship	403/404	99
TCH	hatch	63/64	98
TH	both/although	552/561	98
WH (exc. who, whole, & exceptions)	which	91/93	98
WR	wrench	49/49	100

Single Consonants

B	bib	2246/2280	99
Cia	special	63/69	91
Ce, Ci, Cy (exc. cia)	city	1299/1311	99
C (hard)	cup	3344/3349	99
D	deed	3562/3636	98
F	find	1755/1758	99
Ge	age	373/422	88
Gi	magic	156/187	83
Gy	energy	82/82	100
G (hard)	go	1049/1056	99
H	hat	724/786	92
J	jug	233/233	100
K	kiss	621/621	100
L	lid	5791/5825	99
M	mit	1343/1343	100
N	not	6496/6503	99
P	pop	3267/3296	99
Qu	queen, liquor	258/258	100
R	roar	8323/8320	99
S	see, easy	5375/5453	99
Tia	initial	44/48	92
Tu	turn, nature	370/370	100
T (exc. tia and tu)	tot	6402/6458	99+
V	valve	1476/1476	100
W	with	529/540	98
X	tax, example	644/654	98
Y	yard	53/54	98
Z	zebra	255/267	96

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