

Reading and Science Instruction

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IV. College Students' Misspelling of Common Words

Introduction

As a teacher of college science I used to be disturbed at the time I spent on fundamentals, such as reading, writing, spelling and arithmetic. I have corrected thousands of errors in grammar and composition and perhaps millions of spelling mistakes. After more than twenty-eight years of correcting college students' papers, I am no longer excited when I see a split infinitive. A new sentence begun with a lower case letter does not affect my blood pressure nor do such misspellings as *ginny pig*, *blud* or *nerse*.

Because I know the importance of proper English to a citizen, a boss and an employee (9), I am deeply concerned about the unfortunate young people who write these errors, especially since spelling seems to be getting worse (1, 17) and our education seems to be generally deficient. (5, 7).

Colleagues often ask why such concern in a science teacher. The answer: Unless students in science can read and understand their texts and references, they cannot master subject matter; unless they can explain orally and in writing what they have heard, seen or read, they cannot gain all the benefits of courses in science. Besides, many writers feel that every teacher should be a teacher of language. "Spelling is a perennial problem and the . . . 'demons' must be taught in the elementary school, reviewed systemically both in high school and college. (All teachers) must share the responsibility for the college student's ignorance of the spelling of common words." (17)

"Many school teachers feel that they should not teach reading. They do so only because (those in the grades lower than theirs) . . . failed to do a good job In my opinion, we shall never develop adequate reading programs until there is whole-hearted recognition that (reading) is the responsibility of every teacher in every field, at every level

. . . through (to) the graduate school . . ." (10; italics mine).

One must go further. College teachers must help students "un-learn" errors; they must purge bad writing, and teach youngsters to spell as well as to add, subtract and multiply. College students bring so many gaps in tool subjects—which they should have mastered in school—that they leave too little time for creative science teaching in the subject matter of college science.

Poor reading, poor spelling and poor college work are closely related (24). In college classes, there are too many poor readers and poor spellers, and too many students who cannot pronounce a word of more than three syllables. If pupils have been taught to read well, orally and silently, they will, when they come to college, get much more of the effort of the science teacher.

Experiences in science should make students better citizens, broaden their outlook, prepare them for vocations and perhaps give some that peculiar exhilarating experience called *inspiration*. But one cannot inspire illiterates with a book—certainly not with a science book. It is hard to motivate poor readers. So is it with poor spellers. When they read, they do not understand or recall; and they cannot transmit well in writing the information they should have learned. Hence, they shun the science courses, for they are afraid of the "new" words, the "big" words, and the "hard" words they cannot read, pronounce or spell (17).

The Problem

Flesch, in his controversial book (11) suggests that "reading and spelling are two sides of the same (coin) and the trouble starts as soon as you try to separate the two. The *only correct way to teach reading* (successfully) *is by teaching spelling at the same time.*"

Poor readers often are poor spellers, and

as the reverse is also true (24), poor spellers cannot benefit fully from science textbooks, nor can they use with proper benefit the classic sources, nor read worth-while science books. They are thrilled by films of Pasteur's life and researches, and they read comic books with enthusiasm, but they refuse books like Radot's "Life of Pasteur," deKruif's "Microbe Hunters," Sears' "Deserts on the March," and many others, which are fascinating to a good reader.

Because of their reading deficiencies, most students feel that all science books are too difficult. If they are persuaded to read a book, they get very little out of it. It seems clear that these related problems need urgent attention, especially when the less interesting textbooks are really difficult to read (26).

Materials and Method

For twenty-six years I have kept records of college students' misspellings. During this period I have taught about 7000 students in a variety of science courses in the field of Biology.

This paper deals with misspellings of 440 words found in Thorndike's list of 10,000 common words (18). These belong to everyday speaking, reading and writing, and should be in the vocabulary of every citizen who has had any schooling. No biological, technical or foreign words are included.

Most of these words have been misspelled by 300 different students or more, (not merely 300 times); some have been misspelled by 400 and many by more than 500 college students.

In the alphabetical list below, the word meant is given first; following it, in parentheses, are some of the most frequent misspellings. Though the printing of errors may be criticized, this list is justified, if it will call attention to the glaring errors. Teachers who know of these mistakes or understand why they are made, should help to improve the spelling of other students who wish to attend college.

List of words, each misspelled by more than 300 college students (1931-1955)

<p>A</p> <p>ability (bility)</p> <p>abdominal (abnomial; adbominal)</p> <p>absence (absents, & vice versa)</p> <p>absent (absence)</p>	<p>absorb (aborb; adsobe)</p> <p>absorption (absorbation; absorption)</p> <p>access (excess)</p> <p>acid (asic; acit)</p>	<p>active (atvie; actrive)</p> <p>afflicted (ficted)</p> <p>against (agance)</p> <p>alcohol (aklohol; alcholahol; acholo)</p>
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Misspellings Omitted

Omitted from the list are obvious slips of the pen, such as the omission of a letter or the accidental switching of letters: for example, if *thraot* occurs in the early part of a report but *throat* thereafter. Though teachers should continually correct slipshod writing and careless spelling,—for they may impair the communication of ideas—they need not be perfectionists (19) or they may miss the forest while counting the trees.

When I first met the word *eathworm*, I felt that my students had omitted the *r* accidentally. However, several scores of other students frequently leave out the *r*, and convince me that they have not really learned to spell this word. This is a reflection on their powers of observation and on the kind of teaching they have received.

I have omitted hundreds of other words misspelled by students who failed my courses. Since a failing pupil may be deficient in ability, preparation, intelligence and personal persistence—the will to learn—he may write misspellings of common words known and correctly used by other students. (Also, many students did not pass my Biology courses because their spelling was outrageous—I can think of no better adjective.) Hence, though many spellings here listed are clearly "illiterate" (20), they were written by students who were able to satisfy me in subject matter. These errors deserve attention, for they are probably due to such factors as carelessness, inattention, wrong instruction or lack of instruction. Such weaknesses adversely affect the school, the college and the nation.

Findings

In preparing my list, I used two references, Thorndike's *Teacher's Word Book* (1927) and Gates' *Spelling Difficulties in 3876 Words* (1937). These two books deal with our common vocabulary and with words used in the grades; misspelling of such words seem therefore inexcusable in college students.

almost (allmost)
 alligator (aligator; allagator)
 alphabet (albeth)
 already (allready; alredy)
 always (allways)
 among (amoung)
 analysis (analasis; analisis)
 ancient (acient; anceint)
 angel (angle and vice versa)
 animal (anamal; aminal)
 answer (anser; ancer)
 apparatus (apperatus; apporatus)
 apparent (apparant)
 appetite (apetite)
 apt (ape)
 arctic (artic)
 are (or; ar)
 anticipate (antisipate)
 around (arond)
 arm (alm)
 artisan (artesian)
 artist (artest)
 atmosphere (astospmere)
 ascend (assend; accend)
 attach (attatch; attack)
 attachment (attacment)
 author (auther; arther)
 available (avaiaibl; available; availi-
 able; available)
 awkward (akward)

B

banana (banna; bananna)
 beauty (buety)
 beef (beaf)
 behavior (behavier)
 being (bean; beign)
 belief (beleif; beleive)
 believe (beleive; belive)
 blood (blud; bood)
 bleed (blead)
 blossom (blosom; blossum)
 body (boddy; boby; boley)
 boiling (boilding)
 botany (botamy; banady)
 brain (brane; bain; brian)
 brake (break)
 bran (brand)
 brand (bran)
 break (brake)
 breakfast (breakfuss; breakfusses)
 breathe (breeze; breads)
 brittle (brickle)
 broken (browken)
 bulb (blub)
 buried (burried; berried)
 burst (brust; bust)
 business (buisness)

C

canal (cannal)
 calendar (calandar; calender)
 capacity (capasity; compacity)
 camphor (camfer)
 carriage (carrige; carraige)

cannon (canon)
 carrot (carot)
 careful (carefull)
 cause (casze; course)
 ceiling (cieling)
 central (central)
 chamber (chamble)
 certain (sudden; certain)
 chemical (chemisal; chemity)
 cheek (cheak; cheeck)
 circulation (curculation)
 chest (chesk)
 circle (curcle; curcue)
 color (colur)
 comb (cone; come)
 combination (combanation; com-
 bantion)
 coming (comming)
 complete (complate; compleat;
 complet)
 completely (completly)
 compound (commpound; coum-
 pound)
 concern (consum; consern)
 condition (condiction)
 continuous (contineous)
 copper (cooper)
 coral (corral)
 corpse (corps)
 curve (curbl; cerve)
 creation (ceration)
 cylinder (cilender; cilinder)

D

dangerous (dangerious)
 deaf (deaft)
 decide (deside)
 deer (daer; deers; dear)
 definite (definate; definiate)
 descend (decent; decend; desend)
 describe (decribe; discribe)
 destroy (destory; destroye; dis-
 troy)
 develop (divilop)
 dew (due)
 different (distant; diffrent)
 diagram (digram; dragram)
 dining room (dinning room)
 digestion (dijestion)
 disease (diseadse; diasis; desease;
 diaese; diesease; diese; dease;
 desicse; diease; diaeses; deases)
 discover (decover)
 distinction (distinguishion)
 divine (devine)
 doctor (dockler; docter)
 does (verb) (doese)
 distinguish (destinguesh)
 do not (donot; dount)
 dose (does)
 double (dubble)
 drawer (draw)
 dropped (droped)
 drunkard (dunker; drunker)
 due (dew)

during (durning)
 dwarf (dwaf)

E

earthworm (eathworm)
 easily (easshy)
 effect (efect)
 eggs (egges)
 else (ealse)
 energy (engry; engery; energe;
 enegry)
 environment (invirment; envori-
 ment; envirement; envoirement;
 invirement; envirenment; en-
 virement; invirenment; envier-
 ment)
 enough (enought)
 everybody (everbody)
 etc. (ect.; and ect.)
 evaporate (evaperate; vaperate)
 evidence (everdence)
 everything (everthing)
 existence (existance)
 exist (exzest; exist)
 explanation (explanation)
 experiment (expirement; experi-
 med)
 eyelid (eyelead)
 extreme (extreem; extream)

F

face (phace; phase)
 factories (facteries; factorys)
 family (famaly; famly; fambly)
 false (flase)
 father (farther)
 familiar (fimiliar)
 feeble (feable)
 farther (father)
 fertilize (fertilize; fertillce)
 February (february)
 fifteen (fifteenth)
 fern (furn; firn; firm)
 fever (fevor; feaver; feavor)
 finally (finially; finely; finly)
 find (fine)
 fine (find)
 first (frist)
 floating (flotting; flocking; flow-
 ting)
 flour (flower)
 following (follering; floowering;
 folloring)
 food (fod; foot)
 foreign (frogein)
 forth (force)
 front (frount)
 fruit (frute)
 function (funcation)
 fundamental (fundimental)
 funnel (funal)
 furnish (furnush; funush)

G

gall (gaul; gual)
 gape (gap; gaps)

gas (gass; gase)
gelatin (jellin)
gentleman (gentlman)
geography (goeography)
gland (gand)
goes (goze; gose)
graduate (gradurate)
grateful (greatful)
guinea pig (ginny pig)
growth (groth)

H

hair (hare)
handle (handel)
heel (heele)
heifer (herdphor)
heredity (hederity)
high (heigh)
hind (hine)
horizontal (horizone; horizontal;
horizionial)
human (humman; humann)

I

idea (idear; ideal)
ideal (idea)
if (iff)
importance (impertance)
impulse (impluse)
impossible (imposible)
incidentally (insidently)
individual (individual)
injury (enjer)
intelligent (intellegent; intelli-
gence)
internal (enternal)
intestine (intestants; intestances;
intestion; intastance; intest; in-
instenial)
iodine (idine; idoine; idone)
iris (irish)
irregular (irregital)
island (iland)

J

January (Januery)
jealous (jelous)
judgment (judment)
juice (jusice; jusic; juicies)

K

kidneys (kindnys; kindys)
knee (nee)
knowledge (knolodge; knolege)
known (none)

L

label (lable)
laboratory (labratory)
lead (metal) (led)
larynx (larnyx; lacaryx)
length (lenght)
leaf (leafe)
library (libary)
lens (len; lense)
liquid (liquard; liquod)
lion (loin)

loin (lion)
living (livining; liveing)
lost (loss)
loss (lost)

M

machine (mechine)
male (meal; mail)
marrow (merrow; moral; marol)
many (maney; meny)
material (meterial; matherial)
measure (mersure)
meat (meet; mete)
member (menber)
mineral (meneral; mineral; min-
earl; minerol)
mixed (mixtured)
modern (moden; morden; mod-
ren)
morsel (morsal; mosral)
muscle (mucile; muscule; muscel;
muskle)

N

needle (nedde; neddle)
neck (kneck)
neither (niether)
neighbor (nabor)
nervous (nurvous; nervous)
nerve (never; nurve)
niece (neice)
nine (nin)
nineteen (ninteen)
ninth (ninth)
nipple (nipper)
notice (notis)
nostril (nostral; nostrage)
numerous (numbrou; numberous)
nurse (nerse)

O

oil (iol; oll)
operation (oparation)
opposite (object; apposite)
or (are; ar)
origin (orgin)

P

pail (pale)
palm (plam; parm)
parasite (parsite)
peanuts (pennuts)
pen (pin)
pencil (pencle; pincle)
perforate (perfurate; perferate)
perform (preform)
pigeon (pigion)
pin (pen)
platelet (playlett)
planet (plant; plantes)
pollen (polen; polan)
poison (poisen)
possible (possiable)
position (proposition)
powerful (powful)
pregnant (preganant)

prejudice (predjist; prejdist)
presence (presents)
pressure (preasure)
pretty (pritty)
priest (preist)
privilege (privelege; priviledge)
problem (ploblem)
proboscis (probasic)
pumpkin (punkin; pumkin)
pulse (pluse)
pupil (pupel; puple)
puncture (puncrate)
pursuit (persute; persuit)
purplish (purpish)
pyramid (prymid; pymarid)

Q

queer (quear)
question (qustion)

R

receive (recieve)
recessive (ressive)
reddish (redish)
resistance (resistance)
response (responce; responds)

S

sack (sak)
scene (schene; scheme)
sanitary (sanatary)
scissors (sissors)
science (sience)
search (serch; sertch)
scurvy (scurvery; scervy; scury;
curvey)
seize (sieze)
seen (seened)
sensitive (sensative; senctive;
sinitive)
seacoast (seacost)
serious (serous)
separate (seperate; separate)
several (serval)
shaft (shelf; shaff)
sheep (plural: sheeps)
shining (shinning)
shook (shooke)
shoulder (sholder)
shows (showes)
silver (selver)
similar (similar; similar)
simpler (simplier)
six (sex)
skeletal (skeletive)
sketch (seatch; scieth)
snail (snell; snale)
soluble (soluable)
something (somthing)
son (sun)
source (sourse)
specific (spefic)
specify (spefy)
specimen (specimens; specman)
spread (past tense: spreaded)

spherical (sperical; spericle)
 stem (stim)
 spleen (splene; spleem; splein)
 stomach (stume; stormach; stomach)
 starch (starh; strach; stach)
 strategic (stragetie)
 straighten (streighten)
 strength (strenght)
 stream (stroom)
 strength (strenght)
 structure (sturcture)
 studied (studyed)
 studying (studing)
 substance (subsance)
 successor (successer)
 sun (son)
 sum (som)
 surface (serface; sulface)
 surrounded (surrendered)
 sweat (sweet; swet)
 swallowed (swallard; swalled)
 system (system)
 symbol (assemble; semble)
 symmetrical (symetrical)

T

talent (talant)
 tears (tiers)
 task (tass)
 temperature (tempature; temper-
 ture; temperature; tempture)
 temple (temper)

temporary (temperery; temper-
 ary)
 theory (thero)
 there (their; thene; thier)
 thigh (thie; theigh)
 think (thing; tink)
 thirty (thrity)
 thistle (thissel)
 throat (thraot)
 thought (though; throught;
 thought; throught)
 Thursday (Thrusday)
 through (throw; throught;
 thourgh; etc.)
 tiny (tiney; tinny)
 thus (thrus)
 tongue (tong; tung; tounge)
 together (togeather; togather)
 tough (tuff)
 towards (towarge)
 trachea (trecaker)
 transparent (transperent)
 travel (travil)
 true (ture)
 truly (truely)
 tube (tub; twbe)
 turned (turnt; turnd)
 turnip (turnup; trunus)
 two (tow; too)

U

until (tell; untill)

V

various (vary)
 ventricle (venery; ventural)
 veins (vain; vaint; veines)
 vessel (vesseal)
 vertebrate (vertibrate)
 villain (villian)
 vice versa (vice virus; visca verca;
 vise versa)
 voluntary (volinatory; volintery)
 volume (volumn; volum)

W

waste (waist; wase; wess; west)
 wax (wask; wasck)
 week (weak)
 weak (week)
 weather (whether; wehther;
 wether)
 wharf (warf; worf)
 wheat (weat)
 where (were; whear)
 whole (hole; hold)
 whether (weather; wether;
 wheather)
 which (wich; whitch)
 womb (wound; woum)
 whose (who's)
 would (wood)
 wrist (wriste; wist; risk; wrest;
 wraist)
 writing (writting)

Discussion

The literature is full of evidence that college students do not read, write or comprehend printed material as well as they should. This study proves that they can not spell either. High School textbooks of English have rules for spelling, for making plurals and for hyphenation; college books list "frequently misspelled words,"—one (21) has over 600 words—yet many college students are still "Linguistic Delinquents" (5). Unfortunately, college faculties seem to be immune to this deterioration.

Businessmen know that the ability to read and spell are valuable. An illuminating episode is related in a pamphlet published by General Electric.* The top engineer telephones: "I have before (me) . . . a brief report from one of our young engineers. I have to guess . . . what the fellow is driving at. I am no English shark, but I find myself getting a little angry when I see four sentences tied into one with

four commas. He has *principle* for *principal* and he has also misspelled *accommodate* and *Cincinnati*. What if some of this fellow's bad sentences get into the hands of our customers?" When an executive of a corporation which makes "diesel locomotives, turbines, generators, jet engines, refrigerators and 200,000 other electrical products," considers English and spelling vitally important, then it is time that teachers too begin to pay attention.

I have pondered over my long list, studied the literature, have had conferences with teachers and with the young people themselves, and feel that many factors lie at the root of this problem and contribute to poor spelling. The following are probably important.

Factors Which Probably Contribute To Poor Spelling

1. *Not Enough Drill.* School children are kept busy doing projects and participating in many kinds of activities. They raise money, put on programs, and develop rounded personalities, it is claimed, but many grow up

*"G. E.'s Answer to Four Why's." Form PRD-45, page 6.

with wooden heads. Unless teachers resume intensive spelling study, and do remedial spelling and reading (7a; 13a) they are likely to make us a nation of illiterates. (When I find a "howler", I find out if my student really cannot spell his puzzler. In most cases, he first tries to substitute another word (17), but I make him stick to his word, "dissecting" it, explaining its derivation, or breaking it into syllables (13a). He then writes out the correct spelling ten or twenty times; after this, he is checked again. To be sure, a science teacher cannot afford to spend too much time on drill: he would teach no science. But he cannot accept careless reading and poor spelling. Science is too exact for that.)

2. *American Inventiveness*. Originality and shortcuts have played havoc with spelling. Streamlining has helped in transportation; job analysis and the work of efficiency experts have revolutionized living, but there are the concomitant evils of words like "thot," "thru", "nabor", and even such horrors as "Jaxnville" (Jacksonville). Teachers of the sciences must not tolerate such nonsense.

American culture is infected with a national disease, "sloganitis". Most slogans are puns or clever witticisms; some are homonyms; all are deadly for the young mind, which learns more out of school than in, for our schools now seem not to demand hard work (16a). Young people who are learning to read or are having spelling and reading troubles meet repeatedly such words as "Korn Kure", "All Nu", "Glo Cote", "Hi Fi", "Gleem", "Kwik-Chek", "Kannon Ball Xpress", "Filter Flo", "All Rite", "Champeen". To make matters worse, many slogans are accompanied by the magic letters, "Reg. U. S. Pat. Off."

3. *Many Teachers Feel that Spelling Is Not Their Responsibility*. Some even feel that spelling is "not important enough for a college teacher to waste time on." These are dangerous views. The student who writes *there* for *their* or vice versa is interchanging words he can spell (16). Obviously, his teachers must point out these differences and also distinguish between *two*, *too*, and *to*; *hare*, *hair*, *here*, *hear*, and *heir*. They must also identify the common blunders in words such as *receive* and *separate*. If the grade teacher does not, the high school teacher should; if she does not, the college teacher

must. But if no teacher assumes the responsibility, then the student will have to learn out of school, teach himself, or become a statistic in our national illiteracy score.

4. *Widespread Use (And Abuse) of Objective Tests*. Colleges now accept from schools and send out as graduates hundreds of young people who have passed tests by filling out blanks, matching words or writing T or F beside a tricky statement. On an objective test, a person follows the thinking of the test maker, unravels a problem, makes a reasoned choice, or sometimes guesses; but he does not explain his train of reflective thinking, nor express any creative thought he may have had. Many have therefore never learned to think, nor to realize that they can think. Though accumulating a considerable amount of knowledge, most have never learned to write a good sentence nor to spell common words. *This is serious*, for as the school population is rising and schools will for some years continue to be overcrowded, there will be an increase in the use of objective tests. This means fewer essays and themes, less exposition, poorer reading, writing and spelling. The prospect is depressing.

5. *Incorrect Public Notices*. Too many signs are put up by ill-trained, near-literate or illiterate persons and by "the authorities". These engrave errors in young minds. Some notices have words which sound right when read aloud; some have letters interchanged (as are so many misspellings reported here); some have letters missing or wrongly duplicated; some have bad grammar. I recall huge painted letters in front of a school: "Shool-Driv Slo". It is almost impossible to convince an adolescent that such a sign, or the misspellings on a movie marquee are wrong, for advertisements are more respected than teachers.

6. *Carelessness and Laziness*. In spite of the impressive terminology in the textbooks, even the young people themselves admit that the school curricula do not challenge them. Mass education has become mis-education. "High School . . . (is) marked by academic non-competition. There isn't an area in which scholastic competition is practiced; even an honor roll is absent (16a)." Too lazy to think, the victim of social promotions, spoon-fed with diluted, superficial stuff, the school

graduate comes to college without practice in painstaking work, with no desire to do more than "get by", and with a sneering attitude towards learning for its own sake. When the work becomes hard, he is surprised to discover that he has never learned to study, but has caught over the years habits which are now a part of him.

7. *School Emphasis Is On Reading (Not Spelling)*. According to Gray (22), the older emphasis in the teaching of reading was on the "mechanics of word recognition" and on reading aloud. Later, as the importance of silent reading and of comprehension was recognized, the purposes of reading instruction were increased, the terminology made more difficult and more inclusive and the technical inferences more refined. But the fact that numerous conferences were called—some with alarm—suggests that there were and are weaknesses in the theories, the newer methods, and the teachers who implement these ideas. In spite of these efforts, many still feel that the American people (and college students) are becoming poorer readers and poorer spellers. In as much as the give-and-take of communication demands spelling, one wonders why it has been disregarded.

8. *Reading Techniques Often Conflict With Ideas of Teaching Spelling*. Some methods in teaching reading suggest that spelling is a horrible scheme to delay the progress of the pupil who has reached the "readiness stage". Since pupils are taught to read whole words and to read for context and comprehension, they pay no regard to the syllables which make up the words, nor to the letters which make up the syllables. The experts claim that letters and syllables only delay reading, for the pupil sees a whole word and its configuration—not its letters. Results of this are the misspellings noted above, such as *acid* (asic), *animal* (aminal), *answer* (ansner), *arm* (alm), *bulb* (blub), *brain* (brane), *comb* (cone), and *oil* (iol). Students taught to read by "the total communication process" indeed have no regard or respect for letters or syllables.

The logical next step in the "total communication" dictum is that one reads a phrase without seeing the words in it; then, a good reader reads a sentence without bothering with the phrases, and a paragraph without

attention to sentences. Finally, perhaps, an expert reader "gets" a whole page without reading the paragraphs. Some college students carry this to an absurd conclusion and read their assignments without opening their books (24). "Current practice in the teaching of reading does not require a knowledge of letters" (4). Some experts suggest that the child need not know the alphabet,—and a few college students do not. No wonder they cannot use the index in a science book. A shocking, but revealing observation arose when a student was referred to an unabridged dictionary to look up *diarrhoea*. The student turned to the end of the dictionary, then after some minutes of fumbling lamely admitted that since he could not spell the word, he could not use the dictionary.

Flesch reports (11) that certain experts suggest that young readers play a kind of guessing game. A glance at the list published here shows that this game is a dangerous one. If these ideas thrive, our science will continue to deteriorate. College teachers can testify to this right now, and the data presented here strongly support this conclusion. Our poor speller does not see words correctly; his mental images of even familiar words are blurred, and as he often does not hear the words properly pronounced, and he has never really examined them (25), he "omits, adds or transposes letters, and . . . confuses one word with another (23)". No wonder the poor unfortunates have spelling, writing and reading difficulties, which make them unable to understand what they read or to express themselves well on paper. No wonder too they shun science courses like the plague.

9. "Let's Go." Everybody is in a hurry: even the instructor teaching a class to read. To give scope to all the phases of the modern curriculum, he cannot find enough time for drill, accuracy, neatness and the other "old fashioned" attributes; schools and colleges must now give a quick look and a superficial smattering. There is not enough time for "solid" knowledge; and there is little or no depth or mastery of subject matter.

This characteristic superficiality shows up when beginning students examine their own blood or an amoeba under the microscope or observe a hookworm or a tapeworm. Usually, after one brief glance and an "oh", the aver-

age student is satisfied. He sits back and lets the blood dry up, or allows the amoeba to creep away; yet he may have never seen these before. Only a few will patiently examine what they have, or will try to see more than the superficial or the minimum.

10. *Excessive Use of Visual, Audio-visual and Other Aids.* The phonograph, tape-recorder, sound film and television have played great roles in expanding the world. But these have at the same time decreased our spelling, writing and speaking abilities. We are becoming a nation of listeners and lookers-on. It is much easier to attend a "talkie" than to read a book. The silent movie challenged its audience to read; but television and the talking films "spoonfeed" the student so that, though he may hear a word often enough, he does not see it written or printed, nor does he need to write it.

A class viewed a film on peristalsis after covering the topic. The film explained the ideas excellently. The questions asked and the discussion that followed the screening proved the success of this audio-visual aid to instruction. But, when absent-mindedly, the teacher wrote "Peristalsis" on the blackboard, students asked to have the new word pronounced. One asked its meaning. Yet they had heard it many times and had themselves used it acceptably in the class discussion.

11. *Submission to the "Norm".* Writers of textbooks, committees of learned societies and teachers often allow the pressure of their environment, widespread but incorrect usages, pronunciations and queer accents to sway them. Some language texts even suggest that pupils should not be corrected for saying, "between you and I", "who do you want?" nor for spelling words such as "thoro", "thru" and the like. Comic books and popular literature carry such words as "Keerect", "Sez-you", "okay". If we are to educate, we must, in the words of St. Paul, *transform* rather than *conform* to the popular.

When Kinsey and his colleagues reported findings on the behavior of the human male (14) and female (15), many readers, failing to recognize the factual reports of the *status quo* in samples of the population, criticized the researchers for popularizing evil. Others used the findings to justify their actions. *Ipsa*

facto, popular usage, even in as living a thing as a spoken language, should not be accepted as correct, merely because it is widespread. "Sin" is perhaps the most common of human experiences, but Christian standards, ethics and ideals must never be lowered. So with the standards of language and spelling: teachers must accept and respect these standards and instruct their pupils accordingly.

Thorsten Veblen (1857-1929) in his "Theory of the Leisure Class" blasted conventional spelling as "archaic, cumbrous, and ineffective; its acquisition consumes much time and effort;" but in the same book he honors spelling as a "mark of respectability," and admits that "failure to acquire this (badge of culture) is easy of detection." Veblen himself, in all his writing, did not digress from conventional spelling.

12. *Cheating.* Concerned teachers note with distress the spread of classroom cheating. There is no longer much value to an honor system. Teachers wink at cheating and remark that the pupil needs help anyway. Writers of textbooks apparently accept cheating, the use of "ponies," and the theft and sale of examination questions as inevitable as taxes and death. They throw up their hands and do little to stop the trend. If a child is asked to spell a word, he looks up while a classmate finds the word and whispers it. If a student refuses to give help in an examination, he has a hard time with his fellows. Some pupils will brazenly read answers from an open book during recitation, and most teachers now accept the situation in despair or with a shrug of indifference.

13. *Poorly Paid, Poorly Prepared, Uninspiring Or Disinterested Teachers.* Many teachers today have not themselves learned to spell some common words, and so must accept whatever the pupil says; some cover up ignorance by advising: "Say Jerusalem and go on." Thus schools become bureaux of misinformation. Atkinson (1) reports that a mother withdrew her child from the seventh grade when she discovered that the teacher had barely finished the fifth grade.

14. *Loss of Interest in Letter Writing.* (12). New, dramatic ways of communication have made writing less popular than ever. One is advised not to write but to telegraph. Al-

most any store offers cards with messages already printed. All one needs to do is mark crosses in the appropriate squares, and sign. Birthday and holiday greetings can be telegraphed by index numbers, and instead of the cordial, personal, handwritten "bread-and-butter note," one can now send a pretty, printed "thank you" card.

One solution seems to be that schools must get pupils to write more letters, more essays, more themes. Teachers must be willing to read through pages of "stuff", so as to help students learn to spell correctly and to express themselves.

Inferences

As a basic part of communication, spelling is important. "Poor spelling is the defect most frequently noted in so-called educated persons." (9). The person who is uninterested in spelling, and treats it only as an educational achievement or a social attribute, becomes violently critical of the schools if he finds that the bad speller is his secretary, his typist, his child or some member of a group doing work which has to be seen by the public.

Spelling is important and the evidence presented here shows that our spelling situation is deplorable.

Spelling and reading are essential to communication, but as now taught in the schools, have unfavorable influences on the teaching of science in the colleges. It seems that even though this is an Age of Science and Technology, *the schools develop a fear of science in young people by the way they offer instruction in communication.* Educators have pointed out that the number of pupils attracted to science is not enough to supply today's needs and will soon fall below tomorrow's requirements. The bad situation is worsened when high school graduates come to college with the serious deficiencies they now have. They are frightened away from science. College teachers of science must therefore take the responsibility "for the recruitment and preparation of the high school teachers of science (2)"; they must take the initiative in attracting youngsters to the field of science. These tasks they must do if our supply of scientists and technologists is not to dry up; these they must do, if America is to remain strong and free.

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