Learning Morse Code as a Language

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Section I. - Introduction

The purpose of this document is to provide an overview of a unique method for teaching and learning Morse code. Learning Morse code as a language is a teaching and proficiency improvement method developed by WØUCE that enables students to send, hear and understand letter combinations, words, phrases and complete thoughts in Morse code by their unique sound and rhythm versus traditional methods that require memorization or concentrating on individual letters. This alternative is highly effective as students learn to immediately recognize and understand Morse simply by sending and listening. There is no need to write or type anything as students learn to copy by ear and understand Morse code as a language.

The method, tools and references listed herein are also applicable for those who have some degree of proficiency in using Morse code but want to increase proficiency, speed and overcome problems with receiving or sending. As with all teaching methods, the degree of success in learning or improving Morse code proficiency is dependent on the amount of dedication, perseverance and practice students invest in learning.

Section II. – Learn Morse code just as toddlers' learn English.

Children learn to understand and speak their native language during their first two years of life. During the second month of life infants start making random sounds then start to babble and by month four to five random sounds become real words; "mama" and "dada" are typically the first words infants speak as parents typically repeat these words to off springs. Between years one and two infants repeat and associate single words they as hear them a quickly migrate to combining short words into two and three-word phrases. Infants learn, retain and associate word meanings by sound and some may learn as many as many as five or more words a day especially those who have parents that spend time teaching their child word sounds and associated meanings.

In similar fashion, simple single words are used when training dogs; "sit, stay, wait and outside" are typical of the first words dogs learn to understand by associating the sound of a complete word with an action or desired command. With word association training there is little doubt that dogs could learn the command "Sit" in Morse code as easily as the spoken word.

Section III. WØUCE's teaching method

The WØUCE teaching method enables students to use Morse code as a language from day one through the end of a training period which averages eight weeks depending upon the amount of time devoted to learning. The method starts by teaching students to hear and recognize just three letters T, E & A then immediately progress to two letter combinations and words, three letter combinations and words and on to short phrases, longer phrases and complete sentences. Students learn to hear, recognize, understand and retain what is being sent without need for paper or pencil to write anything down thus they become conversant in Morse code at a faster pace than other teaching or self-learning methods.

Students start learning at a 20 word per minute minimum speed with standard spacing and the speed which is increased in small increments. Most students become proficient in receiving and sending Morse code in the 25-30 wpm range in sixty-days or less. Individual success is based on several requirements:

- Students must have a sincere desire to learn and become proficient in receiving and sending Morse Code
- Students must dedicate themselves to two 30 minute interactive training sessions per week
- Students must commit to at least three ten minute homework practice periods a day, seven days a week
- Students are encouraged to forget and ignore previous learning methods they may have tried

Learning Morse code as a language eliminates the agony of memorization, counting dits or dahs and frustrations associated with slower Morse code teaching methods. Students learn to receive and send on an interactive basis just as toddlers learn to converse and therefore immediately use Morse as a language which prevents and overcomes a number of common problems and frustrations associated with slow speed, letter by letter learning. Sending and receiving share equal important in this teaching method.

WØUCE's method incorporates all of the elements listed below:

Character component sounds (T)
Character component length (E)
Character and word spacing (T E)
Unique letter sound (A)
Unique letter rhythm (T E A)
Unique letter combination sounds and rhythm T, E, A
Unique word sound and rhythm Tea
Minimum 20 wpm character speed
No extra spacing between letters
Copy only by listening
Copy entire word before speaking and sending
Gradually increase speed without telling students
Sending letter sequence One
Receiving letter sequence One
Double letter combinations
Three letter words, phrases, QSO Text, Note Taking

Determine problems, objectives and goals
Forget prior teaching methods
Character speed and spacing by individual
Unique Letter Sounds
Unique Double and Triple Letter Sounds
Learning to listen to what is being sent
Letter Number Combinations (Callsigns)
Copying words, phrases and sentences by ear
Copying behind prevents anticipation
Note taking with pencil and paper
Using QSO and Contest Logging Programs
Sending techniques: Hand Key, Bug, Keyer
QSO Conversation
Chasing DX
Contest exchanges
Overcoming Speed Plateaus

Learning Morse as a language also improves proficiency for those with experience but may have problems to include what I refer to as "The Dirty Dozen." Refer to details on Page11.

Section IV. Letter teaching sequence

In order to learn Morse as a language, students must first learn three individual letters however, the letter teaching sequence used in this teaching method is based on the most common letters by frequency of use in English language:

• Letter Sequence One: T,E,A,O,N,I,R,S
• Letter Sequence Two: H,D,L,U,C
• Letter Sequence Three: M,W,F,Y,P,G,B,V
• Letter Sequence Four: K,J,X,Q,Z

English language letter usage combinations
Most frequently used first letters
T, A, S, O, I, C, W, P, B, F, H, M

Most frequently used last letters
E, T, S, D, N, R, Y, O, F, L, A, G

Double letters by frequency of use
ll, ee, ss, tt, oo, mm, ff, pp, rr ,nn, cc, dd

Most used two letter combinations by frequency of use
th, he, in, er, an, re, on, en, at, es, ed, te, ti, or, st, ar, nd, to, nt, is, of, it, al, as, ha, ng, co, se, me, de
Note: The thirty most frequent digraphs comprise one third of all letter usage

Digraph reversals by frequency of use
er-re, es-se, an-na, it-ti, on-no, en-ne, ot-to, ed-de, st-ts, at-ta, ar-ra, in-ni

Trigraphs by frequency of use
the, and, tio, ati, for, tha, ter, res, ere, con, ted, com, hat, ent, ion, nde, has, ing

Letter, Group and Word teaching Sequence:

SEGMENT ONE: T E A O N I R S

LETTERS	TWO LETTER GROUPS	THREE LETTER GROUPS	THREE LETTER WORDS
E T A	TE AT EA	TTA TTE TAA AEE ATT ETA ETT	TEA ATE EAT TEE
O	OA OE OT EO TO EO AO OO	OTA OEO OTO OET OAE OTE	TOO TOE OAT ONE
N	NT NE NA NO ON AN TN NT	NEA NOE NTE NTA NOO NNO NIT	NAT NOT NET ONE TEN ANT EON NON
I	IT IA IE IN IO NI OI AI TI TE	TEI IAO NOI ION IAE ITO ITA TIO	TIN NAT NON EON
R	RE RT RA RO RN RI	RTE REO ORA RNT RTA RNE RIN	RAT RIO EAR ROT
S	ST SE SA SO SN SI SR SS RS ES SA	SRI SNS SIO STE SES SSE SRN SSO	SIN SET SAT SIR SON

SEGMENT TWO: H D L U C

LETTERS	TWO LETTER GROUPS	THREE LETTER GROUPS	THREE LETTER WORDS
H	HA HO HN HI HR HS	HSR HRI HNO HTA HET	HAT HOT HEN HIT HAS HAD HER HIS HID
D	DE DA DO DN DI DR DS DH	DET DAO DNA DIR DST DHE DOA	DOT DIN DAN DID DUE DON DIT DOE DEN
L	LD LH LS LR LI LN LO LA LT LE	LAE LTE LON LRS LHD LLC LOE	LED LAD LET LOS LIT LID
U	UE UT UA UO UN UI UR US UH UD UL	ULD UHS URI UNL UOA UET UEI	URN USE DUE NUT SUN HUT
C	CU CL CD CH CS CR CI CN CO CE CT CA	CET CAO CNI CRS CHD CUL CCS	CAN CAD CUT COT COD CAT CUD

SEGMENT THREE: M W F Y P G B V

LETTERS	TWO LETTER GROUPS	THREE LETTER GROUPS	THREE LETTER WORDS
M	MA MO MN MI MR MS MC MU ML MS	MCU MUL MDH MSR MIN MNO MEA	MAP MIT MOP MAN MAR MAT MET
W	WE WA WO WN WI WR WS WH	WEA WTE WNI WOR WRS WHU WCD	WIN WAR WET WON WED WAN WAD
F	FD FH FS FR FI FN FO FA FT FE	FWM FCU FLD FHS FRI FNO FTA FEM	FAT FOR FIN FUN FID FAR FEE FLY
Y	YE YT YA YO YN YI YR YS YH YD YL	YFW YMC YUL YDH YSR YIN YOT	YES YOR YEN YAP YIP YUP YUM YET
P	PU PL PD PH PS PR PI PN PO PE PT PA	PPY PFW PMC PUL PDH HSR PNI PAE	PIN PAN PET PAD PIT PUP PIC POP PIP
G	GI GE GA GO GR GU GF GY GP GG GT	GEA GAO GNI GRS GLU GIL GUO GOA	GUN GAD GET GOT GEM GAD GIN
B	BE BA BO BI BR BU BB BT	BTA BTE BON BIR BSD BLU BHC BGA	BET BAT BOP BIN BUS BIG BAG BOG
V	VE VA VI VU VO VE	VBG BPY VFP VWM BCU VLA VIN VUI	VET VAT VAN VUE VIE VFW VIA VEG

SEGMENT FOUR: K J X Q Z

LETTERS	TWO LETTER GROUPS	THREE LETTER GROUPS	THREE LETTER WORDS
K	KV KB KG KP KY KF KW KM KC KU KE	KTA KON KIR KSH KDD KLU KCM KEI	KOI KIP KAF KEA KID KIF KOS
J	JK JV JB JG JP JY JF JW JM JC JU JL JD	JHS JRI JNO JAT JES JOK JUN JED JIS	JUT JAR JET JIB JAB JAG JOE JAW
X	XJ XK XV XB XG XP XY XF XW XM XE	XCU XLD XHS XRI XNO XAT XEX	AXE BOX HEX FAX NIX PIX SOX SAX
Q	QU QR QV QJ QK QB QG QP QY QF QL	QXJ QKV QBG QPY QFU QRS QSO QTR	QAT QIS QUA QUE
Z	ZQ ZX ZJ ZK ZV ZB ZG ZP ZY ZF ZW ZM	ZCU ZLD ZHS ZRI ZNO ZAT ZEZ ZZI	ZOO ZAP ZIT ZIP ZAG ZIN ZIG BIZ WIZ

English Language Basics

The English language is composed of two kinds of letters: **vowels** and **consonants**. The vowels are *a, e, i, o, u and sometimes y or w.* The consonants are: b, c, d, f, g, h, j, k, l, m, n, p, q, r, s, t, v, w, x, z.

Long vowel: We hear the sound of the letter just as it is when we recite the alphabet.

Examples: A *long a* is pronounced like the *a* in the words: make, cake, take, ache.

Short vowel: The sound of the vowel is soft.

Example: A *short a* is pronounced like the *a* in the words: mask, task, act, jack, bag.

1. **Short-Vowel Rule:** When one-syllable words have a vowel in the middle, the vowel usually has a short sound: Examples: cat, dog, man, hat, mom, dad, got.

If the letter after the vowel is *f, l, or s,* this letter is often doubled. Examples: staff, ball, pass.

2. **Two-Vowels Together:** When two vowels are next to each other, the first vowel is usually long (the sound is the same as the sound of the letter) and the second vowel is silent. Examples: meat, seat, plain, rain, goat, road, lie, pie.

3. **"Vowel-Consonant- e" Pattern:** When a short word, or the last syllable of a longer word, ends in this pattern: vowel--consonant--e, the first vowel is usually long and the e is silent. Examples: place, cake, mice, vote, mute.

4. **Y as a long i:** The letter *Y* makes the long sound of *I* when it comes at the end of a short word that has no other vowel. Examples: cry, try, my, fly, by, hi.

5. **Y as a long e:** When y or ey ends a word in an unaccented syllable, the y has the long sound of e. Examples: money, honey, many, key, funny.

6. **I before E:** Write i before e when the sound is long e except after the letter c. Examples: relieve, relief, reprieve. Notice the change when there is a c preceding the ie: receipt, receive, ceiling, deceive, conceive.

7. **E before I:** Write e before i when the sound is long a. Examples: weight, freight, reign.

8. **Oi or Oy:** Use oi in the middle of a word and use oy at the end of a word. Examples: boil, soil, toil, boy, toy.

9. **Ou or Ow:** Use ou in the middle of a word and use ow at the end of words other than those that end in n or d. Examples: mouse, house, found, mount, borrow, row, throw, crow.

10. **Double Consonants:** When b, d, g, m, n, or p appear after a short vowel in a word with two syllables, double the consonant: b, d, g, m, n, or p. Examples: rabbit, manner, dagger, banner, drummer.

11. **The "ch" sound:** At the beginning of a word, use *"ch."* At the end of a word, use *"tch."* When the *"ch"* sound is followed by *ure* or *ion*, use *t*. Examples: choose, champ, watch, catch, picture, rapture.

English Language Consonant Sounds

A consonant letter usually represents one consonant sound however some consonant letters, for example, c, g, s, can represent two different consonant sounds. Sending and receiving word examples helps students learn to hear letter combination sounds and complete words.

Letters	Sounds	Examples
b	[b]	baby, best, buy, bring, blind, absent, about, number, labor, robber, tub
c	[s]	center, cellar, cigarette, cinema, agency, notice;
	[k]	cake, come, cucumber, clean, cry, scratch, act, panic
d	[d]	day, dear, die, door, duty, admire, hidden, lady, kind, ride, ended
f	[f]	fast, female, five, forest, fund, fry, flight, often, deaf, cuff
g	[g]	game, gap, get, go, gun, great, global, giggle, ago, begin, dog, egg;
	[j]	general, gin, giant, agent, suggest, Egypt, energy, huge, manage;
	[zh]	mirage, garage, beige, rouge
h	[h]	hair, help, history, home, hotel, hunt, behind, inherit;
	[-]	hour, honor, honest, heir, vehicle, Sarah
j	[j]	jam, Jane, jet, jelly, Jim, jingle, joke, John, June, just
k	[k]	Kate, kind, kill, kilogram, sky, blanket, break, take, look
l	[l]	late, let, live, alone, close, slim, please, old, nicely, table, file, all
m	[m]	make, men, mind, mother, must, my, common, summer, name, form, team
n	[n]	napkin, never, night, no, nuclear, funny, student, kindness, ton, sun
p	[p]	paper, person, pick, pour, public, repair, apple, keep, top, crisp
q (qu)	[kw]	quality, question, quite, quote, equal, require;
	[k]	unique, technique, antique, grotesque
r	[r]	rain, red, rise, brief, grow, scream, truck, arrive, hurry, turn, more, car
s	[s]	send, simple, song, system, street, lost, kiss, release;
	[z]	cause, present, reason, realism, advise, always, is, was
t	[t]	task, tell, time, tone, tune, hotel, attentive, student, boat, rest
v	[v]	vast, vein, vivid, voice, even, review, invest, give, move, active
w	[w]	wall, war, way, west, wind, word, would, swear, swim, twenty, twist
x	[ks]	exercise, exchange, expect, ex-wife, axis, fix, relax;
	[gz]	exam, exact, executive, exert, exist, exit, exult;
	[z]	Xenon, Xerox, xenophobia, xylophone
z	[z]	zero, zoo, horizon, puzzle, crazy, organize, quiz, jazz;
	[ts]	pizza, Mozart, Nazi, waltz

Note 1:
The letter Y can function as a vowel or as a consonant. As a vowel, Y has the vowel sounds [i], [ai]. As a consonant, Y has the consonant sound [y] (i.e., a semivowel sound), usually at the beginning of the word and only in the syllable before a vowel.
[i]: baby, hurry, lyrics, mystery;
[ai]: by, try, rely, nylon, type;
[y]: yacht, yard, year, yes, yet, yield, you, young, Yukon.
 [i]: baby, hurry, lyrics, mystery;
[ai]: by, try, rely, nylon, type;
[y]: yacht, yard, year, yes, yet, yield, you, young, Yukon.

Note 2: The letter W
The letter W represents the vowel sound [u:] in the diphthongs [au] and [ou]: now, how, owl, brown; low, own, bowl.

The -s/es ending of nouns and verbs
After the letters s, z, x, ch, tch, ge, dge, sh: [iz]

[s]	[z]	[iz]
tapes [teips], streets [stri:ts], parks [pa:rks], chiefs [chi:fs], myths [miθs]	ribs [ribz], kids [kidz], legs [legz], leaves [li:vz], clothes [klouðz], girls, games, cars, boys, pies [paiz], cows [kauz], cities ['sitiz]	pieces ['pi:siz], roses ['rouziz], prizes ['praiziz], boxes ['boksiz], coaches ['kouchiz], bridges ['brijiz], dishes ['dishiz]
(he) grips [grips], writes [raits], takes [teiks], sniffs [snifs]	(he) robs [robz], reads [ri:dz], digs [digz], saves [seivz], falls, plans, swims, offers, plays, cries, goes [gouz], copies ['kopiz]	(he) kisses ['kisiz], loses ['lu:ziz], relaxes, catches, judges, manages, flashes, washes, rouges
Pip's [pips], Kate's [keits], Mike's [maiks], Jeff's [jefs], Seth's [seθs]	Abe's [eibz], Fred's [fredz], Meg's [megz], Olive's ['olivz], Ben's [benz], Molly's ['moliz], Anna's	Chris's ['krisiz], Tess's ['tesiz], Rose's ['rouziz], Liz's ['liziz], Rex's ['reksiz], George's ['jo:rjiz]

The -ed ending of verbs

[t]	[d]	[id]
stopped [stopt], liked [laikt], coughed [ko:ft], crossed [cro:st], released [ri'li:st], reached [ri:cht], washed [wosht]	robbed [robd], saved [seivd], seized [si:zd], called [ko:ld], planned, occurred, bathed [beiðd], managed, played, tried, studied	wanted ['wontid], hated ['heitid], counted ['kauntid], started, needed [ni:did], loaded ['loudid], folded, added

Consonant combinations

Letters	Sounds	Examples
cc	[ks]	accent, accept, access, eccentric, accident;
	[k]	accommodate, account, accuse, occur, acclaim
ch	[ch]	chain, check, chief, choose, teacher, much, church;
tch		kitchen, catch, match, watch, pitch, stretch
ch (Latin, Greek)	[k]	character, chemical, Chris, archive, mechanic, technical, ache;
ch (French)	[sh]	champagne, charlatan, chef, chic, machine, cache
ck	[k]	black, pack, deck, kick, pick, cracker, pocket, rocket
dge	[j]	bridge, edge, judge, knowledge, budget, badger
gh	[g]	ghost, ghastly, Ghana, ghetto;
	[f]	cough, enough, rough, tough, laugh;
	[-]	though, through, weigh, neighbor, bought, daughter
gu	[g]	guard, guess, guest, guide, guitar, dialogue;
	[gw]	language, linguistics, Guatemala, Nicaragua
ng	[ŋ]	king, sing, singer, singing, bang, long, wrong, tongue;
	[ŋ]+[g]	finger, anger, angry, longer, longest, single
ph	[f]	phone, photograph, phrase, phenomenon, biography
qu	[kw]	quality, question, quite, quote, equal, require;
	[k]	unique, technique, antique, grotesque
sc	[s]	science, scissors, scene, scent, scythe;
	[sk]	scan, scandal, scare, score, Scotch, scuba
sch	[sk]	school, scholar, scheme, schedule;
	[sh]	schnauzer, schedule
sh	[sh]	share, she, shine, shoe, fish, cash, push, punish
th	[θ]	thank, thick, think, thought, thunder, author, breath, bath;
	[ð]	this, that, then, though, father, brother, breathe, bathe
wh	[w]	what, when, where, which, while, why, whale, wheel, white;

	[h]	who, whom, whose, whole
	[ks]	exhibition;
xh	[ks]+[h]	exhumation, exhume, exhale;
	[g]+[z]	exhaust, exhibit, exhilarate, exhort, exhume, exhale

With silent letters	Sounds	Examples
bt, pt	[t]	doubt, debt, subtle; receipt, pterodactyl
kn, gn, pn	[n]	knee, knife, know; gnome, sign, foreign; pneumonia, pneumatic
mb, lm	[m]	lamb, climb, bomb, comb, tomb; calm, palm, salmon
ps	[s]	psalm, pseudonym, psychologist, psychiatrist
rh	[r]	rhapsody, rhetoric, rheumatism, rhythm, rhyme
wr	[r]	wrap, wreck, wrestle, wrinkle, wrist, write, wrong

Letters in the suffix	Sounds	Examples
ti, ci, si, su	[sh]	nation, patient, special, vicious, pension, Asia, sensual, pressure
si, su	[zh]	vision, fusion, Asia, usual, visual, measure, pleasure

Phonics Rules

The vowels are "a,e,i,o, and u"; also sometimes "y" & "w". This also includes the diphthongs "oi,oy,ou,ow,au,aw, oo" and many others.

The consonants are all the other letters which stop or limit the flow of air from the throat in speech. They are: "b,c,d,f,g,h,j,k,l,m,n,p,qu,r,s,t,v,w,x,y,z,ch,sh,th,ph,wh, ng, and gh".

1. Sometimes rules don't work.
There are many exceptions in English because of the vastness of the language and the many languages from which it has borrowed. The rules do work however, in the majority of the words.

2. Every syllable in every word must have a vowel.
English is a "vocal" language; Every word must have a vowel.

3. "C" followed by "e, i or y" usually has the soft sound of "s". Examples: "cyst", "central", and "city".

4. "G" followed by "e, i or y" usually has the soft sound of "j". Example: "gem", "gym", and "gist".

5. When 2 consonants are joined together and form one new sound, they are a consonant digraph. They count as one sound and one letter and are never separated. Examples: "ch,sh,th,ph and wh".

6. When a syllable ends in a consonant and has only one vowel, that vowel is short. Examples: "fat, bed, fish, spot, luck".

7. When a syllable ends in a silent "e", the silent "e" is a signal that the vowel in front of it is long. Examples: "make, gene, kite, rope, and use".

8. When a syllable has 2 vowels together, the first vowel is usually long and the second is silent. Examples: "pain, eat, boat, res/cue, say, grow". NOTE: Diphthongs don't follow this rule; In a diphthong, the vowels blend together to create a single new sound. The diphthongs are: "oi,oy,ou,ow,au,aw, oo" and many others.

9. When a syllable ends in any vowel and is the only vowel, that vowel is usually long. Examples: "pa/per, me, I, o/pen, u/nit, and my".

10. When a vowel is followed by an "r" in the same syllable, that vowel is "r-controlled". It is not long, nor short.

"R-controlled "er,ir,and ur" often sound the same (like "er"). Examples: "term, sir, fir, fur, far, for, su/gar, or/der".

Basic Syllable Rules
1. To find the number of syllables:
---**count the vowels in the word,**
---**subtract any silent vowels,** (like the silent "e" at the end of a word or the second vowel when two vowels a together in a syllable)
---**subtract one vowel from every diphthong,** (diphthongs only count as one vowel sound.)
---**the number of vowels sounds left is the same as the number of syllables.**
The number of syllables that you hear when you pronounce a word is the same as the number of vowels sounds heard. For example:
The word **"came"** has 2 vowels, but the "e" is silent, leaving one vowel sound and**one syllable.**
The word **"outside"** has 4 vowels, but the "e" is silent and the "ou" is a diphthong which counts as only one sound, so this word has only two vowels sounds and therefore, **two syllables.**

2. Divide between two middle consonants.
Split up words that have two middle consonants. For example:
hap/pen, bas/ket, let/ter, sup/per, din/ner, and **Den/nis.** The only exceptions are the consonant digraphs. Never split up consonant digraphs as they really represent only one sound. The exceptions are "th", "sh", "ph", "th", "ch", and "wh".

3. Usually divide before a single middle consonant.
When there is only one syllable, you usually divide in front of it, as in:
"o/pen", "i/tem", "e/vil", and "re/port". The only exceptions are those times when the first syllable has an obvious short sound, as in **"cab/in".**

4. Divide before the consonant before an "-le" syllable.
When you have a word that has the old-style spelling in which the "-le" sounds like "-el", divide before the consonant before the "-le". For example: **"a/ble", "fum/ble", "rub/ble" "mum/ble"** and **"this/tle"**. The exception is "ckle" words like **"tick/le"**.

5. Divide off any compound words, prefixes, suffixes and roots which have vowel sounds.
Split off the parts of compound words like "sports/car" and "house/boat". Divide off prefixes such at "un/happy", "pre/paid", or "re/write". Also divide off suffixes as in the words "farm/er", "teach/er", "hope/less" and "care/ful". In the word "stop/ping", the suffix is actually "-ping" because this word follows the rule that when you add "-ing" to a word with one syllable, you double the last consonant and add the "-ing".

Accent Rules:
When a word has more than one syllable, one of the syllables is always a little louder than the others. The syllable with the louder stress is the accented syllable. It may seem that the placement of accents in words is often random or accidental, but these are some rules that usually work.

1. Accents are often on the first syllable. Examples: ba'/sic, pro'/gram.

2. In words that have suffixes or prefixes, the accent is usually on the main root word. Examples: box'/es, un/tie'.

3. If de-, re-, ex-, in-,po-, pro-, or a- is the first syllable in a word, it is usually not accented. Examples: de/lay', ex/plore'.

4. Two-vowel letters together in the last syllable of a word often indicates an accented last syllable. Examples: com/plain', con/ceal'.

5. When there are two like consonant letters within a word, the syllable before the double consonants is usually accented. Examples: be/gin'/ner, let'/ter.

6. The accent is usually on the syllable before the suffixes -ion, ity, -ic, -ical, -ian, -ial, or -ious, and on the second syllable before the suffix -ate. Examples: af/fec/ta'/tion, dif/fer/en'/ti/ate.

7. In words of three or more syllables, one of the first two syllables is usually accented. Examples: ac'/ci/dent, de/ter'/mine.

Phonics is a method for teaching reading and writing the English language by developing learners' phonemic awareness—the ability to hear, identify, and manipulate phonemes in order to teach the correspondence between these sounds and the spelling patterns (graphemes) that represent them.

The goal of phonics is to enable beginning readers to decode new written words by sounding them out, or in phonics terms, *blending* the sound-spelling patterns. Since it focuses on the spoken and written units within words, phonics is a sub lexical approach and, as a result, is often contrasted with whole language, a word-level-up philosophy for teaching reading. The same principals apply to learning to hear letter combination sounds, then words and complete thoughts in Morse code.

Since the turn of the twentieth century phonics has been widely used in primary education and in teaching literacy throughout the English-speaking world. More specifically synthetic phonics is now the accepted method of teaching reading in the education systems in the UK and Australia.

Numbers and punctuation teaching sequence

Ø	1	9	2	7	5	6	4	8	3	Period	Comma	Question Mark	Slash

Cut Numbers Used in Morse Code	1	2	3	4	5	6	7	8	9	Ø
Full Number	1	2	3	4	5	6	7	8	9	Ø
Cut Numbers (Note 4)	A	U	W	V	S	B	G	D	N	T
Cut Numbers common in Ham Radio										
Commonly used in Rag Chew QSOs (Note 1)									N	
Commonly used in DX QSOs (Note 2)									N	T
Commonly used in Contests (Note 3)	A				E				N	T
Note 1 **RST 5NN**									N	
Note 2: **RST 5NN -** Especially by DXpeditions									N	
Note 3: **RST & Serial Numbers**	A				E				N	T
Note 4: Seldom used in Ham Radio QSOs		U	W	V	S	B	B	D		

Commonly Used Q Signals and Meaning

QRL Is the frequency busy? The frequency is busy. Please do not interfere.
QRM Interference from other signals.
QRN Interference from natural or man-made static.
QRO Shall I increase power? Increase power.
QRP Shall I decrease power? Decrease power.
QRQ Shall I send faster? Send faster (WPM).
QRS Shall I send more slowly? Send more slowly (__WPM).
QRT Shall I stop sending? Stop sending.
QRU Have you anything more for me? I have nothing more for you.
QRV Are you ready? I am ready.
QRX Standby.
QRZ Who is calling me?
QSB Abbreviation for signal fading.
QSL Received and understood.
QSO Communications between two or more participants.
QST A general call preceding a message addressed to all amateurs.
QSX I am listening on ___ kHz.
QSY Change to transmit on a different frequency (or to ___ kHz).
QTH What is your location? My location is ____.

Prosigns and Abbreviations

8 Es	Error	**GA**	Go Ahead	**SASE**	Self-Addressed Stamped Envelope		
73	Best Wishes	**GA**	Good Afternoon	**SIG**	Signal		
88	Love and Kisses	**GE**	Good Evening	**SKED**	Schedule		
AA	All After	**GM**	Good Morning	**SRI**	Sorry		
AB	All Before	**GND**	Ground	**SSB**	Single Side Band		
ABT	About	**HI**	Laughter	**STN**	Station		
ADR	Address	**HR**	Here	**SVC**	Service		
AGN	Again	**HW**	How	**TFC**	Traffic		
ANT	Antenna	**K**	Invitation to transmit	**TKS**	Thanks		
AR	End of Transmission	**KN**	Invitation to transmit specific call	**TMW**	Tomorrow		
AR N	No more to follow	**LID**	Poor Operator	**TKS**	Thanks		
AS	Wait	**MSG**	Message	**TNX**	Thanks (Short for Thank You)		
B4	Before	**N**	No more to follow	**TU**	Thank You		
BK	Break	**NIL**	No More	**TX**	Transmitter		
BUG	Semi-Automatic Key	**NW**	Now	**TXT**	Test		
C	Yes	**OM**	Old Man	**UR**	Your		
CFM	Confirm	**OP**	Operator	**VY**	Very		
CK	Check	**OT**	Old Timer	**WA**	Word After		
CL	Clear	**PBL**	Preamble	**WB**	Word Before		
CLD	Cleared	**PDL**	Paddle	**WDS**	Words		
CLG	Calling	**PSE**	Please	**WKD**	Worked		
CQ	CQ - Calling any station	**PWR**	Power	**WUD**	Would		
DLVD	Delivered	**R**	Roger "Received OK'	**XCVR**	Transceiver		
DR	Dear	**RCVD**	Received	**XMTR**	Transmitter		
DX	Foreign Station	**RCVR**	Receiver	**XYL**	Wife		
ES	And	**RIG**	Radio Station Equipment	**YL**	Young Lady		
FB	Fine Business	**RX**	Receive				

Section V. Self-improvement drills and exercises:

To overcome problems with sending accuracy and to increase speed, practice the following exercise at least once a day. Send the sentence "THE QUICK BROWN FOX JUMPS OVER THE LAZY DOGS BACK." The sentence contains all 26 letters in the English alphabet. Start at a comfortable sending speed that allows sending the sentence all the way through without an error and then start increasing speed one, two or three wpm.

If or when a mistake is made follow the rule – Start all over again from the beginning. It won't take too many start overs before an individual recognizes a comfort level at a desired sending speed, then increase the speed bit by bit. Remember the old saying *"No Pain, No Gain."*

Beginners and students with experience, but having problems should practice sending and receiving daily drills which include the following examples:

- **Off the top of the head associated items found in stores, homes, garages and other common places:**
  Bread, Meat, Milk, Cheese – Lamp, Rug, Chair – Ladder, Tire, Rake

- **Look around the room: (Send the first thing seen)** Window, door, wall, floor

- **Associated Word Phrases:** Fishing Pole – Ham and Eggs – Nut and Bolt – Hammer and Nail etc.

- **Two and three letter phrases:** My Dog, Cat and Mouse *(Add similar common phrases)*

- **Words that rhyme: S**ee – Fee,   My – Try,   Hat – Mat, Big – Rig, etc.

- **Parts of something:** Bicycle **–** wheels, brake, frame, seat, peddles, handle bars

- **Dear Diary: Send and listen to the words and phrases: What I had for breakfast, Lunch, Dinner, what I did today, yesterday, etc.**

- **QSO Exchanges:** Call DE Call GM UR 599 in NC Name is Bob (Other QSO info)

- **QSO Party and Contest Exchanges:**
  Contesting provides excellent opportunities for student practice with calls and short exchanges. Most every weekend there is a state QSO party which is usually slower paced than contests:
  > QSO Party Calendar: http://www.hornucopia.com/contestcal/stateparties.html
  > CWops Exchanges: Jack 64, Rob 3, Jim 1
  > DX Contest Exchange Example: 599 NC - Typically sent as 5NN NC

Section VI. Elmering Students with Experience

One thing most all instructors learn while teaching beginners and mentoring operators is what I refer to as *"The Dirty Dozen."* Twelve interrelated problems largely due to improper teaching or self-learning techniques coupled with bad habits formed during the learning or teaching phase of Morse code training. While not all students have the same problems, at some point in the learning and proficiency improvement process most all students encounter one or more problems on the Dirty Dozen list:

1. Anticipating what is being sent: A common problem develops when paper and pencil are used to write or print each letter as it is sent versus learning to copy complete words by their distinct rhythm and sound by ear. Example… Letters A N Y written down individually and the person copying is focused on each letter they have no idea of words or sentence flow. They are not learning to use Morse as a language and are simply copying individual characters. A N Y, and when the next letter is written, for example, W then A N Y W makes no sense but the mind's eye anticipates A N Y W A Y, A N Y W H E R E or A N Y T H I N G. If a different letter than anticipated follows, focus is diverted and anticipation results. This problem is interrelated to Problems 4, 5, 6, 11 and 12.

   Overcoming Anticipation: The most efficient way to overcome anticipation is to learn to recognize complete words by their unique sound and rhythm while learning to copy by ear and copying behind versus writing down individual letters in order to start remembering complete thoughts, calls, contest exchanges etc. Practice recognizing the sound and rhythm of the most common double letter, two and three letter combinations based upon frequency of usage in the English language helps forming word sounds:
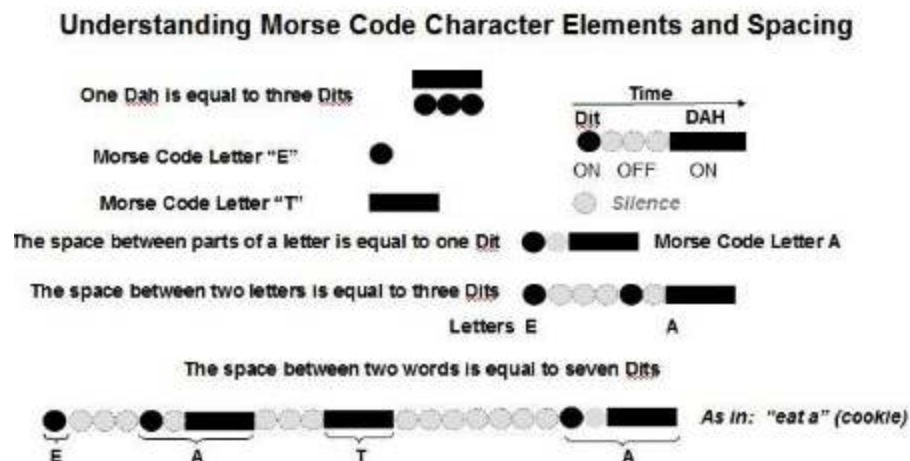
   Common double letter combinations: ll, ee, ss, tt, oo, mm, ff, pp, rr ,nn, cc, dd - The thirty most frequent two letter combinations comprise one third of all letter usage: th, he, in, er, an, re, on, en, at, es, ed, te, ti, or, st, ar, nd, to, nt, is, of, it, al, as, ha, ng, co, se, me, de - The most common three letter combinations are: the, and, tio, ati, for, tha, ter, res, ere, con, ted, com, hat, ent, ion, nde, has, ing

2. Attention loss, lack of accuracy: Attention loss is often related to Problem 10 during the learning phase and often causes frustration. Practice sessions should not exceed thirty minutes in duration. Break up practice sessions in ten or fifteen minute increments but certainly practice thirty minutes a day, seven days a week. Lack of accuracy is related to Problems 1, 3, 4, 6, 7 and 10. There is no substitute or better way to learn and improve proficiency than learning to copy by ear and only take notes versus putting individual characters on paper. Practices learning the sound of short words then progress to short phrases such as my dog, then add a follow on word to start building phrases and sentences. Common QSO exchanges are helpful in building confidence to actually get on the air.

3. Counting Dits and Dahs: Learning Morse code by counting Dits and Dahs is a terrible habit that is difficult to break. Counting is typically caused by learning Morse at 5 or 10 words per minute character speed. While some instructors endorse using the Farnsworth method adding extra space between characters often leads to unintentional counting.

   Experience has confirmed teaching words versus individual letters at 20 wpm character speed with a bit of extra space between words, for example TEA followed by EAT sent as TEA   EAT and progressing three word phrases is more effective. Eliminate extra spaces between words as quickly as possible in order to learn and use Morse with normal speed and spacing. Why teach or learn at 5 or 10 wpm when it just as easy to learn at 20 is often an unanswered question. Counting is directly related to Problems 7, 8, 9 and 12.

4. Dit and Dah Transposition: Transposition is primarily related to learning at slow character speed and tone frequency being either too low or too high for an individual's hearing frequency range. The most common character reversals or transposition are: er-re, es-se, an-na, it-ti, on-no, en-ne, ot-to, ed-de, st-ts, at-ta, ar-ra, in-ni. Practice copying and sending all ten numbers is a good method for overcoming transposition.

5. Inability to break old habits: The obvious answer to overcoming Problem 5 is to not develop bad habits in the first place. Bad habits developed in the early learning stage are the most difficult to overcome. The key to breaking old habits is to focus on exercises, methods and techniques that help overcome or break specific old habits. The first step is to determine what bad habits individuals have. Counting is most certainly one, writing each character immediately as it is sent is another. Focus on overcoming the worst bad habit or habits first. To do so, they must be identified; make a list and a plan then follow the plan.

6. Inability to copy behind: Problem number 6 is directly related with Problem 12. Until students or those with experience "break the pencil and toss out the paper" and learn to copy entire words by their distinct sound an rhythm problem 6 will automatically become problem 5, 8, 9 and 10. Set up exercises comprised of short words, repeated two or three times if necessary and practice retaining words that comprise short phrases: MY RED HAT – HER OLD CAT – BIG BAD BEN – UR RST 599 – MY RIG IS A K-3 – MY ANT A DIPOLE etc. – Problem 6 leads the list of Bad Habits that must be broken in order to become proficient and use Morse code as a language.

7. Inability to distinguish spaces and timing: Problem 7 is usually related to learning to copy at slow speed and copying individual letters versus words. With regard to sending, we can tune the bands most any day and hear what is referred to as "a bad fist" – While an experienced instructor will not encourage using code readers, new radios such as the Elecraft K-3 can display Morse as it is sent, students can benefit by using a Morse display to actually see proper character spacing and timing. Watching a display while practicing sending is helpful in overcoming spacing and timing issues. Proper character and word spacing is shown in the illustration below:

Understanding Morse Code Character Elements and Spacing

One Dah is equal to three Dits

Morse Code Letter "E"

Morse Code Letter "T"

The space between parts of a letter is equal to one Dit

The space between two letters is equal to three Dits

Letters E   A

The space between two words is equal to seven Dits

E   A   T   A

As in: "eat a" (cookie)

8. <u>Increasing speed:</u> With regard to receiving, Problem 8 is directly related to every other problem on the Dirty Dozen List. Address each problem individually and increasing receiving speed will be easier to achieve.

   Most everyone reaches a "plateau" or bump in the road where they seem to be stuck at a certain speed. To overcome problems with a given plateau or bump in the road simply "jump the bump." If you are stuck at 20, increase the speed to 21 or 22 wpm. Jumping the bump by increasing speed even one or two words per minute is the best way to increase receiving speed proficiency.

9. <u>Lack of confidence:</u> Problem 9 is usually related to "getting on the air" and making QSOs. One way to gain confidence is to "have QSOs with yourself." Use a code practice oscillator or key the side tone on a transceiver without going on the air. Make up a list of QSO exchanges using different call signs, names QTH etc. and practice. Even if contesting is not something an individual wants to do, they are excellent confidence builders as the exchanges are short (Other than Sweepstakes) and there are plenty of state QSO parties to take part in. Practice makes perfect.

10. <u>Mental fatigue:</u> Problem 10 is common in many things and practicing Morse code is no different. Too much too often is not productive. Don't practice when tired or just after coming home from a hard day at work. Practice during relaxation time or early in the morning when you are fresh or whatever time an individual has the true desire to practice is the best time. Contest or Radio Sport participants are well aware what a toll fatigue can do to their performance. Don't overdo it.

11. <u>Memorization versus hearing words:</u> Problem 11 is directly related to problems 1, 2, 3, 4, 6 and 7. Until individuals develop the ability to recognize complete words by their sound and rhythm, copy behind and use Morse as a language, problem 11 will remain on the bad habit list. Use techniques and practice copying by ear and copying behind.

12. <u>Writing or typing each letter as it is heard:</u> Last in alphabetical order but most certainly the number 1 problem and obstacle standing in the way of becoming proficient in Morse is our worst enemy and by all means the first bad habit to break. Break the pencil and toss out the writing pad in order to learn to copy by ear and copy behind should be the number one priority for every beginner or anyone with the desire to improve their skill in using Morse code. Learn to use it as a language is the rule of thumb to live by.

Section VII. Reference materials
Reference material and tools for Morse code proficiency enhancement are available on WØUCE's website Morse Code Page - http://www.w0uce.net/Morsecode.html

Use Morse Song MP-3 Files to help learn or overcome problems in using Morse code as a language with Sequence One through Four Letters Groups.

Morse Song
There is a direct relationship between music and Morse code thus Morse Song MP-3 files provide an enjoyable Morse code second language learning experience set to music. The original Morse Code Song created by Andrew Crawford, VE1VAC, combines the unique sounds of all twenty-six letters of the English language with rhythmic cords which makes learning Morse simple and enjoyable.

Morse Song Letter Sequence Groups
VE1VAC's original Morse Song has been digitally rearranged and converted to four MP-3 teaching aids and self learning tools. The MP-3 files are arranged to play letters in sequence as they most frequently appear in English language words. Morse Song Groups are useful tools for learning to copy, send and also to overcome letter confusion and related learning problems. Morse Song MP-3 Files are available for download at: http://www.cwops.org/cwa-student-res.html

Self-learning and interactive teaching
There is no reason to learn Morse code at slow speed and go through the drudgery of having to learn to increase speed. Beginners are encouraged to learn to send with a hand key before progressing to a bug or electronic keyer. Morse Song Sequences are an excellent tool to help develop a smooth, rhythmic sending fist by simply listening then sending along with MP-3 sequence files as they are played.

Beginners will need a hand key and code practice oscillator or transceiver side tone can be keyed. CW Player is a valuable tool used for practice by simply entering letters, letter groups words, phrases and calls arranged in teaching order. Instructors and students are encouraged to set the Speed and Farnsworth Speed selections at 20 words per minute with no extra spacing to start and gradually increase character speed. In this way, Farnsworth does not become a crutch.

Morse Song and Letter Sequence as teaching resources for instructors
Every Morse code instructor has a personal preference for teaching or mentoring others to help overcome problems. Morse Song and use of the Letters, Groups and Words in the WØUCE method as well as Morse Song MP-3 files can be incorporated and personalized to complement other methods.

Skype Audio / Video Conferencing
Skype is a free high-quality Internet based audio/video chat and conferencing application that has proven to be an effective teaching tool for instructors and students. Skype provides a live face-to-face teaching and learning environment for one-on-one sessions or up to six people in a virtual classroom. Skype is available for PC, Mac, Tablets and Smartphones. If a computer does not have an internal webcam, an inexpensive USB webcam will provide suitable audio video capability.

Instructors can send Morse over-the-air and students can reply over-the-air or using Skype. Sending Morse over the audio portion of Skype provides adequate quality when code practice oscillators and radio side-tone is used. The application also provides an excellent media for individuals to practice with others if propagation or conditions do not permit on-the-air sessions or if someone does not have HF capabilities.

When teaching beginners, Skype and Morse Song can be combined by simply using Media Player or another MP-3 device to play Segment One, Two, Three and Four Morse Song MP-3 files over the audio link.

Real-time audio/video conferencing offers a tremendous advantage for instructors because students can be monitored both visually and audibly. Student facial expressions and body language often reveal issues or problems that can be immediately addressed by the instructor. Skype, Morse Song and Morse Translator also enables instructors to teach or mentor students anywhere in the world over the Internet when propagation precludes establishing or maintaining on-the-air Morse training sessions. Skype is available for download:
http://www.skype.com/en/

Section VIII CWops Club CW Academy classes
The following items are required in order to participate in a CWops Academy Internet Training Class
1. Reliable broadband Internet service
2. Skype Video Chat Application
3. Webcam
4. Hand Key, Bug or Paddles for use with electronic keyer
5. Code Practice Oscillator or ability to key transceiver sidetone

Online training classes are typically conducted twice per weekly typically on Tuesday and Thursday evenings, students are also given homework assignments and are required to practice a minimum of 30 minutes per day. Students are encouraged to get on the air and also conduct Skype QSOs and interactive homework assignment practice sessions.

Section IX Teaching and self-practice resources:

- CW Operators' Club *(CWops)* Academy: http://www.cwops.org/cwacademy.html

- CWops Academy Student and Advisor Resources: http://www.cwops.org/cwacademy2.html

- CW Player: http://www.f6dqm.fr/software.htm#cw_player

- AA9PW Morse Code Practice and Online Exam Tool: http://aa9pw.com/morsecode/

- RUFZ Call Sign Pile Up Trainer: Excellent practice tool for Letter/Number combinations and call signs: http://www.rufzxp.net/

- Morse Translator: Online Java application for translating text to Morse code: http://morsecode.scphillips.com/jtranslator.html

- Skype: Free Internet Audio Visual Conferencing application: http:// http://www.skype.com/en/

- Zen and the Art of Radio Telegraphy. http://www.qsl.net/ik0ygj/enu/ZART_r20101008m.pdf

- K6RB Beginner (Level I) Teaching Syllabus and other resources: http://www.cwops.org/cwa-student-res.html

- Other Resources: http://www.w0uce.net/Morsecode.html