



THE STUDY OF SYLLABLE STRUCTURE IN ENGLISH: AN INNOVATIVE LEARNING AND TESTING TOOL BASED ON LINGUISTIC APPROACH

M.Somathasan¹ and V.Naveenraj²

¹Assistant Lecturer in English, Advanced Technological Institute, Trincomalee, Sri Lanka.

²Senior Lecturer and Head of the Department of Language and Communication Studies, Trincomalee Campus, Eastern University, Sri Lanka.

ABSTARCT

English words are composed of one or more syllables. A syllable can be defined in terms of phonetics and phonemics. For this paper, phonological analysis is taken into consideration. Thus, a syllable is a phonological unit that is composed of one or more phonemes. For example, the words I /aɪ/, teacher /ti:ʃə/, computer /kəm.pju:tə/, and expenditure /ɪk.spən.dɪ.tʃə/ have one, two, three, and four syllables, respectively. The knowledge of syllable is important for a student of English to develop a proper pronunciation of words. Syllable structure is one of the areas in the subject - Language Structure, Usage, and Linguistics - in the programme of Higher National Diploma in English (HNDE) at Advanced



Technological Institute (ATI) in Trincomalee, Sri Lanka. In the current trend of pedagogy, students are increasingly expected to employ integrated technology practices in their subjects to make their learning more effective, better, faster, easier, and cheaper. Unfortunately, all the students are unable to achieve or access the technology incorporated learning materials for many reasons. One of them is that most of the materials are expensive in the market; or paid-ones

or password-protected if they are in internet, i.e. they are not accessible. Having considered this concept in mind and as the core of this article, we have developed a student-friendly computational tool to learn and test the syllable structure of English words. By doing so, it is fully believed that not only the students of HNDE programme at Trincomalee ATI, but will the other students who are involved in Linguistics, also be benefitted with this tool.

KEY WORDS:

syllable structure, phonemes, pronunciation, pedagogy, internet, computational tool.

INTRODUCTION:

According to David Crystal (2008), a syllable is “a unit of pronunciation typically larger than a single sound and smaller than a word”. A word may be pronounced ‘syllable at a time’, as in *beautifully* /bju:ɪ.tɪ.fəl.ɪ/. Syllable boundaries are marked by dots which come before each new syllable. He, further, states that the study of syllable is important in phonology in relation to prosody and cross-linguistic studies of rhythm. The linguist, Bolinger (1975), also emphasizes that a syllable obtains much of its obviousness because of the role it plays in rhythm. Further, Selkirk (1982) strongly argues that syllable structure is necessary for “the most general and explanatory statement of phonotactic constraints”, for “the

proper characterization of the domain” of phonological rules, and for “an adequate treatment of suprasegmental phenomena such as *stress* and *tone*”. Moreover, O’Connor and Trim (1973) explain the importance of syllable when they affirm that “the syllable is useful as the largest unit one needs to consider in explaining how phonemes are permitted to combine together in a language”. What is more, the scholar, Finch (2000) says that syllables serve in carrying the stressed patterns of English which are essential to the way in which the speech is organized. In addition, students who have well-developed phonological skills such as a good knowledge in syllable structure, generally learn to read with more success. The present-day phonological theories like *sonority theory* accept that the syllable has constituent or hierarchical, rather than linear, structure. Lack of the knowledge in the internal structure of syllables is one of the reasons for a student to face the difficulty in correct English pronunciation. Thus, to improve the correct pronunciation in English, the knowledge of syllable structure is indispensable. To be competent in the syllable structure, a student has to, first of all, be familiar with the elements found in a syllable.

ELEMENTS OF A SYLLABLE:

A syllable, in linguistic approach, is defined as a fundamental phonological unit consisting of sound segments or elements around the pivotal vowel or vowel-like (syllabic consonant) sound, which is known as the *nucleus*. The nucleus is the element that every syllable must contain, and the other elements are defined in relation to it; the consonant(s) which are found before the nucleus are called the *onset*, and the consonant(s) after it the *coda*. The linguist, Laver (1994), also emphasizes the same idea, i.e. a syllable is “a complex unit made up of nuclear and marginal elements”. Nuclear elements are the vowels or syllabic segments; marginal elements are the consonants and it is especially noted that they, i.e. onset and coda are optional. For example, in the word *cat* /kæt/, /k/ is the onset; /æ/ is the nucleus; and /t/, coda; and in the word *eye* /aɪ/ only nucleus is found and not onset or coda.

1. Onset:

In English, the onset can consist of zero, one, two, or maximum three consonants. Examples are *a* /eɪ/, *lay* /leɪ/, *play* /pleɪ/, and *splay* /spleɪ/. More than one consonant in the onset are said to be in a cluster, known as *consonant cluster*, like /spl.../ in *splay*. When the onset consists of consonant cluster, then the order of the consonants is important; and a generalization also emerges: If a syllable begins with three consonants, then they are in the order of [S] + [voiceless stop] + [liquid]/[glide], as in *splash* /splæʃ/. The sound /ŋ/ can never occur in the onset, i.e. before a vowel.

2. Nucleus:

Nucleus is an obligatory element in a syllable not only in English but in all languages, as well. In English, the nucleus of a syllable is normally a vowel whether it is a short or long monophthong or a diphthong. For example, *sit* /sɪt/ and *seat* /si:t/. Here, the short vowel /ɪ/ and the long vowel /i:/ are the nucleus of the said mono-syllabic words *sit* and *seat*. The element ‘nucleus’ is also known as *peak* or *crest* as it is the most sonorous sound segment in a syllable. There are, however, some syllables in which the nucleus is not a vowel, but a consonant. For example, the words *cattle* /kæt.l/, *rhythm* /rɪð.m/, and *mutton* /mʌt.n/ has two syllables each and the second syllable in these words lacks the vowel. Thus, the consonant sounds /l/, /m/, and /n/ in the second

syllable constitute the nucleus or peak of the syllables. Hence, these consonants are known as *syllabic consonants*.

3. Coda:

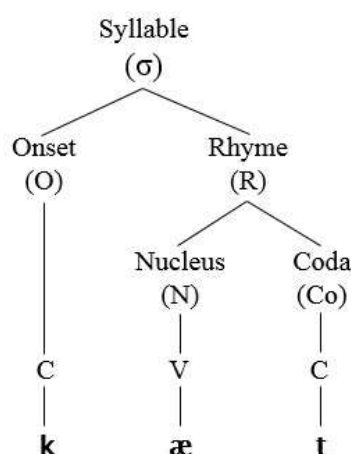
In English, the coda, also known as *termination*, can consist of zero, one, two, three or maximum four consonants. For instance: *shy* /ʃaɪ/, *sick* /sɪk/, *six* /sɪks/, *sixth* /sɪksθ/, and *sixths* /sɪksθs/. More than one consonant in the coda are said to be in a cluster, called *consonant cluster*, such as /...ksθs/ in *sixths*. In a coda with four consonants, the last consonant can only be /s/ (In fact, it can only be the plural morpheme -s or the possessive marker -'s). The only approximant sound that can occur in a coda is /l/ (except for *rhotic* accents, which also allow /r/). As in onsets, the approximant sounds in the coda are always found adjacent to the vowel. The sounds /h/, /w/, and /j/ does not occur in coda.

4. Rhyme:

Rhyme (or 'rime') is nothing, but the combination of nucleus and coda. In the word *I* /aɪ/ the rhyme is the nucleus itself and no coda; and in *cat* /kæt/, the rhyme combines the nucleus /æ/ and the coda /t/.

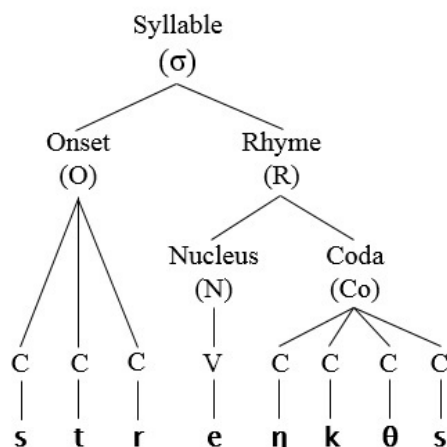
Syllable structure:

A syllable (conventionally marked as a small Greek sigma - σ) has a constituent or internal hierarchical structure which has two immediate constituents or branches: *Onset* and *Rhyme*. The Onset (O) includes any consonant symbolized by C, that precedes the Nucleus (N), which is a vowel or vowel-like sound and symbolized by V. The Rhyme (R), in turn, consists of the nucleus and Coda (Co) which is also normally a consonant that follows the nucleus in a syllable. The nucleus is both the most sonorous and central element of a syllable. Thus, it can be briefed that a syllable must contain a vowel and may consist of consonants. With this concept, the syllable structure of the word *cat* is graphically represented by means of the following tree diagram.



Here, the monosyllabic word *cat* /kæt/ has three sound segments such as /k/, /æ/, and /t/; and the syllable structure of this word is known by CVC, whereas the consonant (C) /k/ occupies the onset, the vowel (V) /æ/ - the nucleus or peak, and the consonant /t/ is the coda of the word.

The diagram below shows the syllable structure of the word *strengths* /streŋkθs/ which is the largest possible syllable in English language.



Here, the monosyllabic word *strengths* /streŋkθs/ depicts the CCCVCCCC syllable structure and it is noted that the onset-consonant cluster is (/str.../) with three consonants and the coda shows the consonant cluster (/...ŋkθs/) with four consonants.

Depending on the structure of the rhyme, syllables are classified as *closed* and *open*. A syllable with an ending consonant i.e. with coda, also known as *arresting consonant* (e.g. *cat* /kæt/, *on* /ɒn/, *all* /ɔ:l/) is traditionally known as *closed syllable*, whereas a syllable which has no arresting consonant, i.e. lacking coda, but may have *releasing consonant*, i.e. the presence of onset or not, is said to be an *open syllable* as in *no* /nəʊ/, *tea* /ti:/, etc. The word *teapot* /ti:.pɒt/ has the open first syllable followed by the closed second syllable.

Some different syllable structures or patterns:

Phonologically, words are monosyllabic, disyllabic, tri-syllabic, and multisyllabic.

1. Monosyllabic words:

Words with one syllable are known as *monosyllabic* or one-syllable words. The syllable structures of some monosyllabic words are given below:

a. V

I /aɪ/ a /eɪ/ air /eə/ ear /ɪə/

The grapheme *r* in the words *air* and *ear* is not pronounced in RP (Received Pronunciation), except in connected speech when the word is followed by a vowel.

b. CV

she /ʃi:/
saw /sɔ:/
me /mi:/

c. VC

it /ɪt/
is /ɪz/
all /ɔ:l/

d. CVC

wife /waɪf/
gave /geɪv/
life /laɪf/

e. CCVC

spell /spel/

skirt /skɜ:t/

f. CCVCC

drowned /draʊnd/

speaks /spi:ks/

g. CCVC

spring /sprɪŋ/

scream /skri:m/

h. CCCVCC

stretched /stretʃt/

strides /straɪdz/

2. Disyllabic words:

Words with two syllables are known as *disyllabic* words. The syllable structures of some disyllabic words are as follows:

teacher /ti:ʃə/ CV-CV

experts /ek.spɜ:ts/ VC-CCVCC

teaches /ti:ʃɪz/ CV-CVC

study /stʌd.i/ CCVC-V

speeches /spi:ʃɪz/ CCV-CVC

effects /i.fekts/ V-CVCCC

3. Tri-syllabic words:

Words with three syllables are called *tri-syllabic* words. The syllable structures of some tri-syllabic words are stated below:

linguistics /lɪŋ.gwɪs.tɪks/ CVC-CCVC-CVCC syllable /sɪl.ə.bl/ CVC-V-CV

develops /dɪ.vel.əps/ CV-CVC-VCC

division /dɪ.vɪʒ.ən/ CV-CVC-VC

4. Multisyllabic words:

Words with more than three syllables are known as *multisyllabic* words. The following words have more than three syllables each.

photographic /fəʊ.tə.græf.ɪk/ CV-CV-CCVC-VC

lexicographer /lek.sɪ.kəg.rə.fə/ CVC-CV-CVC-CV-CV

antidisestablishmentarianism /æn.trɪ.dɪz.ɪs.tæb.lɪʃ.men.teə.rɪ.ə.nɪ.zm/

VC-CV-CVC-VC-CVC-CVC-CV-CV-CV-CV

Syllabification:

The task of breaking up a word into syllables is called *syllabification*. Syllabification or syllable division is language-specific, i.e. every language has its own principles of syllabification. For example, the English word *four* is monosyllabic, but the word for 'four' in Spanish is syllabified into two. Further English, Hungarian, French, and Spanish have codas, but Hawaiian does not. Finding the number of syllables and syllable boundaries in a word may be an easy task for a native speaker of English, but it is not that much of easiness for a learner of English as a second language. He has to spend a lot of time to be familiar with them. As far as the number of syllables in a word is concerned, it is known that a syllable must contain one vowel sound. Thus, the number of vowels heard in a word equals the number of syllables in it. For example, a student can hear two vowel sounds in pronouncing *doctor* /dɒk.tə/ and hence two syllables. While pronouncing the word *table* /teɪ.bl/, a student hardly notices a distinct vowel in the last syllable, 'ble'. He hears, instead, a vowel-like sound—/teɪ.bl/. Thus, when dividing words into syllables, a student can listen to vowel

or vowel-like sound. One vowel or vowel-like sound equals one syllable. While considering the syllable boundaries, there are some rules to be followed. They are:

1. *Single consonant between two vowels VCV (V-CV or VC-V)*: When there is a single consonant between two vowels, the word is divided before the consonant if the first vowel is a long vowel as in *rumour* /ru:.mə/ (CV-CV); or otherwise the word is divided after the consonant if the first vowel is a short one as in *closet* /klɒz.ɪt/ (CCVC-VC). If the two vowels are the short vowels, then the word is divided right after the first vowel like in *permit* /pə.mɪt/ (CV-CVC). However, there are some exceptions to the VCV pattern with two short vowels as in *river* /rɪv.ə/ (CVC-V) and *magic* /mæg.ɪk/ (CVC-VC). Further, the Vr pattern is also an exception to this syllable division as the vowel is not separated from the r in the Vr pattern (e.g. *merit* /mer.ɪt/ not /me.rɪt/).
2. *Two adjacent consonants VCCV (VC-CV)*: When there are two consonants between two vowels, the syllable boundary falls between the two consonants as in *nutshell* /nʌt.ʃel/ (CVC-CVC) and *upset* /ʌp.set/ (VC-CVC).
3. *Consonant digraphs and consonant blends*: Words are generally divided into syllables before or after consonant digraphs (e.g. *father* /fɑ:.ðə/, *leather* /leð.ə/, etc.) and consonant blends like *secret* /si:.krət/. There are, however, exceptions as in *twisty* /twɪs.tɪ/ and *sister* /sɪs.tə/.
4. *C-le final syllable*: In the words that end in a C-le syllable (-ble, -cle, -dle, -fle, -gle, -kle, -ple, -sle, and -zle) as in *table*, *circle*, *cradle*, *Google*, *staple*, etc., the last syllable usually begins with the consonant and the vowel is a soft sound: /b(ə)l/, /k(ə)l/, /d(ə)l/, /f(ə)l/, /g(ə)l/, /k(ə)l/, /p(ə)l/, /s(ə)l/, and /z(ə)l/.
5. *Compound words*: Compounds words are divided between the two ‘words’, as in *team-mate* /ti:m.meɪt/ and *art-house* /ɑ:t.haʊs/.

Innovative strategy to learn and test the English syllable structure:

A teacher can use different ways such as *chalk and board*, *multimedia*, *over-head projector*, *computer* or any other *technology* to teach the syllable structure in a classroom. Now-a-days students expect a smart learning environment as technology, especially computer technology has penetrated into the domain of education to great extent. Though many ways can be used in teaching and learning of syllable structure, we have developed a simple but effective student-friendly computational tool for learning and testing the syllable and its structure by considering the students of HNDE at ATI, Trincomalee, Sri Lanka and the other students who are dealing with phonology as one of the subjects in their course of linguistic study.

The sample visual of the developed tool

S.N	Word	No.of syllables	User's attempt	Status	Marks
1.	research	2	2	Right	1
2.	strengths	1	2	Wrong	0
				Total	1

METHODOLOGY:

The study proposed in this paper is to learn the syllable and its structure and then to test the knowledge gathered or already existing. To do so, we develop an innovative and user-friendly learning and testing tool named as *Syllable Number and Boundary Finder* by using the magic computer language, Visual Basic 6. In this tool, mono-, di-, tri-, and multi-syllabic words (for this paper, maximum six syllables-words are considered and 100 words as data) in English have been included. To work with this tool, a student has to, first of all, click the *Word* button to get the word. Then he has to choose the number of syllables in the word. If he likes, he can check his answer by clicking the *Check* button word after word. Further, he can continue the syllabification process by clicking the *Word* button again to get the next word.

After completing all the words or anytime in the middle of the process, he can check his status. Likewise, he can click the *Syllable Boundary Finder* button to find out syllable boundary in the included data. This is the mechanism of this tool. For this study, 36 students were selected from the first year of HNDE to test their knowledge in syllable structure of English with this tool. As far as the results were concerned, 16 students were successful in more than 75 words; 13 got between 50 and 75. Then 4 students became between 25 and 50. One student got 21; the other one, 16; and the last student got 11 words right. The overall results were good and all the students stated that it was interesting for them to work with such a tool; and their feedback was fully positive.

CONCLUSION:

Syllables as in *laptop* /ləp.tɒp/ are the basic units of pronunciation in English language. All words have one or more syllables, and each syllable has one vowel (or vowel-like) sound, known as nucleus; and the preceding consonant or cluster of consonants is called onset; and the following consonant or the cluster of consonants is coda. Nucleus and coda are termed as Rhyme. This is the internal structure of a syllable. For example, in the word *plane* /pleɪn/, the diphthong /eɪ/ is the nucleus, while the onset consonant cluster is /pl/ and the coda, /n/. A student has to equip with the knowledge of syllable structure for a better understanding of how sounds interact with each other, how words can be divided, and how this affects pronunciation. The phonetician, Kahn (1976), also

succinctly shows that syllables play a very important role in describing the generalizations of some phonological phenomena found in English. Thus, we developed a student-friendly innovative tool, *Syllable Number and Boundary Finder*, to help not only the students of HNDE but those who are involved in the phonological studies as well, for learning and testing their capacity in English syllable structure. Further, the tool was tested in 36 students of HNDE at the institution; and the result was very positive. Hence, learning syllable structures in English with the help of the innovative ways gives the desired results and highly motivates the students towards their success in education.

REFERENCES:

1. Bolinger, D. 1975. *Aspect of Language*. 2nd edn. New York: Harcourt Brace Jovanovich, Inc.
2. Chomsky, N. and M. Halle. 1991. *The Sound Patterns of English*. Cambridge, Mass: MIT
3. Crystal, D. 2008. *A Dictionary of Linguistics and Phonetics*. 6th edn. Blackwell Publishing.
4. Finch, G. 2000. *Linguistic Terms and Concepts*. New York: Macmillan Ltd.
5. Giegerich, H. J. 1992. *English Phonology: An Introduction*. Cambridge University Press.
6. Gimson, A. C. 1980. *An Introduction to the Pronunciation of English*. 3rd edn. Edward Arnold.
7. Jones, D. 1997. Edited and revised by P. Roach and J. Hartman. *English Pronouncing Dictionary*. 15th edn. Cambridge University Press.
8. Kahn, D. 1976. *Syllable-Based Generalizations in English Phonology*. Bloomington, Indiana University Linguistics Club.
9. Laver, J. 1994. *Principles of Phonetics*. Cambridge: Cambridge University Press.
10. O'Connor, J. and Trim, J.L. 1973. *Vowel, Consonant, and Syllable –A Phonological Definition*. In Jones, W.E. and Laver, J. (eds.) Press.
11. Roach, P. 2000. *English Phonetics and Phonology. A Practical Course*. 3rd edn. Cambridge University Press
12. Roca, I. and Johnson, W. 1999. *A Course in Phonology*. Oxford: Blackwell.



M.Somathasan

Assistant Lecturer in English, Advanced Technological Institute, Trincomalee, Sri Lanka.