English Consonants

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http://web.ntpu.edu.tw/~ckliu/pronunciation/pronunciation.htm
Articulation positions of consonants

- Hard palate
- Soft palate
- Tongue
- Oral part of pharynx
- Epiglottis
- Vocal fold
- Larynx
- Trachea
- Esophagus
Articulation positions of consonants

Overview

Positions

(1) Vocal folds

http://www.humnet.ucla.edu/humnet/linguistics/radinf/demos/vocalfolds/vocalfolds.htm
http://www.voicedoctor.net/media/video/female.html
http://www.sci.mus.mn.us/sound/vrml/vocal/vocalcu.htm

(2) A voyage to the vocal organs (a movie)

http://www.ncvs.org/ncvs/tutorials/youngexp/fantasticvoyage.html (RealPlayer is needed)
Manners and positions of English consonants

The X-ray video
(The X-ray video, provided by Ladefoged, UCLA)

<table>
<thead>
<tr>
<th>/epe</th>
<th>/eta</th>
<th>/eke</th>
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<tbody>
<tr>
<td>/epa</td>
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<tr>
<td>/epen</td>
<td>/hidi</td>
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<tr>
<td>/igi</td>
<td>/higa</td>
<td>/ia</td>
</tr>
</tbody>
</table>

Why did Ken put the soggy net on top of his desk?
I have put blood on her two clean yellow shoes.
Contrasting the English & Mandarin consonants

<table>
<thead>
<tr>
<th>Catagories</th>
<th>English</th>
<th>Mandarin</th>
<th>Notes</th>
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<td><strong>Phonemic structures</strong></td>
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<td>V</td>
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<td>V</td>
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<tr>
<td>CV</td>
<td>be</td>
<td>CV</td>
<td></td>
</tr>
<tr>
<td>CCV</td>
<td>ski</td>
<td>CVC( /n/ or /ŋ/)</td>
<td></td>
</tr>
<tr>
<td>CVC</td>
<td>kid</td>
<td>lin; ling</td>
<td></td>
</tr>
<tr>
<td>CCVC</td>
<td>skip</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CCCVCC</td>
<td>slept</td>
<td></td>
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</tr>
<tr>
<td>CCCVCCC</td>
<td>stretch</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Bilabial</strong></td>
<td>/p//b/</td>
<td>/p//b/</td>
<td>mismatch</td>
</tr>
<tr>
<td><strong>Labiodental</strong></td>
<td>/f//v/</td>
<td>/f/</td>
<td>mismatch</td>
</tr>
<tr>
<td><strong>Dental</strong></td>
<td>/θ//ð/</td>
<td>/ts//tz/; /t//d/; /s//z/</td>
<td>mismatch</td>
</tr>
<tr>
<td><strong>Dental-alveolar</strong></td>
<td>/t//d/; /s//z/;</td>
<td></td>
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</tr>
<tr>
<td><strong>Alveolar</strong></td>
<td>/t//d/; /s//z/;</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Palatal</strong></td>
<td>/ʃ//ʒ/; /tʃ//dʒ/</td>
<td>/ʃ//ʒ/; /tʃ//dʒ/</td>
<td>mismatch</td>
</tr>
<tr>
<td><strong>Velar</strong></td>
<td>/k//g/</td>
<td>/k//g/</td>
<td></td>
</tr>
<tr>
<td><strong>Glotal</strong></td>
<td>/h/</td>
<td>/h/</td>
<td></td>
</tr>
<tr>
<td><strong>Nasal</strong></td>
<td>/m//n//ŋ/</td>
<td>/m//n//ŋ/</td>
<td></td>
</tr>
<tr>
<td><strong>Lateral</strong></td>
<td>/l//ɻ//r/</td>
<td>/ɻ/</td>
<td>mismatch</td>
</tr>
<tr>
<td><strong>Approximant</strong></td>
<td>/w//j/</td>
<td>/ɔr/</td>
<td>mismatch</td>
</tr>
</tbody>
</table>

mismatch
## Overview

### Manners and positions of English consonants

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<tr>
<th>Manners of Articulation</th>
<th>Place of Articulation</th>
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<tbody>
<tr>
<td></td>
<td>Bilabial</td>
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<tr>
<td>Stop</td>
<td></td>
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<tr>
<td>Voiceless</td>
<td>/p/</td>
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<tr>
<td>Voiced</td>
<td>/b/</td>
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<td>Fricatives</td>
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<td>Voiceless</td>
<td>/f/</td>
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<tr>
<td>Voiced</td>
<td>/v/</td>
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<td>Affricate</td>
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<td>Voiceless</td>
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<tr>
<td>Voiced</td>
<td></td>
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<tr>
<td>Nasal-voiced</td>
<td>/m/</td>
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<tr>
<td>Liquid-voiced</td>
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<tr>
<td>Glide/Approximant</td>
<td></td>
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<tr>
<td>Voiceless</td>
<td></td>
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<tr>
<td>Voiced</td>
<td>/w/</td>
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# Overview

Manners and positions of English consonants

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<td></td>
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<td>Affricate</td>
<td>Voiceless</td>
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<td></td>
<td>Voiced</td>
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<tr>
<td>Nasal</td>
<td>Voiced</td>
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<td>Liquid</td>
<td>Voiced</td>
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<tr>
<td>Approximant</td>
<td>Voiceless</td>
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<tr>
<td></td>
<td>Voiced</td>
</tr>
</tbody>
</table>
Aspirated and unaspirated sounds

Voiced & Voiceless

Time

bin

spin

pin

lips together

lips apart

vibrating

voiced

voiceless unaspirated

voiceless aspirated
Aspiration is a period of voicelessness after the stop articulation and before the start of the voicing for the vowel. If you put a sheet of thin paper in front of your lips while saying “pie,” you can feel the burst of air that comes out during the period of voicelessness after the release of the stop.

In a narrow transcription, aspiration may be indicated by a small raised \( h, [^{\text{h}}] \). Accordingly, these words may be transcribed as [\( p^{\text{h}}\text{aI}, t^{\text{h}}\text{aI}, k^{\text{h}}\text{aI} \)]. You may not be able to feel the burst of air in “tie, kye” because these stop closures are made well inside the mouth cavity.
Aspirated and unaspirated sounds

Try the following set of sounds and examine the VOT (vowel onset time):
- tie sty die
- pie spy buy
- key ski geesey
1. If the stop consonant is voiceless, there will be a period of “aspiration” before the VOT.

2. If the stop consonant is voiced, there will not be a period of “aspiration” before the VOT.
Possible deviating consonant sounds

<table>
<thead>
<tr>
<th>English sounds</th>
<th>Examples</th>
<th>Deviating sounds</th>
<th>Examples</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>add coda</td>
<td>big; book, etc.</td>
<td>/-ə/</td>
<td>biG; booK</td>
<td><strong>Direct methods:</strong> audio-visual aids as well as face-to-face instruction</td>
</tr>
<tr>
<td>/kl/</td>
<td>clear</td>
<td>/kəl/</td>
<td>*calear</td>
<td></td>
</tr>
<tr>
<td>/pl/</td>
<td>please; play</td>
<td>/pəl/</td>
<td>police(?); *palay</td>
<td></td>
</tr>
<tr>
<td>/bl/</td>
<td>blue</td>
<td>/bəl/</td>
<td>*balue</td>
<td></td>
</tr>
<tr>
<td>/sp/</td>
<td>spy</td>
<td>/spʰ/</td>
<td>spy</td>
<td></td>
</tr>
<tr>
<td>/st/</td>
<td>stay</td>
<td>/stʰ/</td>
<td>stay</td>
<td></td>
</tr>
<tr>
<td>/sk/</td>
<td>sky</td>
<td>/skʰ/</td>
<td>sky</td>
<td></td>
</tr>
<tr>
<td>del coda</td>
<td>United States questions</td>
<td></td>
<td>*Uni?-States ques?ion</td>
<td></td>
</tr>
<tr>
<td>/m/</td>
<td>him; problem</td>
<td>/n/</td>
<td>*hin; *problen</td>
<td></td>
</tr>
<tr>
<td>/n/</td>
<td>country</td>
<td>/m/</td>
<td>*comtry</td>
<td></td>
</tr>
<tr>
<td>/ŋ/</td>
<td>going</td>
<td>/n/</td>
<td>goin</td>
<td></td>
</tr>
<tr>
<td>/ɬ/</td>
<td>deal</td>
<td>/r/</td>
<td>dear</td>
<td></td>
</tr>
<tr>
<td>/r/</td>
<td>room</td>
<td>/l/</td>
<td>loom</td>
<td></td>
</tr>
<tr>
<td>/l/</td>
<td>world</td>
<td></td>
<td>word</td>
<td></td>
</tr>
</tbody>
</table>
### Possible deviating consonant sounds

<table>
<thead>
<tr>
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<th>Examples</th>
<th>Deviating sounds</th>
<th>Examples</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>/v/</td>
<td>seven</td>
<td>/b/</td>
<td>*seben</td>
<td><strong>Direct methods:</strong> audio-visual aids as well as face-to-face instruction</td>
</tr>
<tr>
<td>/θ/</td>
<td>think</td>
<td>/s/</td>
<td>sink</td>
<td></td>
</tr>
<tr>
<td>/ð/</td>
<td>they</td>
<td>/d/</td>
<td>lay; day</td>
<td></td>
</tr>
<tr>
<td>/ʃ/</td>
<td>shake</td>
<td>/s/</td>
<td>sake</td>
<td></td>
</tr>
<tr>
<td>/ʒ/</td>
<td>pleasure</td>
<td>/dʒ/</td>
<td>pledger</td>
<td></td>
</tr>
<tr>
<td>/ʒ/</td>
<td>watch</td>
<td>/ts/</td>
<td>*wats(y)</td>
<td></td>
</tr>
<tr>
<td>/z/</td>
<td>zoo</td>
<td>/dz/</td>
<td>*dzu</td>
<td></td>
</tr>
</tbody>
</table>

**Phonetic approaches:**

1. To slow down when showing the learners the articulation positions;
2. To provide clear examples and make sure the learners comprehend the instruction.
(1) Voiceless stops /p, t, k/ are **aspirated** when they are syllable **initial**.

Examples

`pip, test, kick`

`[pʰɪp, tʰɛst, kʰɪk]`. 
Voiceless stops /p, t, k/ are unaspirated if immediately preceded by an /s/.

Examples
spew, stew, skew
(3) Stops are unexploded when they occur before another stop in words such as

Examples

apt                      rubbed
[æpʰt]                   [rʌb’d]
In many accents of English, syllable final /p, t, k/ are accompanied by a glottal stop.

Examples

- tip, pit, kick
- [tí?p, pí?t, kí?k]
In many accents of English, /t/ is replaced by a glottal stop [ʔ] when it occurs before an alveolar nasal [n] in the same word.

Examples
beaten
['biʔn]
(6) Nasals are syllabic at the end of a word when immediately after an obstruent (/p, t, k, tʃ, f, θ, s, ʃ/ and /b, d, g, ðʒ, v, ŋ, z, ʒ/).

Examples

leaden, chasm

['lɛdən] ['kæzm]
The lateral /l, r/ are syllabic at the end of a word when immediately after a consonant.

Examples

paddle, whistle
['pædəl], ['wɪsəl]

sabre, razor, hammer, tailor
['seɪbrə], ['reɪzər], [hæmər], [teɪlər]
(8) Alveolar stops (/t, d, n/) become voiced taps [r] when they occur between two vowels with the second of which unstressed.

Examples
winter winner
panting panning
(9) Alveolar stops are reduced or omitted when between two consonants.

Examples

most people
['məus ˈpipl] or ['moust ˈpipl]

best game
(10)
A consonant is shortened when it is before an identical consonant.

Examples
big game, top post

stray tissue, straight issue, straight tissue
(11) Velar stops become more front as the following vowel in the same syllable becomes more front.

Examples
/k/ in "cap, kept, kit, key"
   [kæp, kɛpt, kɪt, ki]

/g/ in "gap, get, give, geese"
   [ɡæp, ɡɛt, ɡɪv, ɡɪs].
(12)
The lateral /l/ is **velarized** when after a vowel or before a consonant at the end of a word.

Examples

<table>
<thead>
<tr>
<th>life</th>
<th>file</th>
<th>clap</th>
<th>talc</th>
</tr>
</thead>
<tbody>
<tr>
<td>[laɪf]</td>
<td>[faɪl]</td>
<td>[klæp]</td>
<td>[tælk]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>feeling</th>
<th>feel</th>
</tr>
</thead>
<tbody>
<tr>
<td>[fɪlɪŋ]</td>
<td>[fɪl]</td>
</tr>
</tbody>
</table>
Real consonants in different phonological environments
How to read English alphabet letters

/i/ B, C, D, E, G, P, T, V, Z
/ε/ F, L, M, N, S, X, (Z)
/e/ A, H, J, K
/ju/ Q, U, W
/aɪ/ I, Y
/o/ O
/ɑ/ R

http://web.ntpu.edu.tw/~language/sound/sound.htm
http://web.ntpu.edu.tw/~ckliu/pronunciation/pronunciationold.htm
Consonants /m/ & /θ/ /ð/ for EFL students

/m/ make famous damage name the same time

Sentences
1. They have a problem with our new computer system.
2. They have the same name, and that’s the problem.

/θ/ thing think nothing author math fifth

/ð/ that there together other smooth breathe

3. Sentences:
   a. I’m so thirsty.
   b. That was three days ago.
   c. The test is on Thursday.
   d. He grew up in the southwest.
   e. I’m sorry. I have something else to do right now.
Fricatives /s/ and /z/

1. /s/
2. /z/

3. Read the following pairs:
   1. a. sip b. zip
   2. a. Sue b. zoo
   3. a. seal b. zeal
   4. a. prices b. prizes

4. More pairs
   a. think sink
   b. math mass
   c. truce truth
Fricatives /ʃ/ and /ʒ/  

1. /ʃ/ she short machine washing foolish crash  

2. /ʒ/ vision occasion television pleasure treasure  

3. Sentences:  
   a. Please pass the sugar.  
   b. The tickets should come in the mail.  
   c. I’ll have to rush to finish before the deadline.  
   e. She’s fluent in English and Spanish.  

4. Sentences:  
   1. I usually dress casually on this kind of occasion.  
   2. It’s a great pleasure to share the treasure with you.
### Affricates /tʃ/ and /dʒ/

1. /tʃ/  | chair  | children  | church  | watch TV  | lunchtime  
2. /dʒ/  | judge  | college education  | a large package  

3. Read the following pairs:
   - a. sheet  |  seat  | f.  | shift  | sift  
   - b. shoe  |  chew  | g.  | shore  | chore  
   - c. see  |  she  | h.  | watching  | washing  
   - d. sheet  |  cheat  | g.  | sour  | shower  
   - e. chop  |  shop  | h.  | catch  | cash  

Liquids /r/ and /l/; /-r/ and /ɹ/

1. /-r/ her beer year share four car
2. /ɹ/ fill well whole meanwhile natural result

3. Read the following pairs:
   a. /r/ & /l/ lead read erect elect right light
   b. /-r/ & /ɹ/ here heel halt heart stale stare
   c. /ɑ/ & /ɹ/ pot part sharp shop

4. Read the following expressions:
   1. a little bit
   2. in the middle
   3. in a little while
   4. on the whole
   5. old people
   6. a helpful article
   7. in trouble
   8. a logical result
Approximants/glides /w/ and /j/

1. /w/ we wet word work language quick
2. /j/ yellow yell year yam yard use

Sentences:

1. We acquired our first language when we were children.
2. We will have to work hard to clear this wood.
Consonants clusters /st/, /sp/ & /sk/

1. /st-/ stop storm strong start stay
2. /sp-/ spring spend speak split
3. /sk-/ skin scream squeeze

4. Sentences:
   a. The stone steps lead straight to the stream.
   b. Would you rather ski or skate or just be a spectator?
When /t/ and /d/ followed by /ŋ/

1. /dŋ/ sudden hidden garden didn’t couldn’t
2. /tŋ/ cotton written button eaten mountain

Read the following sentence:
I paid that money back to you, didn’t I? I hope I didn’t forget!
When /b/, /k/, /g/ & /p/ are followed by /l/ or /r/

<table>
<thead>
<tr>
<th></th>
<th>Word 1</th>
<th>Word 2</th>
<th>Word 3</th>
<th>Word 4</th>
<th>Word 5</th>
<th>Word 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>/bl/</td>
<td>bleed</td>
<td>bless</td>
<td>black</td>
<td>blue</td>
<td>blood</td>
</tr>
<tr>
<td>2</td>
<td>/cl/</td>
<td>clear</td>
<td>clean</td>
<td>clever</td>
<td>clock</td>
<td>clothe</td>
</tr>
<tr>
<td>3</td>
<td>/gl/</td>
<td>glad</td>
<td>glasses</td>
<td>glow</td>
<td>glory</td>
<td>glue</td>
</tr>
<tr>
<td>4</td>
<td>/pl/</td>
<td>please</td>
<td>play</td>
<td>pleasure</td>
<td>plan</td>
<td>apply</td>
</tr>
</tbody>
</table>

Sentences:

1. I’m glad to see that my block is still clean.
2. Let’s clean the wall and clear the path.
When /r/ is followed by /l/

1. /-rl/  world  girl  curl  Earl  pearl
   word

2. Read the following expressions:
   the best in the world
   girl’ dormitory
   pearl necklace
   curly hair
Assimilation

1. Progressive assimilation
   look   looks
   love   loves
   like   liked
   love   loved

2. Regressive assimilation
   input  have to

3. Complete assimilation
   cupboard

4. Coalescent assimilation
   this year; would you…; set you up
When “s” and “es” are suffixes (sibilants)

1. a rose /z/  
2. Josh /ʃ/  
3. The judge /dʒ/  
4. they watch TV /tʃ/  
5. the boss /s/

Two roses /ro-ʒəz/ or /ro-ʒəz/

Josh’s brother /dʒə-ʃəz/

The judge’s decision /dʒə-dʒəz/

He watches TV /wa-tʃəz/

The boss’s been here /bɔ-səz/.

Try to read the following expression:

Someone else’s book
When “s” and “es” are suffixes (non-sibilants)

1. When voiceless consonants are followed by “s” or “es”
   - a ship /p/
   - they visit /t/
   - Dick /k/
   - clock /k/
   - two ships /ps/
   - he visits /ts/
   - Dick’s house /ks/
   - The clock’s broken /ks/.

2. When voiced consonants are followed by “s” or “es”
   - a job /b/
   - Sam /m/
   - Buy the book /bay/.
   - He /hiy/
   - good jobs /bz/
   - Sam’s friend /mz/
   - He buys books /bayz/.
   - He’s here /hiyz/.

3. When /s/ is clustered with other sibilants:
   - one month
   - the earth
   - two months
   - the earth’s circumference
When “d” and “ed” are suffixes after /d/ or /t/

1. construct constructed (after /t/)
decide decided (after /d/)
gradaute graduated (after /t/)

2. install installed
save saved
delay delayed

3. talk talked
laugh laughed
process processed

4. Read the following expressions:
   a. He filled out the application
   b. I checked in this morning.
When fricatives are followed by /j/

<table>
<thead>
<tr>
<th>$p_1$</th>
<th>$p_2$</th>
<th>$p_3$</th>
<th>Examples</th>
</tr>
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<tbody>
<tr>
<td>/s/</td>
<td></td>
<td>$ʃ$</td>
<td>this year</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>miss you</td>
</tr>
<tr>
<td>/z/</td>
<td></td>
<td>3</td>
<td>How is your day?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>He loves you.</td>
</tr>
<tr>
<td>/t/ or /ts/</td>
<td>/ʃ/</td>
<td>/tʃ/</td>
<td>next year</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>last year</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Who set you up?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>That’s your problem.</td>
</tr>
<tr>
<td>/d/ or /dz/</td>
<td></td>
<td>/dʒ/</td>
<td>Did you do that?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>What would you do?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>My dad’s your partner.</td>
</tr>
</tbody>
</table>
More examples in single words

1. In the near future
2. The next century
3. I assure you
4. blood pressure
5. a precise measurement
6. Leisure-time activities
7. individual rights
8. A recent graduate
Deletion

1. Loss of /h/ sound
   ask him
   did he

2. Loss of /ə/ sound
   tell them
   something

3. Loss of /t/ or /d/ before /ən/
   sudden
   sentences

4. Loss of a syllable
   family
   temperature
   camera
   potato…
Good evening, ladies and gentlemen, and welcome. I’m sure we have all heard the expression, “Think Green.” Tonight we are going to talk about ways that we can “Act Green” in our everyday lives.

The best place to start, of course, is in the home. Every day, people all over the world are hurting the environment without even knowing it. For example, busy families buy paper napkins and plastic food wrap at the supermarket. This helps them save time on housework, but after these things have been used, what happens to them? They go in the trash. In many places, especially in North America, big cities are running out of places to throw their trash. What can we do about this before it is too late?
Thank you!

Of the consonant section