**ENGLISH PHONOLOGY AND GRAPHOLOGY**

**by**

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**September 2023**

**COURSE TITLE: ENGLISH PHONOLOGY AND GRAPHOLOGY**

**COURSE CODE: ENL 7104**

**HOURS TAUGHT: Three hours per week**

**PREREQUISITES: None**

**PURPOSE OF THE COURSE**

The purpose of the course is to enable the student to focus on the basic raw materials of human language, both in its spoken and written forms, and to explore how these are organized into language –specific systems for communication. In doing this the student is to be exposed to a variety of language systems as well as approaches and models used in explicating aspects of such systems both at the phonological as well as at the graphological levels. Highlighted through the course unit will be the interfaces of phonetics and phonology, on the one hand, as well as that between phonology and graphology.

**EXPECTED LEARNING OUTCOMES**

By the end of the course, students should be able to:

* Portray knowledge to a wide range of phonological processes
* Show an understanding of the formalization of phonological rules
* Appreciate various phonological theories and the perspectives they bring to the analysis and description of specific phonological issues
* Show a clear understanding of the interface of phonology and graphology

**COURSE CONTENT**

* The sounds of language
* Units of phonological analysis: syllable, segment, feature
* Phonemes and allophones
* Segmental and suprasegmental phonemes
* Underlying forms
* Derivatives
* Phonological rules
* Phonological representations
* From pictograms and logograms through the syllabic writing to the alphabet
* Graphization
* Orthographical reforms

**MODE OF DELIVERY**

* Lectures
* Demonstrations
* Tutorials
* Written and oral exercises
* Practical exercises
* Online interaction KIU LMS

**INSTRUCTIONAL MATERIALS AND/OR EQUIPMENT**

* Whiteboard and Markers
* Flip Charts
* LCD Projector
* CDs, DVDs and Tapes

**COURSE ASSESSEMNT**

* Continuous written and/or oral tests 20%
* Group and individual assignments 20%
* End-of-semester /trimester examination 60%

**Total 100%**

**READING LIST**

Branson, Barry (1991) *Graphology Explained*-- A Workbook

Gardner, Ruth (1996) *The Truth about Graphology*, USA: Llewellyn Publications

Gimson, A.C. (1980) *An Introduction to the Pronunciation of English*, 3rd edn, London: Edward Arnold (Publishers) Ltd

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Gussenhoven, Carlos & Haike Jacobs (1998) *Understanding Phonology*, London: Hodder Headline Group

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Odden, David (2005) *Introducing Phonology*, Cambridge: Cambridge University Press

O’Grady, William, Michael Dobrovolsky and Francis Katamba (1997) *Contemporary Linguistics-An introduction*, United Kingdom: Longman

Roach, Peter (1993) *English Phonetics and Phonology*, Cambridge: Cambridge University Press

Spencer, Andrew (1996) *Phonology*, Oxford: Blackwell Publishers Ltd

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# What is phonology?

Phonology is the study of the sound system of languages. It is a huge area of language theory and it is difficult to do more on a general language course than have basic knowledge of what it includes. In an exam, you may be asked to comment on a text that you are seeing for the first time in terms of various language descriptions, of which phonology may be one. At one extreme, phonology is concerned with *anatomy* and *physiology* - the *organs of speech* and how we learn to use them. At another extreme, phonology shades into *socio-linguistics* as we consider social attitudes to features of sound such as *accent* and *intonation*. And part of the subject is concerned with finding objective standard ways of recording speech, and representing this symbolically.

For some kinds of study - perhaps a language investigation into the phonological development of young children or regional variations in accent, you will need to use phonetic transcription to be credible. But this is not necessary in all kinds of study - in an exam, you may be concerned with stylistic effects of sound in advertising or literature, such as *assonance, rhyme* or *onomatopoeia* - and you do not need to use special phonetic symbols to do this.

# The physics and physiology of speech

Man is distinguished from the other primates by having the apparatus to make the sounds of speech. Of course most of us learn to speak without ever knowing much about these organs, save in a vague and general sense - so that we know how a paining tooth, a cold or sore throat alters our own performance. Language scientists have a very detailed understanding of how the human body produces the sounds of speech. Leaving to one side the vast subject of how we choose particular utterances and identify the sounds we need, we can think rather simply of how we use our lungs to breathe out air, produce vibrations in the larynx and then use our tongue, teeth and lips to modify the sounds. The diagram below shows some of the more important speech organs.

|  |  |
| --- | --- |
| Speech organs - click for a larger version | This kind of diagram helps us to understand what we observe in others but is less useful in understanding our own speech. Scientists can now place small cameras into the mouths of experimental subjects, and observe some of the physical movements that accompany speech. But most of us move our vocal organs by reflexes or a sense of the sound we want to produce, and are not likely to benefit from watching movement in the *vocal fold*. The diagram is a simplified cross-section through the human head - which we could not see in reality in a living speaker, though a simulation might be instructive. But we do observe some external signs of speech sounds apart from what we hear.  |

A few people have the ability to interpret most of a speaker's utterances from lip-reading. But many more have a sense of when the lip-movement does or does not correspond to what we hear - we notice this when we watch a feature film with dubbed dialogue, or a TV broadcast where the sound is not synchronized with what we see.

The diagram can also prove useful in conjunction with descriptions of sounds - for example indicating where the airflow is constricted to produce *fricatives*, whether on the *palate*, the *alveolar ridge*, the *teeth* or the *teeth* and *lips* together.

Speech therapists have a very detailed working knowledge of the physiology of human speech, and of exercises and remedies to overcome difficulties some of us encounter in speaking, where these have physical causes. An understanding of the anatomy is also useful to various kinds of expert who train people to use their voices in special or unusual ways. These would include singing teachers and voice coaches for actors, as well as the even more specialized coaches who train actors to produce the speech sounds of hitherto unfamiliar varieties of English or other languages. At a more basic level, my French teacher at school insisted that we (his pupils) could produce certain vowel sounds only with our mouths more open than we would ever need to do while speaking English. And a literally stiff upper lip is a great help if one wishes to mimic the speech sounds of Queen Elizabeth II.

 So what happens? Mostly we use air that is moving out of our lungs (*pulmonic egressive air*) to speak. We may pause while breathing in, or try to use the ingressive air - but this is likely to produce quiet speech, which is unclear to our listeners. (David Crystal notes how the normally balanced respiratory cycle is altered by speech, so that we breathe out slowly, using the air for speech, and breathe in swiftly, in order to keep talking). In languages other than English, speakers may also use *non-pulmonic* sound, such as *clicks* (found in southern Africa) or *glottalic sounds* (found worldwide). In the larynx, the vocal folds set up vibrations in the egressive air. The vibrating air passes through further cavities which can modify the sound and finally are articulated by the *passive* (immobile) *articulators* - the *hard palate*, the *alveolar ridge* and the *upper teeth* - and the *active* (mobile) *articulators*. These are the *pharynx*, the *velum (or soft palate)*, the *jaw* and *lower teeth*, the *lips* and, above all, the *tongue*. This is so important and so flexible an organ, that language scientists identify different regions of the tongue by name, as these are associated with particular sounds. Working outwards these are:

* *the back* - opposite the soft palate
* *the centre* - opposite the meeting point of hard and soft palate
* *the front* - opposite the hard palate
* *the blade* - the tapering area facing the ridge of teeth
* *the tip* - the extreme end of the tongue

The first three of these (back, centre and front) are known together as the *dorsum* (which is Latin for “backbone” or “spine”)

# Phonology, phonemes and phonetics

You may have known for some time that the suffix *“-phone”* is to do with sounds. Think, for instance, of *telephone, microphone, gramophone* and *xylophone*. The morpheme comes from Greek *phonema*, which means “a sound”.

* *Telephone* means “distant sound”
* *Microphone* means “small sound” (because it sends an input to an amplifier which in turn drives loudspeakers - so the original sound is small compared to the output sound)
* *Gramophone* was originally a trade name. It comes from inverting the original form, *phonograph* (=sound-writing) - so called because the sound caused a needle to trace a pattern on a wax cylinder. The process is reversed for playing the sound back
* *Xylophone* means “wood sound” (because the instrument is one of very few where the musical note is produced simply by making wood resonate)

The fundamental unit of grammar is a *morpheme*. A basic unit of written language is a *grapheme*. And the basic unit of sound is a *phoneme*. However, this is technically what Professor Crystal describes as “the smallest contrastive unit” and it is highly useful to you in explaining things - but strictly speaking may not exist in real spoken language use. That is, almost anything you say is a continuum and you rarely assemble a series of discrete sounds into a connected whole. And there is no perfect or single right way to say anything - which is just as well, because we can never exactly reproduce a previous performance.

However, in your comments on phonology, you will certainly want sometimes to focus on single phonemes or small sequences of phonemes. A phoneme is a *sound segment* of words or syllables. Quite a good way to understand how it may indicate meaning is to consider how replacing it with another phoneme will change the word - so if we replace the middle sound in “*bad*” we can make *“bawd”, “bed”, “bid”, “bird”* and *“bud”*. (In two cases here one letter is replaced with two letters but in all these cases it is a single vowel sound that changes.)

The first people to write in English used an existing alphabet - the Roman alphabet, which was itself adapted from the Greek alphabet for writing in Latin. (In the Roman empire, Latin was the official language of government and administration, and especially of the army but in the eastern parts of the empire Greek was the official language, and in Rome Greek was spoken as widely as Latin, according to F.F. Bruce, in *The Books and the Parchments*, Chapter 5). Because these first writers of English (Latin-speaking Roman monks) had more sounds than letters, they used the same letters to represent different sounds - perhaps making the assumption that the reader would recognize the word, and supply the appropriate sounds. It would be many years before anyone would think it possible to have more consistent spelling, and this has never been a realistic option for writers of English, though spelling has changed over time. And, in any case, the sounds of Old English are not exactly the same as the sounds of modern English.

As linguists have become aware of more and more languages, many with sounds never heard in English, they have tried to create a comprehensive set of symbols to correspond to features of sound - vowels, consonants, clicks and glottalic sounds and non-segmental or suprasegmental features, such as stress and tone. Among many schemes used by linguists one has perhaps more authority than most, as it is the product of the International Phonetic Association (IPA). In the table below, you will see the phonetic characters that correspond to the phonemes used in normal spoken English. To give examples is problematic, as no two speakers will produce the same sound. In the case of the vowels and a few consonants, the examples will not match the sounds produced by all speakers - they reflect the variety of accent known as Received Pronunciation or RP. Note that RP is not specific to any region, but uses more of the sounds found in the south and midlands than in the north. It is a socially prestigious accent, favoured in greater or less degree by broadcasters, civil servants, barristers and people who record speaking clock messages. It is not fixed and has changed measurably in the last 50 years.

You may also wonder what has happened to the letter *x*. This is used in English to represent two consonant sounds, those of *k* and *s* or of *k* and *z*. In phonetic transcription these symbols will be used.

*“Consonant”* and *“vowel”* each have two related but distinct meanings in English. In writing of phonology, you need to make the distinction clear. When you were younger you may have learned that *b,c,d,f* and so on are *consonants* while *a,e,i,o,u* are *vowels* - and you may have wondered about *y*. In this case *consonants* and *vowels* denote the letters that commonly represent the relevant sounds. Phonologists are interested in vowel and consonant sounds and the phonetic symbols that represent these (including vowel and consonant letters). It may be wise for you to use the words *consonant* and *vowel* (alone) to denote the sounds. However, it is better to use an unambiguous phrase - and write or speak about *consonant* or *vowel sounds*, *consonant* or *vowel letters* and *consonant* or *vowel symbols*. In most words, these sounds can be identified, but there are some cases where we move from one vowel to another to create an effect that is like neither - and these are *diphthongs*. We also have some *triphthongs* - where three vowel sounds come in succession in words such as *“fire”, “power”* and *“sure”*. (Nevertheless, this depends on the speaker - many of us alter the sounds so that we say *“our”* as if it were *“are”*.) For convenience, you may prefer the term *vowel glides* - and say that *“fine”* and *“boy”* contain two-vowel glides while *“fire”* contains a three-vowel glide.

# International Phonetic Alphabet (IPA) symbols for the sounds of English

The examples show the letters in bold that correspond to the sound that they illustrate. You will find guidance below on how to use these symbols in electronic documents. The IPA distributes audio files in analog and digital form, with specimen pronunciations of these sounds.

* The document in the frame below uses unicode symbols. If you do not see them, then you can open a PDF version of the page.

A *phoneme* is a speech sound that helps us construct meaning. That is, if we replace it with another sound (where this is possible) we get a new meaning or no meaning at all. If I replace the initial consonant (*/r/*) from *rubble*, I can get *double* or *Hubble* (astronomer for whom the space telescope is named) or meaningless forms (as regards the lexicon of standard English) like *fubble* and *wubble*. The same thing happens if I change the vowel and get *rabble, rebel, Ribble* (an English river) and the nonsense form *robble*. (I have used the conventional spelling of “rebel” here, but to avoid confusion should perhaps use phonetic transcription, so that replacements would always appear in the same position as the character they replace.)

However, what happens when a phoneme is adapted to the spoken context in which it occurs, in ways that do not alter the meaning for either speaker or hearer? Rather than say these are different phonemes that share the same meaning we use the model of *allophones*, which are variants of a phoneme. Thus if we isolate the *l* sound in the initial position in *lick* and in the final position in *ball*, we should be able to hear that the sound is (physically) different as is the way our speech organs produce it. Technically, in the second case, the back of the tongue is raised towards the *velum* or *soft palate*. The initial *l* sound is called *clear l*, while the terminal *l* sound is sometimes called a *dark l*. When we want to show the detail of *phonetic variants* or *allophones* we enclose the symbols in square brackets whereas in transcribing sounds from a phonological viewpoint we use slant lines. So, using the IPA transcription [*l*] is clear l, while *[ɫ]* is dark *l*.

If this is not clear think:

* Am I only describing a sound (irrespective of how this sound fits into a system, has meaning and so on)? If so, use square brackets.
* Am I trying to show how the sound is part of a wider system (irrespective of how exactly it sounds in a given instance)? If so, use slant brackets.

So long as we need a form of transcription, we will rely on the IPA scheme. But increasingly it is possible to use digital recording and reproduction to produce reference versions of sounds. This would not, of course, prevent change in the choice of which particular sounds to use in a given context. When people wonder about *harass* (hærəs) or *harass* (həræs) they usually are able to articulate either, and are concerned about which reveals them as more or less educated in the use of the “proper” form. (For your information, the stress historically falls on the first syllable, to rhyme with *embarrass* - thus in both *Pocket Oxford* [UK, 1969] and *Funk & Wagnalls New Practical Standard* [US, 1946]. The fashion for *hu-rass* is found on both sides of the Atlantic and we should not credit it to, or blame it on, US speakers of English.)

**Phonologists** also refer to *segments*. A segment is “a discrete unit that can be identified in a stream of speech”, according to Professor Crystal. In English the segments would correspond to vowel sounds and consonant sounds, say. This is a clear metaphor if we think of fruit - the number of segments varies, but is finite in a whole fruit. So some languages have few segments and others many - from 11 in Rotokas and Mura to 141 in !Xu. The term may be most helpful in indicating what non-segmental or supra-segmental (above the segments) features of spoken language are.

# The sounds of English

## Vowels

[Front vowels](http://www.teachit.co.uk/armoore/lang/phonology.htm#front) | [Central vowels](http://www.teachit.co.uk/armoore/lang/phonology.htm#central) | [Back vowels](http://www.teachit.co.uk/armoore/lang/phonology.htm#back)

English has twelve vowel sounds. In the table above they are divided into seven *short* and five *long vowels*. An alternative way of organizing them is according to where (in the mouth) they are produced. This method allows us to describe them as *front, central* and *back*. We can qualify them further by how high the tongue and lower jaw are when we make these vowel sounds, and by whether our lips are rounded or spread, and finally by whether they are short or long. This scheme shows the following arrangement:

**Front vowels**

* /i:/ - cream, seen (long high front spread vowel)
* /ɪ/ - bit, silly (short high front spread vowel)
* /ɛ/ - bet, head (short mid front spread vowel); this may also be shown by the symbol /e/
* /æ/ - cat, dad (short low front spread vowel); this may also be shown by /a/

 **Central vowels**

* /ɜ:/- burn, firm (long mid central spread vowel); this may also be shown by the symbol /ə:/.
* /ə/ - about, clever (short mid central spread vowel); this is sometimes known as *schwa*, or the neutral vowel sound - it never occurs in a stressed position.
* /ʌ/ - cut, nut (short low front spread vowel); this vowel is quite uncommon among speakers in the Midlands and further north in Britain.

 **Back vowels**

* /u:/ - boob, glue (long high back rounded vowel)
* /ʊ/ - put, soot (short high back rounded vowel); also shown by /u/
* /ɔ:/ - corn, faun (long mid back rounded vowel) also shown by /o:/
* /ɒ/- dog, rotten (short low back rounded vowel) also shown by /o/
* /ɑ:/ - hard, far (long low back spread vowel)

We can also arrange the vowels in a table or even depict them against a cross-section of the human mouth. Here is an example of a simple table:

|  |  |  |  |
| --- | --- | --- | --- |
|   | Front | Central | Back |
| High | ɪ    i: |   | ʊ    u:  |
| Mid | ɛ | ə    ɜ: | ɔ: |
| Low | Æ | ʌ | ɒ    ɑ: |

## Diphthongs

*Diphthongs* are sounds that begin as one vowel and end as another, while gliding between them. For this reason, they are sometimes described as *glide vowels*. How many are there? Almost every modern authority says eight - but they do not all list the same eight (check this for yourself). Simeon Potter, in *Our Language* (Potter, S, [1950] Chapter VI, Sounds and Spelling, London, Penguin) says there are nine - and lists those I have shown in the table above, all of which I have found in the modern reference works. The one most usually omitted is /ɔə/ as in *bored*. Many speakers do not use this diphthong, but use the same vowel in *poured* as in *fraud* - but it is alive and well in the north of Britain.

Potter notes that all English diphthongs are *falling* - that is the first element is stressed more than the second. Other languages have rising diphthongs, where the second element is stressed, as in Italian *“uomo”* (man) and *“uovo”* (egg).

## Consonants

[Voicing](http://www.teachit.co.uk/armoore/lang/phonology.htm#voicing) | [Articulation described by region](http://www.teachit.co.uk/armoore/lang/phonology.htm#region) | [Articulation described by manner](http://www.teachit.co.uk/armoore/lang/phonology.htm#manner)

Some authorities claim one or two fewer consonants than I have shown above, regarding those with double symbols (/tʃ/ and /dʒ/) as *“diphthong consonants”* in Potter's phrase. The list omits one sound that is not strictly a consonant but works like one. The full IPA list of phonetic symbols includes some for *non-pulmonic* consonants (not made with air coming from the lungs), click and glottal sounds. In some varieties of English, especially in the south of Britain (but the sound has migrated north) we find the *glottal plosive* or *glottal stop*, shown by the symbol /ʔ/ (essentially a question mark without the dot at the tail). This sound occurs in place of /t/ for some speakers - so /botəl/ or /botl/ (bottle) become /boʔəl/ or /boʔl/.

We form consonants by controlling or impeding the *egressive* (outward) flow of air. We do this with the *articulators* - from the *glottis*, past the *velum*, the *hard palate* and *alveolar ridge* and the *tongue*, to the *teeth* and *lips*. The sound results from three things:

* voicing - causing the vocal cords to vibrate
* where the articulation happens
* how the articulation happens - how the airflow is controlled

# Voicing

All vowels must be *voiced* - they are caused by vibration in the vocal cords. But consonants may be voiced or not. Some of the consonant sounds of English come in pairs that differ in being voiced or not - in which case they are described as *voiceless* or *unvoiced*. So /b/ is voiced and /p/ is the unvoiced consonant in one pair, while voiced /g/ and voiceless /k/ form another pair.

We can explain the consonant sounds by the place where the articulation principally occurs or by the kinds of articulation that occur there. The first scheme gives us this arrangement:

**Articulation described by region**

* *Glottal articulation* - articulation by the glottis. We use this for one consonant in English. This is /h/ in initial position in *house* or *hope*.
* *Velar articulation* - we do this with the back of the tongue against the velum. We use it for initial hard /g/ (as in *golf*) and for final /ŋ/ (as in *gong*).
* *Palatal articulation* - we do this with the front of the tongue on the hard palate. We use it for /dʒ/ (as in *jam*) and for /ʃ/ (as in *sheep* or *sugar*).
* *Alveolar articulation* - we do this with the tongue blade on the alveolar ridge. We use it for /t/ (as in *teeth*), /d/ (as in *dodo*) /z/ (as in *zebra*) /n/ (as in *no*) and /l/ (as in *light*).
* *Dental articulation* - we do this with the tip of the tongue on the back of the upper front teeth. We use it for /θ/ (as in *think*) and /ð/ (as in *that*). This is one form of articulation that we can observe and feel ourselves doing.
* *Labio-dental articulation* - we do this with the lower lip and upper front teeth. We use it for /v/ (as in *vampire*).
* *Labial articulation* - we do this with the lips for /b/ (as in *boat*) and /m/ (as in *most*). Where we use two lips (as in English) this is bilabial articulation.

**Articulation described by manner**

This scheme gives us a different arrangement into *stop (or plosive) consonants, affricates, fricatives, nasal consonants, laterals* and *approximants*.

* *Stop consonants* (so-called because the airflow is stopped) or *plosive consonants* (because it is subsequently released, causing an outrush of air and a burst of sound) are:
	+ *Bilabial voiced* /b/ (as in *boat*) and *voiceless* /p/ (as in *post*)
	+ *Alveolar voiced* /d/ (as in *dad*) and *voiceless* /t/ (as in *tap*)
	+ *Velar voiced* /g/ (as in *golf*) and *voiceless* /k/ (as in *cow*)
* *Affricates* are a kind of stop consonant, where the expelled air causes friction rather than plosion. They are palatal /tʃ/ (as in cheat) and palatal /dʒ/ (as in jam)
* *Fricatives* come from restricting, but not completely stopping, the airflow. The air passes through a narrow space and the sound arises from the friction this produces. They come in voiced and unvoiced pairs:
	+ *Labio-dental voiced* /v/ (as in *vole*) and *unvoiced* /f/ (as in *foal*)
	+ *Dental voiced* /ð/ (as in *those*) and *unvoiced* /θ/ (as in *thick*)
	+ *Alveolar voiced* /z/ (as in *zest*) and *unvoiced* /s/ (as in *sent*)
	+ *Palatal voiced* /ʒ/ (as in the middle of *leisure*) and unvoiced /ʃ/ (as at the end of *trash*)
* *Nasal consonants* involve closing the articulators but lowering the uvula, which normally closes off the route to the nose, through which the air escapes. There are three nasal consonants in English:
	+ *Bilabial* /m/ (as in *mine*)
	+ *Alveolar* /n/ (as in *nine*)
	+ *Velar* /ŋ/ (as at the end of *gong*)
* *Lateral consonants* allow the air to escape at the sides of the tongue. In English there is only one such sound, which is *alveolar* /l/ (as at the start of *lamp*)
* *Approximants* do not impede the flow of air. They are all voiced but are counted as consonants chiefly because of how they function in syllables. They are:
	+ *Bilabial* /w/ (as in *water*)
	+ *Alveolar* /r/ (as in *road*)
	+ *Palatal* /j/ (as in *yet*)

# Syllables

When you think of individual sounds, you may think of them in terms of *syllables*. These are units of phonological organization and smaller than words. Alternatively, think of them as units of rhythm. Although they may contain several sounds, they combine them in ways that create the effect of unity.

Thus *splash* is a single syllable but it combines three consonants, a vowel, and a final consonant /spl+æ+ʃ/.

Some words have a single syllable - so they are *monosyllables* or *monosyllabic*. Others have more than one syllable and are *polysyllables* or *polysyllabic*.

Sometimes you may see a word divided into its syllables, but this may be an artificial exercise, since in real speech the sounds are continuous. In some cases it will be impossible to tell whether a given consonant was ending one syllable of beginning another. It is possible, for example, to pronounce *lamppost* so that there are two /p/ sounds in succession with some interval between them. But many native English speakers will render this as /læm-pəʊst/ or /læm-pəʊsd/.

Students of language may find it helpful to be able to identify individual syllables in explaining *pronunciation* and *language change* - one of the things you may need to do is explain which are the syllables that are *stressed* in a particular word or phrase.

# Suprasegmentals

[Prosodic features](http://www.teachit.co.uk/armoore/lang/phonology.htm#prosody) | [Paralinguistic features](http://www.teachit.co.uk/armoore/lang/phonology.htm#paralinguistic)

In written English we use punctuation to signal some things like *emphasis*, and the *speed* with which we want our readers to move at certain points. In spoken English we use sounds in ways that do not apply to individual segments but stretches of spoken discourse from words to phrases, clauses and sentences. Such effects are described as *non-segmental* or *suprasegmental* - or, using the adjective in a plural nominal (noun) form, simply *suprasegmentals*.

Among these effects are such things as *stress, intonation, tempo* and *rhythm* - which collectively are known as *prosodic features*. Other effects arise from altering the quality of the voice, making it breathy or husky and changing what is sometimes called the timbre - and these are *paralinguistic features*. Both of these kinds of effect may signal meaning. But they do not do so consistently from one language to another, and this can cause confusion to students learning a second language.

**Prosodic features**

* *Stress or loudness* - increasing volume is a simple way of giving emphasis, and this is a crude measure of stress. But it is usually combined with other things like changes in tone and tempo. We use stress to convey some kinds of meaning (semantic and pragmatic) such as urgency or anger or for such things as imperatives.
* *Intonation* - you may be familiar in a loose sense with the notion of tone of voice. We use varying levels of pitch in sequences (contours or tunes) to convey particular meanings. Falling and rising intonation in English may signal a difference between statement and question. Younger speakers of English may use rising (question) intonation without intending to make the utterance a question.
* *Tempo* - we speak more or less quickly for many different reasons and purposes. Occasionally it may be that we are adapting our speech to the time we have in which to utter it (as, for example, in a horse-racing commentary). But mostly tempo reflects some kinds of meaning or attitude - so we give a truthful answer to a question, but do so rapidly to convey our distraction or irritation.
* *Rhythm* - patterns of stress, tempo and pitch together create a rhythm. Some kinds of formal and repetitive rhythm are familiar from music, rap, poetry and even chants of soccer fans. But all speech has rhythm - it is just that in spontaneous utterances we are less likely to hear regular or repeating patterns.

**Paralinguistic features**

How many voices do we have? We are used to “putting on” silly voices for comic effects or in play. We may adapt our voices for speaking to babies, or to suggest emotion, excitement or desire. These effects are familiar in drama, where the use of a stage whisper may suggest something clandestine and conspiratorial. Nasal speech may suggest disdain, though it is easily exaggerated for comic effect (as by the late Kenneth Williams in many *Carry On* films).

Such effects are sometimes described as changing *timbre* or voice quality. We all may use them sometimes but they are particularly common among entertainers such as actors or comedians. This is not surprising, as they practise using their voices in unusual ways, to represent different characters. The performers in the BBC's *Teletubbies* TV programme use paralinguistic features to suggest the different characters of Tinky-Winky, Dipsy, La-La and Po.

# Accent

Everyone's use of the sound system is unique and personal. And few of us use sounds consistently in all contexts - we adapt to different situations. (We rarely adapt our sounds alone - more likely we mind our language in the popular sense, by attending to our lexical choices, grammar and phonology.)

Most human beings adjust their speech to resemble that of those around them. This is very easy to demonstrate, as when some vogue words from broadcasting surf a wave of popularity before settling down in the language more modestly or passing out of use again.

This is particularly true of sounds, in the sense that some identifiable groups of people share (with some individual variation) a collection of sounds that are not found elsewhere, and these are *accents*. We think of accents as marking out people by geographical region and, to a less degree, by social class or education. So we might speak of a *Ugandan, Nigerian, Kenyan, Tanzanian, British, American, Indian, Asiatic etc accents*. Usually, the orthography, the system of writing a particular language, may not change. The pronunciation does. Consider the way the word GOD is pronounced by the various accent groups identified.

Thinking of social class, we might speak of a *public school accent* (stiff upper lip and cut glass vowels). But we do not observe occupational accents and we are unlikely to speak of a baker's, soldier’s or accountant's accent (whereas we might study their special uses of lexis and grammar).

This is not the place to study in detail the causes of such accents or, for example, how they are changing. Language researchers may wish to record regional variant forms and their frequency. In Britain today (perhaps because of the influence of broadcasting) we can observe sound features moving from one region to another (like the glottal stop which is now common in the north of England), while also recording how other features of accent are not subject to this kind of change.

Studying phonology alone will not answer such questions. But it gives you the means to identify specific phonetic features of accent and record them objectively.

# Received Pronunciation

*Received Pronunciation* (or *RP*) is a special accent - a regionally neutral accent that is used as a standard for broadcasting and some other kinds of public speaking. It is not fixed - you can hear earlier forms of RP in historical broadcasts, such as newsreel films from the Second World War. Queen Elizabeth II has an accent close to the RP of her own childhood, but not very close to the RP of the 21st century.

RP excites powerful feelings of admiration and repulsion. Some see it as a standard or the correct form of spoken English, while others see its use (in broadcasting, say) as an affront to the dignity of their own region. Its merit lies in its being more widely understood by a national and international audience than any regional accent. Non-native speakers often want to learn RP, rather than a regional accent of English. RP exists but no one is compelled to use it. However, if we see it as a reference point, we can decide how far we want to use the sounds of our region where these differ from the RP standard. In addition, its critics may make a mistake in supposing all English speakers even have a regional identity - many people are geographically mobile, and do not stay for long periods in any one place.

 RP is also a very loose and flexible standard. It is not written in a book and does not prescribe such things as whether to stress the first or second syllable in research and refer mainly to the presenters, newsreaders, continuity announcers and so on. RP is used as a standard in some popular language reference works. For example, the *Oxford Guide to the English Language* (Weiner, E [1984], Pronunciation, p. 45, Book Club Associates/OUP, London) has this useful description of RP:

“The aim of recommending one type of pronunciation rather than another, or of giving a word a recommended spoken form, naturally implies the existence of a standard. There are of course many varieties of English, even within the limits of the British Isles, but it is not the business of this section to describe them. The treatment here is based upon Received Pronunciation (RP), namely 'the pronunciation of that variety of British English widely considered to be least regional, being originally that used by educated speakers in southern England.' This is not to suggest that other varieties are inferior; rather, RP is here taken as a neutral national standard, just as it is in its use in broadcasting or in the teaching of English as a foreign language.”

## Accent and social class

Accent is certainly related to social class. This is a truism - because accent is one of the things that we use as an indicator of social class. For a given class, we can express this positively or negatively. As regards the highest social class, positively we can identify features of articulation - for certain sounds, upper class speakers do not open or move the lips as much as other speakers of English. Negatively, we can identify such sounds as the glottal stop as rare among, and untypical of, speakers from this social class.

Alternatively we can look at vowel choices or preferences. For example, the upper classes for long used the vowel /ʌ/ in some cases where /ɒ/ is standard - thus Coventry would be /kʌvəntri:/. C.S. Lewis in *The Great Divorce* depicts a character who pronounces *“God”* as *“Gud”* -“ 'Would to God' he continued, but he was now pronouncing it Gud...”

 We may think of dropping or omitting consonants as a mark of the lower social classes and uneducated people. But dropping of terminal *g* - or rather substituting /n/ for /ŋ/ was until recently a mark of the upper class “toff”, who would enjoy, for example, *huntin', fishin'* and *shootin'*. The British actor Ian Carmichael did this in playing the part of Dorothy L. Sayers' detective, Lord Peter Wimsey. In writing the dialogue for her novels Miss Sayers indicates Lord Peter's dropping of the terminal *g* by the use of an apostrophe:

“It's surprisin' how few people ever mean anything definite from one year's end to another...”

*Gaudy Night*, Chapter 4

Among real life speakers in whom I have observed this tendency I would identify the late Sir Alf Ramsey. (I do not know whether Alf Ramsey was brought up to speak in this way or acquired the habit later.)

Investigating the connection can be challenging, however, since social class is an artificial construct. Assuming that you have found a way to identify your subjects as belonging to some definable social group, then you can study vowel choices or frequencies. Even the most cursory attention tells us that the Queen has distinct speech sounds. But can we explain them in detail? Does she share them with other members of her family? Do other speakers share them?

## Pronunciation and prescription

The English Language List is an Internet discussion forum for English language teachers. Recently (2001) a student, not a native speaker but clearly a very competent writer of English, asked where he could get help to learn to speak in a standard British accent. Many of the responses came from people who were not answering his question but trying to persuade him to stick with his current accent (which he felt would disadvantage him in his business career). Yet we are not disparaging regional accents when we try to learn the neutral and prestigious standard form. (What the discussion never really revealed was how many of the list members would identify themselves as RP speakers.)

The prescriptive tradition in English grammar was unscientific and perhaps harmful. But setting down authoritative standard forms is not always so unwise. In spelling they are useful, and the same may be true of pronunciation. Dictionaries do not compel the reader to learn and use the pronunciations they show - but they do give a representation of the pronunciation according to RP. Some show variant pronunciations as well as the principal RP form.

If you are a student (or even a teacher) you may find RP an unfamiliar accent - maybe you can see that the phonetic transcription indicates a pronunciation different from the one you normally use. No one is forcing you to change your own speech sounds, in which your sense of identity may be profoundly located. But you can become aware that the local norm is not the universal standard.

Now that English is an international language, its development is certainly not controlled by what happens in the UK. So British RP may cease to be a useful standard for learners of English. Increasingly, language learners favour a mid-Atlantic accent, which shares features of British RP and the speech of the eastern USA.

# The organs of Speech

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# Exercise 1

1. Analyse places of articulation in human language.
2. Distinguish between articulation and enunciation.
3. Discuss the manner of articulation in English Language.
4. Write the following in phonetics:
5. I am going to complete answering this paper in twenty minutes.
6. Please, do not exaggerate the pain you have.
7. Phonology is the science of speech sounds in a particular language.
8. Discuss the factors that affect the pronunciation of words.
9. How can pronunciation help or hinder correctness in spelling words?
10. What should teachers of Language emphasize in teaching speaking?

# Past paper

**PAPER**

**INSTRUCTIONS**

* **Time: 3 hours.**
* **Answer any Four questions.**

1. Give a phonetic transcription of the following words

1. Education
2. Women
3. College
4. Oven
5. Good
6. Data
7. Said
8. Paper
9. Judith
10. Clothes
11. Gate
12. First
13. Fast
14. Fruit
15. Onion  **(15 marks)**

2. Divide the following words into syllabic divisions.

1. Accountability
2. Aggrieve
3. Command
4. Affectionately
5. Accommodate

***(15 marks)***

3. Draw the picture showing speech organs and places of articulation in humans. *(****15 marks)***

4. Give the classification of the English consonants, showing their place of articulation and manner of articulation. *(****15 marks)***

5. i.) Define the following terms

1. Phonetics
2. phonology
3. semi vowel
4. stress
5. Intonation
6. Plosive
7. Affricate ***(07 marks)***

ii). Name the eight diphthongs in the English Language. Illustrate how they are used. ***(08 marks)***

6. Why should we teach and learn English pronunciation? ***(15 marks)***

7. Write the following passage in **phonetics**:

My study recommends that teachers should not consider their learners as stumbling blocks but rather as complementary to the learning process. They ought to strive to establish rapport for effective communication. Secondly, teachers should appreciate the efforts of the rather few responding learners in their classes. This will encourage the other slow learners to cope and make efforts to learn more. **(15 marks)**

**END**

# THE PHONETIC CHART IPA

This chart gives a partial system of [diaphonemes](https://en.wikipedia.org/wiki/Diaphoneme) for English. The symbols for the diaphonemes are given in bold, followed by their most common phonetic values. For the vowels, a separate phonetic value is given for each major dialect, and words used to name corresponding [lexical sets](https://en.wikipedia.org/wiki/Lexical_set) are also given. The diaphonemes and lexical sets given here are based on RP and General American; they are not sufficient to express all of the distinctions found in other dialects, such as Australian English.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
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| --- |
| IPA: ENGLISH [CONSONANTS](https://en.wikipedia.org/wiki/Consonant) |
| [**Dia-phoneme**](https://en.wikipedia.org/wiki/Help%3AIPA_for_English)[**[1]**](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-PE-1) | **Phones** | **Examples** |
| **p** | [pʰ](https://en.wikipedia.org/wiki/Aspirated_consonant), [p](https://en.wikipedia.org/wiki/Voiceless_bilabial_stop) | **p**en, s**p**in, ti**p** |
| **b** | [b](https://en.wikipedia.org/wiki/Voiced_bilabial_stop) | **b**ut, we**b** |
| **t** | [tʰ](https://en.wikipedia.org/wiki/Aspirated_consonant), [t](https://en.wikipedia.org/wiki/Voiceless_alveolar_stop), [ɾ](https://en.wikipedia.org/wiki/Alveolar_flap), [ʔ](https://en.wikipedia.org/wiki/Glottal_stop)[[2]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-2) | **t**wo, s**t**ing, be**t** |
| **d** | [d](https://en.wikipedia.org/wiki/Voiced_alveolar_stop), [ɾ](https://en.wikipedia.org/wiki/Alveolar_flap)[[3]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-3) | **d**o, o**dd** |
| **t͡ʃ** | [t͡ʃʰ](https://en.wikipedia.org/wiki/Aspirated_consonant), [t͡ʃ](https://en.wikipedia.org/wiki/Voiceless_palato-alveolar_affricate) | **ch**air, na**t**ure, tea**ch** |
| **d͡ʒ** | [d͡ʒ](https://en.wikipedia.org/wiki/Voiced_palato-alveolar_affricate) | **g**in, **j**oy, e**dge** |
| **k** | [kʰ](https://en.wikipedia.org/wiki/Aspirated_consonant), [k](https://en.wikipedia.org/wiki/Voiceless_velar_stop) | **c**at, **k**ill, s**k**in, **q**ueen, uni**que**, thi**ck** |
| **ɡ** | [ɡ](https://en.wikipedia.org/wiki/Voiced_velar_stop) | **g**o, **g**et, be**g** |
| **f** | [f](https://en.wikipedia.org/wiki/Voiceless_labiodental_fricative) | **f**ool, enou**gh**, lea**f**, o**ff**, **ph**oto |
| **v** | [v](https://en.wikipedia.org/wiki/Voiced_labiodental_fricative) | **v**oice, ha**ve**, o**f** |
| **θ** | [θ](https://en.wikipedia.org/wiki/Voiceless_dental_fricative), [t̪](https://en.wikipedia.org/wiki/Voiceless_dental_stop)[[4]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-4) | **th**ing, tee**th** |
| **ð** | [ð](https://en.wikipedia.org/wiki/Voiced_dental_fricative), [d̪](https://en.wikipedia.org/wiki/Voiced_dental_stop)[[5]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-5) | **th**is, brea**the**, fa**th**er |
| **s** | [s](https://en.wikipedia.org/wiki/Voiceless_alveolar_fricative#Voiceless_alveolar_sibilant) | **s**ee, **c**ity, pa**ss** |
| **z** | [z](https://en.wikipedia.org/wiki/Voiced_alveolar_fricative#Voiced_alveolar_sibilant) | **z**oo, ro**s**e |
| **ʃ** | [ʃ](https://en.wikipedia.org/wiki/Voiceless_palato-alveolar_sibilant) | **sh**e, **s**ure, se**ssi**on, emo**ti**on, lea**sh** |
| **ʒ** | [ʒ](https://en.wikipedia.org/wiki/Voiced_palato-alveolar_sibilant) | plea**su**re, bei**ge**, equa**ti**on, sei**zu**re |
| **h** | [h](https://en.wikipedia.org/wiki/Voiceless_glottal_fricative), [ɦ](https://en.wikipedia.org/wiki/Voiced_glottal_fricative),[[6]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-6) [ç](https://en.wikipedia.org/wiki/Voiceless_palatal_fricative)[[7]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-7) | **H**am |
| **m** | [m](https://en.wikipedia.org/wiki/Bilabial_nasal), [ɱ](https://en.wikipedia.org/wiki/Labiodental_nasal)[[8]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-8) | **m**an, ha**m** |
| **n** | [n](https://en.wikipedia.org/wiki/Alveolar_nasal) | **n**o, ti**n** |
| **ŋ** | [ŋ](https://en.wikipedia.org/wiki/Velar_nasal) | ri**ng**er, si**ng**,[[9]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-9) fi**n**ger, dri**n**k |
| **l** | [l](https://en.wikipedia.org/wiki/Alveolar_lateral_approximant), [ɫ](https://en.wikipedia.org/wiki/Alveolar_lateral_approximant#Velarized_alveolar_lateral_approximant),[[10]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-10) [ɤ](https://en.wikipedia.org/wiki/Close-mid_back_unrounded_vowel)[[11]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-11) [w](https://en.wikipedia.org/wiki/Labio-velar_approximant), [o](https://en.wikipedia.org/wiki/Close-mid_back_rounded_vowel), [ʊ](https://en.wikipedia.org/wiki/Near-close_near-back_vowel)[[12]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-12) | **l**eft, be**ll**, sab**le** |
| **r** | [ɹʷ](https://en.wikipedia.org/wiki/Labialization), [ɹ](https://en.wikipedia.org/wiki/Alveolar_approximant), [ɾ](https://en.wikipedia.org/wiki/Alveolar_flap),[[13]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-r-13) [ɻ](https://en.wikipedia.org/wiki/Retroflex_approximant), [ʋ](https://en.wikipedia.org/wiki/Labiodental_approximant)[[14]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-14) | **r**un, ve**r**y |
| **w** | [w](https://en.wikipedia.org/wiki/Labio-velar_approximant) | **w**e, q**u**een |
| **j** | [j](https://en.wikipedia.org/wiki/Palatal_approximant) | **y**es, n**y**ala |
| **hw** | [ʍ](https://en.wikipedia.org/wiki/Voiceless_labio-velar_approximant), [w](https://en.wikipedia.org/wiki/Labio-velar_approximant)[[15]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-15) | **Wh**at |
|  |
| **IPA: Marginal consonants** |
| **ʔ** | [ʔ](https://en.wikipedia.org/wiki/Glottal_stop) | uh**-**oh |
| **x** | [x](https://en.wikipedia.org/wiki/Voiceless_velar_fricative) | lo**ch** (Scottish),[[16]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-16) u**gh**[[17]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-17) |
|  |
| **IPA: Reduced vowels**[**[18]**](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-18) |
| **ə** | Reduced /ʌ, æ, ɑː, ɒ/ |
| **ɪ̈ (ɪ, ə)** | Reduced /ɪ, iː, ɛ, eɪ, aɪ/ |
| **ʊ̈ (ʊ, ə)** | Reduced /ʊ, uː/ |
| **ɵ (ə)** | Reduced /oʊ/ |
| **ɚ (ə)** | Reduced /ɜr, ɑr, ɔr/ |

|  |
| --- |
| IPA: English [vowels](https://en.wikipedia.org/wiki/Vowel) and [diphthongs](https://en.wikipedia.org/wiki/Diphthong) |
| [**Dia-phoneme**](https://en.wikipedia.org/wiki/Help%3AIPA_for_English)[**[1]**](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-PE-1) | **AuE[[19]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects%22%20%5Cl%20%22cite_note-19)Australia** | **CaECanada** | **GA**[**[20]**](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-20)[**[21]**](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-21)[**[22]**](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-Mannell_2009-22)**United States** | **InE[[23]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects%22%20%5Cl%20%22cite_note-23)India** | **IrE[[24]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects%22%20%5Cl%20%22cite_note-24)Republic of Ireland** | **NZE**[**[22]**](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-Mannell_2009-22)[**[25]**](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-25)**New Zealand** | **RP**[**[26]**](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-26)[**[27]**](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-27)**United Kingdom** | **ScE[[28]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects%22%20%5Cl%20%22cite_note-28)Scotland** | **SAE**[**[29]**](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-29)[**[30]**](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-30)**South Africa** | **SSESingapore** | **WaE[[31]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects%22%20%5Cl%20%22cite_note-31)Wales** | [**Keyword**](https://en.wikipedia.org/wiki/Lexical_set) | **Examples** |
| **æ** | [æ](https://en.wikipedia.org/wiki/Near-open_front_unrounded_vowel),[æː](https://en.wikipedia.org/wiki/Near-open_front_unrounded_vowel)[[32]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-badlad-32) | [æ](https://en.wikipedia.org/wiki/Near-open_front_unrounded_vowel), eə~ɛə[[33]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects%22%20%5Cl%20%22cite_note-shortatensing-33) | [æ](https://en.wikipedia.org/wiki/Near-open_front_unrounded_vowel)~[ɛ](https://en.wikipedia.org/wiki/Open-mid_front_unrounded_vowel) | [ɑ](https://en.wikipedia.org/wiki/Open_back_unrounded_vowel)~[a](https://en.wikipedia.org/wiki/Open_front_unrounded_vowel)~[æ](https://en.wikipedia.org/wiki/Near-open_front_unrounded_vowel) | [ɛ](https://en.wikipedia.org/wiki/Open-mid_front_unrounded_vowel) | [æ](https://en.wikipedia.org/wiki/Near-open_front_unrounded_vowel)~[a](https://en.wikipedia.org/wiki/Open_front_unrounded_vowel) | [ɐ̟](https://en.wikipedia.org/wiki/Near-open_central_vowel) | [a](https://en.wikipedia.org/wiki/Open_front_unrounded_vowel)~[æ](https://en.wikipedia.org/wiki/Near-open_front_unrounded_vowel)~[ɛ](https://en.wikipedia.org/wiki/Open-mid_front_unrounded_vowel) | [ɛ](https://en.wikipedia.org/wiki/Open-mid_front_unrounded_vowel)[[34]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-34) | [a](https://en.wikipedia.org/wiki/Open_front_unrounded_vowel) | TRAP | l**a**d, b**a**d, c**a**t[[35]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-oxforda-35) |
| **ɑː or æ** | [äː](https://en.wikipedia.org/wiki/Open_central_unrounded_vowel) | [äː](https://en.wikipedia.org/wiki/Open_central_unrounded_vowel) | [ɐː](https://en.wikipedia.org/wiki/Near-open_central_vowel) | [ɑː](https://en.wikipedia.org/wiki/Open_back_unrounded_vowel) | [äː](https://en.wikipedia.org/wiki/Open_central_unrounded_vowel)~[ɑː](https://en.wikipedia.org/wiki/Open_back_unrounded_vowel)~[ɒː](https://en.wikipedia.org/wiki/Open_back_rounded_vowel)~[ɔː](https://en.wikipedia.org/wiki/Open-mid_back_rounded_vowel) | [ɑ](https://en.wikipedia.org/wiki/Open_back_unrounded_vowel)[[36]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-36) | BATH | p**a**ss, p**a**th, s**a**mple |
| **ɑː** | [ɑ](https://en.wikipedia.org/wiki/Open_back_unrounded_vowel)~[ɒ](https://en.wikipedia.org/wiki/Open_back_rounded_vowel) | [ɑ](https://en.wikipedia.org/wiki/Open_back_unrounded_vowel)~[ä](https://en.wikipedia.org/wiki/Open_central_unrounded_vowel) | [ɑː](https://en.wikipedia.org/wiki/Open_back_unrounded_vowel) | [aː](https://en.wikipedia.org/wiki/Open_front_unrounded_vowel) | PALM | f**a**ther |
| [**ɒ**](https://en.wikipedia.org/wiki/Open_back_rounded_vowel) | [ɔ](https://en.wikipedia.org/wiki/Open-mid_back_rounded_vowel) | [ɒ](https://en.wikipedia.org/wiki/Open_back_rounded_vowel)~[ä](https://en.wikipedia.org/wiki/Open_central_unrounded_vowel) | [ɑ](https://en.wikipedia.org/wiki/Open_back_unrounded_vowel) | [ɔ](https://en.wikipedia.org/wiki/Open-mid_back_rounded_vowel) | [ɒ](https://en.wikipedia.org/wiki/Open_back_rounded_vowel)~[ɔ](https://en.wikipedia.org/wiki/Open-mid_back_rounded_vowel) | [ɔ](https://en.wikipedia.org/wiki/Open-mid_back_rounded_vowel) | [ɒ̈](https://en.wikipedia.org/wiki/Open_back_rounded_vowel)~[ʌ̈](https://en.wikipedia.org/wiki/Open-mid_back_unrounded_vowel) | [ɔ](https://en.wikipedia.org/wiki/Open-mid_back_rounded_vowel) | [ɒ](https://en.wikipedia.org/wiki/Open_back_rounded_vowel) | LOT | n**o**t, w**a**sp |
| [ɒ](https://en.wikipedia.org/wiki/Open_back_rounded_vowel)~[ɔ](https://en.wikipedia.org/wiki/Open-mid_back_rounded_vowel)~[ɑ](https://en.wikipedia.org/wiki/Open_back_unrounded_vowel)[[37]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-37) | [ɒ̈](https://en.wikipedia.org/wiki/Open_back_rounded_vowel)~[ʌ̈](https://en.wikipedia.org/wiki/Open-mid_back_unrounded_vowel),[ɔː](https://en.wikipedia.org/wiki/Open-mid_back_rounded_vowel)~[oː](https://en.wikipedia.org/wiki/Close-mid_back_rounded_vowel) | CLOTH | **o**ff, l**o**ss, cl**o**th, l**o**ng, d**o**g, ch**o**colate[[38]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-38) |
| **ɔː** | [oː](https://en.wikipedia.org/wiki/Close-mid_back_rounded_vowel) | [ɒː](https://en.wikipedia.org/wiki/Open_back_rounded_vowel) | [ɔː](https://en.wikipedia.org/wiki/Open-mid_back_rounded_vowel) | [oː](https://en.wikipedia.org/wiki/Close-mid_back_rounded_vowel) | [oː](https://en.wikipedia.org/wiki/Close-mid_back_rounded_vowel) | [ɔː](https://en.wikipedia.org/wiki/Open-mid_back_rounded_vowel)~[oː](https://en.wikipedia.org/wiki/Close-mid_back_rounded_vowel) | [ɒː](https://en.wikipedia.org/wiki/Open_back_rounded_vowel) | THOUGHT | l**aw**, c**au**ght, **a**ll, h**a**lt, t**al**k |
| **ə** | [ə](https://en.wikipedia.org/wiki/Mid_central_vowel#Mid-central_unrounded_vowel) | [ə](https://en.wikipedia.org/wiki/Mid_central_vowel#Mid-central_unrounded_vowel) | [ə](https://en.wikipedia.org/wiki/Mid_central_vowel#Mid-central_unrounded_vowel) | [ə](https://en.wikipedia.org/wiki/Mid_central_vowel#Mid-central_unrounded_vowel) | [ɘ](https://en.wikipedia.org/wiki/Close-mid_central_unrounded_vowel) | [ə](https://en.wikipedia.org/wiki/Mid_central_vowel#Mid-central_unrounded_vowel) | [ə](https://en.wikipedia.org/wiki/Mid_central_vowel#Mid-central_unrounded_vowel) | [ə](https://en.wikipedia.org/wiki/Mid_central_vowel#Mid-central_unrounded_vowel) | COMMA | **a**bout |
| **ɨ** | [ɪ̈](https://en.wikipedia.org/wiki/Near-close_central_unrounded_vowel) |  | [ɪ](https://en.wikipedia.org/wiki/Near-close_near-front_unrounded_vowel) | [ɨ](https://en.wikipedia.org/wiki/Close_central_unrounded_vowel) |  | [ɨ](https://en.wikipedia.org/wiki/Close_central_unrounded_vowel) | KIT | spott**e**d |
| **ɪ** | [ɪ](https://en.wikipedia.org/wiki/Near-close_near-front_unrounded_vowel) | [ɪ](https://en.wikipedia.org/wiki/Near-close_near-front_unrounded_vowel) | [ɪ](https://en.wikipedia.org/wiki/Near-close_near-front_unrounded_vowel)~[i](https://en.wikipedia.org/wiki/Close_front_unrounded_vowel), [ə](https://en.wikipedia.org/wiki/Mid_central_vowel#Mid-central_unrounded_vowel)[[39]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-kit-39) | [i](https://en.wikipedia.org/wiki/Close_front_unrounded_vowel), [ɪ](https://en.wikipedia.org/wiki/Near-close_near-front_unrounded_vowel) | [ɪ](https://en.wikipedia.org/wiki/Near-close_near-front_unrounded_vowel) | s**i**t |
| **i** | [i](https://en.wikipedia.org/wiki/Close_front_unrounded_vowel) | [i](https://en.wikipedia.org/wiki/Close_front_unrounded_vowel) |  |  | [i](https://en.wikipedia.org/wiki/Close_front_unrounded_vowel) | ɪj | [e](https://en.wikipedia.org/wiki/Close-mid_front_unrounded_vowel), [i](https://en.wikipedia.org/wiki/Close_front_unrounded_vowel) | [iˑ](https://en.wikipedia.org/wiki/Close_front_unrounded_vowel) | [i](https://en.wikipedia.org/wiki/Close_front_unrounded_vowel) | [iː](https://en.wikipedia.org/wiki/Close_front_unrounded_vowel) | HAPPY | cit**y** |
| **iː** | ɪi̯ | [iː](https://en.wikipedia.org/wiki/Close_front_unrounded_vowel) | [iː](https://en.wikipedia.org/wiki/Close_front_unrounded_vowel) | ɘi̯ | ɪj | [i](https://en.wikipedia.org/wiki/Close_front_unrounded_vowel) | [iː](https://en.wikipedia.org/wiki/Close_front_unrounded_vowel) | FLEECE | s**ee** |
| [eː](https://en.wikipedia.org/wiki/Close-mid_front_unrounded_vowel)~[iː](https://en.wikipedia.org/wiki/Close_front_unrounded_vowel%22%20%5Co%20%22Close%20front%20unrounded%20vowel) | m**ea**t |
| **eɪ** | æɪ̯ | eɪ̯~[e](https://en.wikipedia.org/wiki/Close-mid_front_unrounded_vowel) | [eː](https://en.wikipedia.org/wiki/Close-mid_front_unrounded_vowel) | [eː](https://en.wikipedia.org/wiki/Close-mid_front_unrounded_vowel) | æe̯ | ɛɪ̯ | [e](https://en.wikipedia.org/wiki/Close-mid_front_unrounded_vowel) | eɪ̯~ɛɪ̯~æɪ̯~äɪ̯~ʌɪ̯ | [e](https://en.wikipedia.org/wiki/Close-mid_front_unrounded_vowel)[[40]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-Singapore.27_pp._93-99-40) | [eː](https://en.wikipedia.org/wiki/Close-mid_front_unrounded_vowel) | FACE | d**a**te |
| Ei | d**ay**, p**ai**n, wh**ey**, r**ei**n |
| **ɛ** | [e](https://en.wikipedia.org/wiki/Close-mid_front_unrounded_vowel) | [ɛ](https://en.wikipedia.org/wiki/Open-mid_front_unrounded_vowel) | [e](https://en.wikipedia.org/wiki/Close-mid_front_unrounded_vowel)~[ɪ](https://en.wikipedia.org/wiki/Near-close_near-front_unrounded_vowel) | [e](https://en.wikipedia.org/wiki/Close-mid_front_unrounded_vowel)~[ɛ](https://en.wikipedia.org/wiki/Open-mid_front_unrounded_vowel) | [ɛ](https://en.wikipedia.org/wiki/Open-mid_front_unrounded_vowel) | [ɛ](https://en.wikipedia.org/wiki/Open-mid_front_unrounded_vowel)~[e](https://en.wikipedia.org/wiki/Close-mid_front_unrounded_vowel)~[ɪ](https://en.wikipedia.org/wiki/Near-close_near-front_unrounded_vowel) | [ɛ](https://en.wikipedia.org/wiki/Open-mid_front_unrounded_vowel), [e](https://en.wikipedia.org/wiki/Close-mid_front_unrounded_vowel)[[41]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-41) | [ɛ](https://en.wikipedia.org/wiki/Open-mid_front_unrounded_vowel) | DRESS | b**e**d[[42]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-collinse-42) |
| **ɜr** | ɵː(ɹ)~ɘː(ɹ) | [ɝ](https://en.wikipedia.org/wiki/R-colored_vowel)~ɚ~ɹ̩ | ɜː(ɾ)~äɾ | ɚː, ɔɹ~ʊɹ[[43]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects%22%20%5Cl%20%22cite_note-FFFM-43) | ɵː(ɹ)~ø̞̈ː(ɹ)~œ̈ː(ɹ) | əː(ɹ)~ɜː(ɹ) | ʌɾ[[43]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects%22%20%5Cl%20%22cite_note-FFFM-43) | ø̈ː(ɹ)~ø̞̈ː(ɹ)~əː(ɹ) | ə(ɹ) | ɜː(ɾ) | NURSE | b**ur**n |
| ɚː, ɛɹ[[43]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects%22%20%5Cl%20%22cite_note-FFFM-43) | ɛɾ[[43]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects%22%20%5Cl%20%22cite_note-FFFM-43) | h**er**d, **ear**th |
| ɚː, ɔɹ~ʊɹ[[43]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects%22%20%5Cl%20%22cite_note-FFFM-43) | ɪɾ[[43]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects%22%20%5Cl%20%22cite_note-FFFM-43) | b**ir**d |
| **ər** | ə(ɹ) | [ɚ](https://en.wikipedia.org/wiki/R-colored_vowel)~ɹ̩ | ə(ɾ) | [ɚ](https://en.wikipedia.org/wiki/R-colored_vowel)~ɹ̩ | ɘ(ɹ) | ə(ɹ) | əɾ | ə(ɹ) | ə(ɾ) | LETTER | winn**er**, don**or**, massac**re**[[44]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-r-colored_schwa-44) |
| [**Dia-phoneme**](https://en.wikipedia.org/wiki/Help%3AIPA_for_English)[**[1]**](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-PE-1) | **AuEAustralia** | **CaECanada** | **GAUnited States** | **InEIndia** | **IrERepublic of Ireland** | **NZENew Zealand** | **RPUnited Kingdom** | **ScEScotland** | **SAESouth Africa** | **SSESingapore** | **WaEWales** | [**Keyword**](https://en.wikipedia.org/wiki/Lexical_set) | **Examples** |
| **ʌ** | [ä](https://en.wikipedia.org/wiki/Open_central_unrounded_vowel) | [ʌ](https://en.wikipedia.org/wiki/Open-mid_back_unrounded_vowel) | [ʌ̈](https://en.wikipedia.org/wiki/Open-mid_back_unrounded_vowel)~[ɐ̝](https://en.wikipedia.org/wiki/Near-open_central_vowel) | [ə](https://en.wikipedia.org/wiki/Mid_central_vowel#Mid-central_unrounded_vowel)~[ɜ](https://en.wikipedia.org/wiki/Open-mid_central_unrounded_vowel) | [ɞ](https://en.wikipedia.org/wiki/Open-mid_central_rounded_vowel), [ʊ](https://en.wikipedia.org/wiki/Near-close_near-back_vowel) | [ɐ](https://en.wikipedia.org/wiki/Near-open_central_vowel) | [ə](https://en.wikipedia.org/wiki/Mid_central_vowel#Mid-central_unrounded_vowel) ~ [ʌ](https://en.wikipedia.org/wiki/Open-mid_back_unrounded_vowel) ~ [ɑ](https://en.wikipedia.org/wiki/Open_back_unrounded_vowel)[[45]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-45) | [ʌ](https://en.wikipedia.org/wiki/Open-mid_back_unrounded_vowel) | [ɐ](https://en.wikipedia.org/wiki/Near-open_central_vowel)~[ä](https://en.wikipedia.org/wiki/Open_central_unrounded_vowel) | [ɑ](https://en.wikipedia.org/wiki/Open_back_unrounded_vowel), [ʌ](https://en.wikipedia.org/wiki/Open-mid_back_unrounded_vowel) | [ə](https://en.wikipedia.org/wiki/Mid_central_vowel#Mid-central_unrounded_vowel)~[ɜ](https://en.wikipedia.org/wiki/Open-mid_central_unrounded_vowel) | STRUT | r**u**n, w**o**n, fl**oo**d |
| **ʊ** | [ʊ](https://en.wikipedia.org/wiki/Near-close_near-back_vowel) | [ʊ](https://en.wikipedia.org/wiki/Near-close_near-back_vowel)~[ɵ̠](https://en.wikipedia.org/wiki/Close-mid_central_rounded_vowel) | [ʊ](https://en.wikipedia.org/wiki/Near-close_near-back_vowel)~[ɵ̠](https://en.wikipedia.org/wiki/Close-mid_central_rounded_vowel) | [ʉ](https://en.wikipedia.org/wiki/Close_central_rounded_vowel) | [ʊ](https://en.wikipedia.org/wiki/Near-close_near-back_vowel)~[ʊ̈](https://en.wikipedia.org/wiki/Near-close_central_rounded_vowel) | [u](https://en.wikipedia.org/wiki/Close_back_rounded_vowel) | [ʊ](https://en.wikipedia.org/wiki/Near-close_near-back_vowel) | FOOT | p**u**t |
| uː | h**oo**d |
| **uː** | [ʉː](https://en.wikipedia.org/wiki/Close_central_rounded_vowel) | [u̟](https://en.wikipedia.org/wiki/Close_back_rounded_vowel) | [uː](https://en.wikipedia.org/wiki/Close_back_rounded_vowel) | [ʉː](https://en.wikipedia.org/wiki/Close_central_rounded_vowel) | ɵu̯ | [u̟ː](https://en.wikipedia.org/wiki/Close_back_rounded_vowel)~[ʉː](https://en.wikipedia.org/wiki/Close_central_rounded_vowel)~[yː](https://en.wikipedia.org/wiki/Close_front_rounded_vowel) | [uː](https://en.wikipedia.org/wiki/Close_back_rounded_vowel) | GOOSE | thr**ou**gh, y**ou** |
| ɪu[[46]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects%22%20%5Cl%20%22cite_note-46) | thr**ew**, y**ew** |
| **juː** | jʉː | (j)u̟ | juː | jʉː | ju̟ː~jʉː | jʉ | ju̟ː~jʉː~jyː | ju | c**u**te, d**ew**, **ewe** |
| **aɪ** | ɑe̯~ɑɪ̯ | aɪ̯, ɐɪ̯~əɪ̯[[47]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-canadianraising-47) | äɪ̯ | ɔɪ̯ | ɐe̯ | ɑɪ̯ | əi̯~ae̯ | äɪ̯~[äː](https://en.wikipedia.org/wiki/Open_central_unrounded_vowel)~ɑɪ̯~[ɑ̟ː](https://en.wikipedia.org/wiki/Open_back_unrounded_vowel) | ai̯, ɑ[[48]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-48) | ai̯ | PRICE | m**y**, w**i**se, h**igh** fl**igh**t, m**i**ce |
| **ɔɪ** | oɪ̯ | ɔɪ̯ | ɔɪ̯~oɪ̯ | ɒɪ̯ | ɒɪ̯~oɪ̯, äɪ̯ | oe̯ | oɪ̯ | oi̯ | ɔɪ̯~ɒɪ̯ | ɔi̯ | ɒi̯ | CHOICE | b**oy**, h**oi**st |
| **oʊ** | əʉ̯~ɐʉ̯ | oʊ̯~[o](https://en.wikipedia.org/wiki/Close-mid_back_rounded_vowel) | [oː](https://en.wikipedia.org/wiki/Close-mid_back_rounded_vowel) | oʊ̯, [oː](https://en.wikipedia.org/wiki/Close-mid_back_rounded_vowel) | ɑʉ̯ | əʊ̯ | [o](https://en.wikipedia.org/wiki/Close-mid_back_rounded_vowel) | ɛʊ̯~œʊ̯~œʉ̯~œɤ̯̈~œː~ʌʊ̯ | [o](https://en.wikipedia.org/wiki/Close-mid_back_rounded_vowel)[[40]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-Singapore.27_pp._93-99-40) | oː | GOAT | n**o**, t**oe**, s**oa**p |
| ou̯ | t**ow**, f**ol**k |
| ɔʊ̯ | [o](https://en.wikipedia.org/wiki/Close-mid_back_rounded_vowel)~oə̯~oʊ̯ | ɔʊ̯ | əʊ̯~ɒʊ̯~ɔʊ̯ |  | s**ou**l, r**o**ll, c**o**ld |
| **aʊ** | æɔ̯~æʊ̯ | äʊ̯, ʌu̯~əu̯[[47]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-canadianraising-47) | äʊ̯~æʊ̯ | äʊ̯ | æu̯~ɛu̯ | æɔ̯ | au̯ | ɘʉ̯ | äʊ̯~[äː](https://en.wikipedia.org/wiki/Open_central_unrounded_vowel)~æʊ̯ | au̯ | MOUTH | n**ow**, tr**ou**t |
| **ɑr** | äː(ɹ) | ɑɹ | äː(ɾ) | aːɹ~äːɹ | ɐː(ɹ) | ɑː(ɹ) | ɐ̟ɾ | äː(ɹ)~ɑː(ɹ)~ɒː(ɹ)~ɔː(ɹ) | ɑ(ɹ) | aː(ɾ) | START | **ar**m, c**ar** |
| **ɪər** | ɪː(ɹ)~ɪː.ä(ɹ) | ɪɹ | iɹ~iə̯ɹ | ɪə̯(ɾ)~iː(ɾ) | iːɹ | iə̯(ɹ)~ɪə̯(ɹ),eə̯[[49]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-49) | ɪə̯(ɹ)~ɪː(ɹ) | iɾ | ɪə̯(ɹ)~ɪː(ɹ) | jə(ɹ) | ɪə̯(ɾ) | NEAR | d**eer**, h**ere** |
| **ɛər** | eː(ɹ)~eː.ä(ɹ) | ɛɹ | ɛ(ə̯)ɹ~eɹ | ɛə̯(ɾ)~eː(ɾ) | eːɹ | iə̯(ɹ)~eə̯(ɹ) | ɛə̯(ɹ)~ɛː(ɹ)[[50]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-airsymbol-50) | eɾ | ɛə̯(ɹ)~ɛː(ɹ)~eː(ɹ) | ɛ(ɹ) | ɛː(ɾ) | SQUARE | m**are**, th**ere**, b**ear** |
| **ɔr** | oː(ɹ) | ɔɹ | ɔɹ~oɹ | ɒː(ɾ) | ɑɹ | oː(ɹ) | oː(ɹ) | ɔɾ | ɔː(ɹ)~oː(ɹ) | ɔ(ɹ) | ɒː(ɾ) | NORTH | s**or**t, w**ar**m |
| **ɔər** | oːɹ | oɾ | oː(ɾ) | FORCE | t**ore**, b**oar**, p**or**t |
| **ʊər** | ʉː.ə(ɹ)~oː(ɹ) | ʊɹ | ʊɹ~ɔɹ~oɹ | ʊə̯(ɾ)~uː(ɾ) | uːɹ,oːɹ | ʊɐ̯(ɹ)~ʉː.ɐ(ɹ) | ɵː(ɹ)~oː(ɹ)[[51]](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-51) | uɾ | ʊə̯(ɹ)~oː(ɹ) | wə(ɹ) | ʊə̯(ɾ) | CURE | t**our**, m**oor** |
| **jʊər** | jʉː.ə(ɹ)~joː(ɹ) | jʊɹ, jɝ~jɚ | jʊə̯(ɾ)~juː(ɾ) | juɹ, joːɹ | jʊɐ̯(ɹ),jʉː.ɐ(ɹ) | jɵː(ɹ)~joː(ɹ) | juɾ | jʊə̯(ɹ),joː(ɹ) | jɔ(ɹ) | ɪʊə̯(ɾ) | p**ure**, **Eur**ope |
| [**Dia-phoneme**](https://en.wikipedia.org/wiki/Help%3AIPA_for_English)[**[1]**](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#cite_note-PE-1) | **AuEAustralia** | **CaECanada** | **GAUnited States** | **InEIndia** | **IrERepublic of Ireland** | **NZENew Zealand** | **RPUnited Kingdom** | **ScEScotland** | **SAESouth Africa** | **SSESingapore** | **WaEWales** | [**Keyword**](https://en.wikipedia.org/wiki/Lexical_set) | **Examples** |

 |

|  |
| --- |
| **IPA: Other symbols used in transcription of English pronunciation** |
| **IPA** | **Explanation** |
| [**ˈ**](https://en.wikipedia.org/wiki/Stress_%28linguistics%29) | Primary stress indicator (placed before the stressed syllable); for example, *rapping* /ˈræpɪŋ/ |
| [**ˌ**](https://en.wikipedia.org/wiki/Secondary_stress) | Secondary stress/full vowel indicator (placed before the stressed syllable); for example, *pronunciation* /prəˌnʌnsiˈeɪʃən/ |
| [**.**](https://en.wikipedia.org/wiki/Syllabification) | [Syllable](https://en.wikipedia.org/wiki/Syllable) separation indicator; for example, *ice cream* /ˈaɪs.kriːm/ vs. *I scream* /ˌaɪ.ˈskriːm/ |
| [**̩**](https://en.wikipedia.org/wiki/Syllabic_consonant) | [**̍**](https://en.wikipedia.org/wiki/Syllabic_consonant) | Syllabic consonant indicator (placed under the syllabic consonant); for example, *ridden* [ˈɹɪdn̩] |

# Notes

1. This is a compromise IPA transcription, which covers most dialects of English.
2.  Pronounced [[ɾ](https://en.wikipedia.org/wiki/Alveolar_flap)] in some positions in GA and Australian English, and is possible in RP in words like *butter*, [[ʔ](https://en.wikipedia.org/wiki/Glottal_stop)] in some positions in Scottish English, English English, American English and Australian English, and [t̞] non-initially in Irish English.
3.  Pronounced [[ɾ](https://en.wikipedia.org/wiki/Alveolar_flap)] in some positions in GA and Australian English.
4.  /θ/ is pronounced as a dental stop [t̪] in Irish English, Newfoundland English, and New York English, merges with /f/ in some varieties of English English, and merges with /t/ in some varieties of Caribbean English. The dental stop [t̪] also occurs in other dialects as an allophone of /θ/.
5.  /ð/ is pronounced as a dental stop [d̪] in Irish English, Newfoundland English, and New York English, merges with /v/ in some varieties of English English, and merges with /d/ in some varieties of Caribbean English. [d̪] also occurs in other dialects as an allophone of /ð/.
6.  The glottal fricative /h/ is often pronounced as voiced [[ɦ](https://en.wikipedia.org/wiki/Voiced_glottal_fricative)] between vowel sounds and after voiced consonants.
7.  /h/ is pronounced [[ç](https://en.wikipedia.org/wiki/Voiceless_palatal_fricative)] before the palatal approximant /j/, and sometimes before high front vowels.
8.  The bilabial nasal /m/ is pronounced as labiodental [[ɱ](https://en.wikipedia.org/wiki/Labiodental_nasal)] before *f* and *v*, as in *symphony* [ˈsɪɱfəni], *circumvent* [ˌsɝkəɱˈvɛnt], *some value* [ˌsʌɱˈvæɫjuː].
9.  In some dialects, such as [Brummie](https://en.wikipedia.org/wiki/Brummie), words like *ringer*, *sing* /ˈɹɪŋə ˈsɪŋ/, which have a velar nasal [ŋ] in most dialects, are pronounced with an additional /ɡ/, like "finger": /ˈɹɪŋɡə/.
10.  Velarized [[ɫ](https://en.wikipedia.org/wiki/Alveolar_lateral_approximant#Velarized_alveolar_lateral_approximant)] traditionally does not occur in Irish English; clear or plain [[l](https://en.wikipedia.org/wiki/Alveolar_lateral_approximant)] does not occur in Australian, New Zealand, Scottish, or American English. RP, some other English accents, and South African English, however, have clear [[l](https://en.wikipedia.org/wiki/Alveolar_lateral_approximant)] in syllable onsets and dark [[ɫ](https://en.wikipedia.org/wiki/Alveolar_lateral_approximant#Velarized_alveolar_lateral_approximant)] in syllable rimes.
11.  [*L*-vocalization](https://en.wikipedia.org/wiki/L-vocalization) as [[ɤ](https://en.wikipedia.org/wiki/Close-mid_back_unrounded_vowel)] is prevalent in Standard Singapore English.
12.  [*L*-vocalization](https://en.wikipedia.org/wiki/L-vocalization) as [[w](https://en.wikipedia.org/wiki/Labio-velar_approximant)], [[o](https://en.wikipedia.org/wiki/Close-mid_back_rounded_vowel)], and [[ʊ](https://en.wikipedia.org/wiki/Near-close_near-back_vowel)] occurs in New Zealand English and many regional accents not included in the chart, such as Cockney, New York English, Estuary English, Pittsburgh English, and African-American Vernacular English.
13.  The tap [[ɾ](https://en.wikipedia.org/wiki/Alveolar_flap)] is found in some varieties of Scottish and Irish English.
14.  [*R*-labialization](https://en.wikipedia.org/wiki/R-labialization) as [[ʋ](https://en.wikipedia.org/wiki/Labiodental_approximant)] is found in some accents in Southern England.
15.  Some dialects, such as [Scottish English](https://en.wikipedia.org/wiki/Scottish_English), [Irish English](https://en.wikipedia.org/wiki/Hiberno-English), and many [American South](https://en.wikipedia.org/wiki/Southern_American_English) and [New Englan dialects](https://en.wikipedia.org/wiki/New_England_English), distinguish voiceless [ʍ] from voiced [w]; see [*wine*–*whine* merger](https://en.wikipedia.org/wiki/Phonological_history_of_wh#Wine.E2.80.93whine_merger) and [voiceless labiovelar approximant](https://en.wikipedia.org/wiki/Voiceless_labiovelar_approximant).
16.  Marginal in most accents, and otherwise merged with /k/, see [Lock–loch merger](https://en.wikipedia.org/wiki/Phonological_history_of_English_fricatives_and_affricates#Lock.E2.80.93loch_merger).
17.  This common English interjection is usually pronounced with [[x](https://en.wikipedia.org/wiki/Voiceless_velar_fricative)] in unscripted spoken English, but it is most often read /ʌɡ/ or /ʌk/
18.  /ɔː, aʊ, ɔɪ/ are never reduced. In some dialects, such as Australian, all reduced vowels become [ə].
19.  [Harrington, Cox & Evans (1997](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#CITEREFHarringtonCoxEvans1997))
20.  [Kenyon & Knott (1953](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#CITEREFKenyonKnott1953))
21.  [Kenyon (1950](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#CITEREFKenyon1950))
22.  [Mannell, Cox & Harrington (2009](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#CITEREFMannellCoxHarrington2009))
23.  [Sailaja (2009](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#CITEREFSailaja2009):19–26)
24.  [Wells (1982](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#CITEREFWells1982):422)
25.  [Bauer et al. (2007](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#CITEREFBauerWarrenBardsleyKennedy2007):97–102)
26.  [Roach (2004](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#CITEREFRoach2004):241–243). See [Pronunciation respelling for English#International Phonetic Alphabet](https://en.wikipedia.org/wiki/Pronunciation_respelling_for_English#International_Phonetic_Alphabet) for the alternative system devised by [Clive Upton](https://en.wikipedia.org/wiki/Clive_Upton) for [Oxford University Press](https://en.wikipedia.org/wiki/Oxford_University_Press) dictionaries.
27.  ["Case Studies – Received Pronunciation Phonology – RP Vowel Sounds"](http://www.bl.uk/learning/langlit/sounds/case-studies/received-pronunciation/vowel-sounds-rp/). British Library.
28.  [Scobbie, Gordeeva & Matthews (2006](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#CITEREFScobbieGordeevaMatthews2006):7)
29.  [Bekker (2008](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#CITEREFBekker2008))
30.  [Lass (2002](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#CITEREFLass2002):111–119)
31.  [Coupland (1990](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#CITEREFCoupland1990):93–136)
32.  See [bad–lad split](https://en.wikipedia.org/wiki/Phonological_history_of_English_short_A#Bad.E2.80.93lad_split) for this distinction.
33.  In most of the United States (with high dialectal variation), and to a lesser degree in Canada, special [/æ/ tensing systems](https://en.wikipedia.org/wiki/%C3%86_tensing) occur.
34.  Suzanna Bet Hashim and Brown, Adam (2000) 'The [e] and [æ] vowels in Singapore English'. In Adam Brown, David Deterding and Low Ee Ling (eds.) *The English Language in Singapore: Research on Pronunciation*, Singapore: Singapore Association for Applied Linguistics [ISBN 981-04-2598-8](https://en.wikipedia.org/wiki/Special%3ABookSources/9810425988), pp. 84–92.
35.  Often transcribed /a/ for RP, for example in dictionaries of the [Oxford University Press](https://en.wikipedia.org/wiki/Oxford_University_Press).
36.  Deterding, David (2003) 'An instrumental study of the monophthong vowels of Singapore English', English World Wide, 24(1), 1–16.
37.  [ɒ](https://en.wikipedia.org/wiki/Open_back_rounded_vowel)~[ɔ](https://en.wikipedia.org/wiki/Open-mid_back_rounded_vowel) occurs in American accents without the [cot–caught merger](https://en.wikipedia.org/wiki/Cot%E2%80%93caught_merger) (about half of today's speakers); the rest have [ɑ](https://en.wikipedia.org/wiki/Open_back_unrounded_vowel).
38.  In American accents without the [cot–caught merger](https://en.wikipedia.org/wiki/Cot%E2%80%93caught_merger), the LOT vowel (generally written *o*) appears as [ɒ](https://en.wikipedia.org/wiki/Open_back_rounded_vowel)~[ɔ](https://en.wikipedia.org/wiki/Open-mid_back_rounded_vowel) instead of [ɑ](https://en.wikipedia.org/wiki/Open_back_unrounded_vowel) before the fricatives /f/, /θ/ and /s/ and the velar nasal /ŋ/; also usually before /ɡ/, especially in single-syllable words (*dog*, *log*, *frog*, etc.), and occasionally before /k/ (as in *chocolate*). See [lot–cloth split](https://en.wikipedia.org/wiki/Lot%E2%80%93cloth_split). In American accents with the [cot–caught merger](https://en.wikipedia.org/wiki/Cot%E2%80%93caught_merger) (about half of today's speakers), only [ɑ](https://en.wikipedia.org/wiki/Open_back_unrounded_vowel) occurs.
39.  It is not clear whether this a true phonemic split, since the distribution of the two sounds is predictable; see [Kit–bit split](https://en.wikipedia.org/wiki/Kit%E2%80%93bit_split).
40.  Deterding, David (2000) 'Measurements of the /eɪ/ and /oʊ/ vowels of young English speakers in Singapore'. In Adam Brown, David Deterding and Low Ee Ling (eds.), *The English Language in Singapore: Research on Pronunciation*, Singapore: Singapore Association for Applied Linguistics, pp. 93–99.
41.  Mary W.J. Tay (1982). "'The phonology of educated Singapore English'". *English World-Wide* **"3"** ("2"): 135–45. [doi](https://en.wikipedia.org/wiki/Digital_object_identifier):[10.1075/eww.3.2.02tay](https://dx.doi.org/10.1075/eww.3.2.02tay).
42.  Often transcribed /e/ for RP, for example in Collins English Dictionary.
43.  See [Fern–fir–fur merger](https://en.wikipedia.org/wiki/English-language_vowel_changes_before_historic_r#Fern.E2.80.93fir.E2.80.93fur_merger) for this distinction in some varieties.
44.  Sometimes transcribed for GA as [əɹ], especially in transcriptions that represent both rhotic and non-rhotic pronunciations, as [ə(ɹ)].
45.  The STRUT vowel in BrE is highly variable in the triangle defined by ə, ʌ and ɑ, see ['STRUT for Dummies'](http://englishspeechservices.com/blog/strut-for-dummies/)
46.  In Welsh English, *you*, *yew* and *ewe* are /juː/, /jɪu/ and /ɪu/ respectively; in most other varieties of English they are homophones.
47.  Some dialects of North American English have a vowel shift called [Canadian raising](https://en.wikipedia.org/wiki/Canadian_raising), in which the first element of the diphthongs /aɪ, aʊ/ is raised in certain cases, yielding [ɐɪ̯, ʌʊ̯] or [əi̯, əʊ̯]. Canadian English has raising of both diphthongs, but most dialects in the United States only have raising of /aɪ/. In monosyllables, raising occurs before voiceless consonants, so *right* [ɹʷɐi̯t] and *out* [ʌu̯t] have raised vowels, but *eyes* [aɪz] and *loud* [laʊd] do not.
48.  Lee, Ee May and Lim, Lisa (2000) ' Diphthongs in Singaporean English: their realisations across different formality levels, and some attitudes of listeners towards them. In Adam Brown, David Deterding and Low Ee Ling (eds.), *The English Language in Singapore: Research on Pronunciation*, Singapore: Singapore Association for Applied Linguistics, pp. 100–111.
49.  This is especially common amongst young speakers.
50.  While the actual pronunciation is [ɛə(ɹ) ~ ɛː(ɹ)], it can also be transcribed /eə(ɹ)/.
	1.  [Roach (2004](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet_chart_for_English_dialects#CITEREFRoach2004)) notes that many people in England use [[oː](https://en.wikipedia.org/wiki/Close-mid_back_rounded_vowel)] for this vowel, but also that RP traditionally distinguishes between *maw* /mɔː/ and *moor* /mʊə/, *tore* /tɔː/ and *tour* /tʊə/, as well as *paw* /pɔː/ and *poor* /pʊə/. If one wishes to make that distinction today it would be best to use ɵ instead of ʊə. This will lead to *tore* as toː and *tour* as tɵː.

# Appendix 1 V o w e l s

The following table displays and describes the different IPA vowels and diphthongs. Click on a vowel to hear an audio clip. (Note: The audio clips may not play well in the media bar of Internet Explorer. Use another player or download the links to disk.)

|  |  |  |
| --- | --- | --- |
| **Vowel** | **Description** | **Example** |
| [i] | forward vowel | as in beet |
| [I] | forward vowel | as in bit |
| [e] | forward vowel | as in chaotic |
| [eI] | Diphthong | as in bait |
| (character not available) | forward vowel | as in bet |
| [ae] | Diphthong | as in bat |
| [a] | forward vowel | as in Boston(as spoken by New Englanders) |
| [aI] | Diphthong | as in by |
| [au] | Diphthong | as in house |
| [u] | back vowel | as in boot |
| [ju] | Diphthong | as in abuse |
| omega | back vowel | as in book |
| [o] | back vowel | as in pillow |
| (character not available) | Diphthong | as in boat |
| open o | back vowel | as in awe |
| (character not available) | Diphthong | as in boy |
| (character not available) | back vowel | as in father |
| (character not available) | central vowel, stressed | as in bud |
| (character not available) | central vowel, unstressed (schwa) | as in appeal |
| (character not available) | central vowel with r, stressed | as in burr |
| (character not available) | central vowel with r, unstressed (hooked schwa) | as in butter |
| (character not available) | central vowel, r-less | as in bird |

[I n t r o d u c t i o n](http://cmed.faculty.ku.edu/ipafolder/index.html)  |  [V o w e l s](http://cmed.faculty.ku.edu/ipafolder/vowels.html)  |  [C o n s o n a n t s](http://cmed.faculty.ku.edu/ipafolder/cons.html)  |  [L i n k s   a n d   R e s o u r c e s](http://cmed.faculty.ku.edu/ipafolder/links.html)

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* Bekker, Ian (2008). ["The vowels of South African English"](http://dspace.nwu.ac.za/bitstream/handle/10394/2003/phdmain.pdf?sequence=1) (PDF).
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**Graphology**

Not to be confused with [Graphanalysis](https://en.wikipedia.org/wiki/Graphanalysis), the branch of [forensic examination of questioned documents](https://en.wikipedia.org/wiki/Questioned_document_examination) that deals with handwritten documents.

For the linguistic study of writing systems, which has sometimes been called graphology, see [Graphemics](https://en.wikipedia.org/wiki/Graphemics).

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**Graphology** (or **graphoanalysis**, but not [*graphanalysis*](https://en.wikipedia.org/wiki/Graphanalysis)) is the analysis of the physical characteristics and patterns of [handwriting](https://en.wikipedia.org/wiki/Handwriting) purporting to be able to identify the writer, indicating psychological state at the time of writing, or evaluating personality characteristics.[[1]](https://en.wikipedia.org/wiki/Graphology#cite_note-definition-1) It is generally considered a [pseudoscience](https://en.wikipedia.org/wiki/Pseudoscience).[[2]](https://en.wikipedia.org/wiki/Graphology#cite_note-nevo1986-2)[[3]](https://en.wikipedia.org/wiki/Graphology#cite_note-Graph_Beyer_PBS-3)[[4]](https://en.wikipedia.org/wiki/Graphology#cite_note-ReferenceA-4)[[5]](https://en.wikipedia.org/wiki/Graphology#cite_note-NYT1-5)[[6]](https://en.wikipedia.org/wiki/Graphology#cite_note-Dunning-6) The term is sometimes incorrectly used to refer to [forensic document examination](https://en.wikipedia.org/wiki/Questioned_document_examination) due to the fact that aspects of the latter dealing with the examination of handwritten documents are occasionally referred to as the frequently confused term [*graphanalysis*](https://en.wikipedia.org/wiki/Graphanalysis).

Graphology has been controversial for more than a century. Although supporters point to the [anecdotal evidence](https://en.wikipedia.org/wiki/Anecdotal_evidence) of positive testimonials as a reason to use it for personality evaluation, empirical studies fail to show the validity claimed by its supporters.[[7]](https://en.wikipedia.org/wiki/Graphology#cite_note-7)[[8]](https://en.wikipedia.org/wiki/Graphology#cite_note-Furnham1987-8)

**Etymology**

The word Graphology is derived from *grapho-* (from the Greek γραφή, "writing") and [*logos*](https://en.wikipedia.org/wiki/Logos) (from the Greek [λόγος](https://en.wiktionary.org/wiki/%CE%BB%CF%8C%CE%B3%CE%BF%CF%82), which relates to discussion or theory).[[9]](https://en.wikipedia.org/wiki/Graphology#cite_note-9)

**History**

[Jean-Charles Gille-Maisani](https://en.wikipedia.org/wiki/Jean-Charles_Gille) stated in 1991 that [Juan Huarte de San Juan](https://en.wikipedia.org/wiki/Juan_Huarte_de_San_Juan)'s 1575 *Examen de ingenios para las ciencias* was the first book on handwriting analysis.[[10]](https://en.wikipedia.org/wiki/Graphology#cite_note-10)[[11]](https://en.wikipedia.org/wiki/Graphology#cite_note-11) In American graphology, [Camillo Baldi](https://en.wikipedia.org/wiki/Camillo_Baldi)'s *Trattato come da una lettera missiva si conoscano la natura e qualita dello scrittore* from 1622 is considered to be the first book.[[12]](https://en.wikipedia.org/wiki/Graphology#cite_note-ROMAN1952-12)[[13]](https://en.wikipedia.org/wiki/Graphology#cite_note-13)

Around 1830 [Jean-Hippolyte Michon](https://en.wikipedia.org/wiki/Jean-Hippolyte_Michon) became interested in handwriting analysis. He published his findings[[14]](https://en.wikipedia.org/wiki/Graphology#cite_note-14)[[15]](https://en.wikipedia.org/wiki/Graphology#cite_note-15) shortly after founding *Société Graphologique* in 1871. The most prominent of his disciples was [Jules Crépieux-Jamin](https://en.wikipedia.org/wiki/Jules_Cr%C3%A9pieux-Jamin) who rapidly published a series of books[[16]](https://en.wikipedia.org/wiki/Graphology#cite_note-16)[[17]](https://en.wikipedia.org/wiki/Graphology#cite_note-17) that were soon published in other languages.[[18]](https://en.wikipedia.org/wiki/Graphology#cite_note-18)[[19]](https://en.wikipedia.org/wiki/Graphology#cite_note-19) Starting from Michon's integrative approach, Crépieux-Jamin founded a holistic approach to graphology.

[Alfred Binet](https://en.wikipedia.org/wiki/Alfred_Binet) was convinced to conduct research into graphology from 1893 to 1907. He called it "the science of the future" despite rejection of his results by graphologists.

After [World War I](https://en.wikipedia.org/wiki/World_War_I), interest in graphology continued to spread in Europe as well as the United States. In Germany during the 1920s, [Ludwig Klages](https://en.wikipedia.org/wiki/Ludwig_Klages) founded and published his finding in *Zeitschrift für Menschenkunde* (*Journal for the Study of Mankind*). His major contribution to the field can be found in *Handschrift und Charakter*.[[20]](https://en.wikipedia.org/wiki/Graphology#cite_note-20)[[21]](https://en.wikipedia.org/wiki/Graphology#cite_note-21)

Thea Stein Lewinson and J. Zubin modified Klage's ideas, based upon their experience working for the U.S. government, publishing their method in 1942.[[22]](https://en.wikipedia.org/wiki/Graphology#cite_note-22)

In 1929 Milton Bunker founded The American Grapho Analysis Society teaching [graphoanalysis](https://en.wikipedia.org/wiki/Graphoanalysis). This organization and its system split the American graphology world in two. Students had to choose between graphoanalysis or holistic graphology. While hard data is lacking, anecdotal evidence indicates that 10% of the members of International Graphoanalysis Society (IGAS) were expelled between 1970 and 1980.[[23]](https://en.wikipedia.org/wiki/Graphology#cite_note-23)

Regarding a proposed correlation between gender and handwriting style, a paper by published by James Hartley in 1989 concluded that there was some evidence in support of this hypothesis.[[24]](https://en.wikipedia.org/wiki/Graphology#cite_note-24)

**Professional status**

Although graphology had some support in the scientific community before the mid-twentieth century, more recent research rejects the validity of graphology as a tool to assess personality and job performance,[[2]](https://en.wikipedia.org/wiki/Graphology#cite_note-nevo1986-2)[[25]](https://en.wikipedia.org/wiki/Graphology#cite_note-kingkoehler-25)[[26]](https://en.wikipedia.org/wiki/Graphology#cite_note-26) and today it is considered to be a [pseudoscience](https://en.wikipedia.org/wiki/Pseudoscience).[[2]](https://en.wikipedia.org/wiki/Graphology#cite_note-nevo1986-2)[[3]](https://en.wikipedia.org/wiki/Graphology#cite_note-Graph_Beyer_PBS-3)[[4]](https://en.wikipedia.org/wiki/Graphology#cite_note-ReferenceA-4)[[5]](https://en.wikipedia.org/wiki/Graphology#cite_note-NYT1-5)[[6]](https://en.wikipedia.org/wiki/Graphology#cite_note-Dunning-6)[[27]](https://en.wikipedia.org/wiki/Graphology#cite_note-27) Graphology is primarily used as a recruiting tool to screen candidates during the evaluation process. Many studies have been conducted to assess its effectiveness to predict personality and job performance. Recent studies testing the validity of using handwriting for predicting personality traits and job performance have been consistently negative.[[2]](https://en.wikipedia.org/wiki/Graphology#cite_note-nevo1986-2)[[25]](https://en.wikipedia.org/wiki/Graphology#cite_note-kingkoehler-25)

In a 1987 study, graphologists were unable to predict scores on the [Eysenck Personality Questionnaire](https://en.wikipedia.org/wiki/Eysenck_Personality_Questionnaire) using writing samples from the same people.[[8]](https://en.wikipedia.org/wiki/Graphology#cite_note-Furnham1987-8) In a 1988 study, graphologists were unable to predict scores on the [Myers-Briggs](https://en.wikipedia.org/wiki/Myers-Briggs_Type_Indicator) test using writing samples from the same people.[[28]](https://en.wikipedia.org/wiki/Graphology#cite_note-28) A 1982 [meta-analysis](https://en.wikipedia.org/wiki/Meta-analysis) drawn from over 200 studies concludes that graphologists were generally unable to predict any kind of personality trait on any personality test.[[29]](https://en.wikipedia.org/wiki/Graphology#cite_note-29)

Measures of job performance appear similarly unrelated to the handwriting metrics of graphologists. Professional graphologists using handwriting analysis were just as ineffective as lay people at predicting performance in a 1989 study.[[30]](https://en.wikipedia.org/wiki/Graphology#cite_note-30) A broad literature screen done by King and Koehler confirmed dozens of studies showing the geometric aspects of graphology (slant, slope, *etc.*) are essentially worthless predictors of job performance.[[25]](https://en.wikipedia.org/wiki/Graphology#cite_note-kingkoehler-25)

Rowan Bayne, a British psychologist who has written several studies on graphology, summarized his view of the appeal of graphology: "[i]t's very seductive because at a very crude level someone who is neat and well behaved tends to have neat handwriting", adding that the practice is "useless... absolutely hopeless".[[31]](https://en.wikipedia.org/wiki/Graphology#cite_note-duff-31) The [British Psychological Society](https://en.wikipedia.org/wiki/British_Psychological_Society) ranks graphology alongside [astrology](https://en.wikipedia.org/wiki/Astrology), giving them both "zero validity".[[31]](https://en.wikipedia.org/wiki/Graphology#cite_note-duff-31)

Graphology was also dismissed as a pseudo-science by the skeptic [James Randi](https://en.wikipedia.org/wiki/James_Randi) in 1991.[[32]](https://en.wikipedia.org/wiki/Graphology#cite_note-32)

In his May 21, 2013 [Skeptoid podcast](https://en.wikipedia.org/wiki/Brian_Dunning_%28author%29#Skeptoid_podcast) episode titled "All About Graphology," [scientific skeptic](https://en.wikipedia.org/wiki/Skeptical_movement) author [Brian Dunning](https://en.wikipedia.org/wiki/Brian_Dunning_%28author%29) reports:[[6]](https://en.wikipedia.org/wiki/Graphology#cite_note-Dunning-6)

In his book *The Write Stuff*, Dr. Barry Beyerstein summarized the work of Dr. Geoffrey Dean, who performed probably the most extensive literature survey of graphology ever done. Dean did a meta-analysis on some 200 studies:

Dean showed that graphologists have failed unequivocally to demonstrate the validity or reliability of their art for predicting work performance, aptitudes, or personality. Graphology thus fails according to the standards a genuine psychological test must pass before it can ethically be released for use on an unsuspecting public.

Dean found that no particular school of graphology fared better than any other... In fact, no graphologist of any stripe was able to show reliably better performance than untrained amateurs making guesses from the same materials. In the vast majority of studies, neither group exceeded chance expectancy.

Dunning concludes:[[6]](https://en.wikipedia.org/wiki/Graphology#cite_note-Dunning-6)

Other divining techniques like [iridology](https://en.wikipedia.org/wiki/Iridology), [phrenology](https://en.wikipedia.org/wiki/Phrenology), [palmistry](https://en.wikipedia.org/wiki/Palmistry), and [astrology](https://en.wikipedia.org/wiki/Astrology) also have differing schools of thought, require years of training, offer expensive certifications, and fail just as soundly when put to a scientific controlled test. Handwriting analysis does have its plausible-sounding separation from those other techniques though, and that's the whole "handwriting is brainwriting" idea — traits from the brain will be manifested in the way that it controls the muscles of the hand. Unfortunately, this is just as unscientific as the others. No amount of sciencey sounding language can make up for a technique failing when put to a scientifically controlled test.

**Additional specific objections**

* The [Barnum effect](https://en.wikipedia.org/wiki/Forer_effect) (the tendency to interpret vague statements as specifically meaningful) and the [Dr. Fox effect](https://en.wikipedia.org/wiki/Dr._Fox_effect)[[33]](https://en.wikipedia.org/wiki/Graphology#cite_note-33) (the tendency for supposed experts to be validated based on likeability rather than actual skill) make it difficult to validate methods of personality testing. These phenomena describe the observation that individuals will give high accuracy ratings to descriptions of their personality that supposedly are tailored specifically for them, but are in fact vague and general enough to apply to a wide range of people. See, for example, Tallent (1958).[[34]](https://en.wikipedia.org/wiki/Graphology#cite_note-34) Non-individualized graphological reports give credence to this criticism.
* Effect Size: Dean's (1992)[[35]](https://en.wikipedia.org/wiki/Graphology#cite_note-35)[[36]](https://en.wikipedia.org/wiki/Graphology#cite_note-beyerstein1992-36) primary argument against the use of graphology is that the [effect size](https://en.wikipedia.org/wiki/Effect_size) is too small. Regardless of the validity of handwriting analysis, the research results imply that it is not applicable for any specific individual, but may be applicable to a group.
* Vagueness: Some important principles of graphology are vague enough to allow a lot of room for a graphologist to skew interpretations to suit a subject or preconceived conclusion. For example, one of the main concepts in the theory of [Ludwig Klages](https://en.wikipedia.org/wiki/Ludwig_Klages) is *form-niveau* (or *form-level*): the overall level of originality, beauty, harmony, style, *etc.* of a person's handwriting—a quality that, according to Klages, can be perceived but not measured. According to this theory, the same sign has a positive or negative meaning depending on the subject's overall character and personality as revealed by the *form-niveau*. In practice, this can lead the graphologist to interpret signs positively or negatively depending on whether the subject has high or low social status.[[37]](https://en.wikipedia.org/wiki/Graphology#cite_note-37)

**Approaches**

[Max Pulver](https://en.wikipedia.org/wiki/Max_Pulver) supports a system called symbolic analysis in which he looks for symbols in the handwriting.[[38]](https://en.wikipedia.org/wiki/Graphology#cite_note-38)[39][40][41]

**Systems of handwriting analysis**

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Each approach to handwriting analysis has spawned several systems.

Integrative graphology focuses on strokes and their relation to personality.[[42]](https://en.wikipedia.org/wiki/Graphology#cite_note-Sciences_360-42) [Graphoanalysis](https://en.wikipedia.org/wiki/Graphoanalysis) was the most influential system in the United States, between 1929 and 2000. The Sistema de Xandró is another method of integrative graphology.[[43]](https://en.wikipedia.org/wiki/Graphology#cite_note-43)[[44]](https://en.wikipedia.org/wiki/Graphology#cite_note-44)[[45]](https://en.wikipedia.org/wiki/Graphology#cite_note-45) Holistic graphology is based on form, movement, and use of space.[[42]](https://en.wikipedia.org/wiki/Graphology#cite_note-Sciences_360-42) The [psychogram](https://en.wikipedia.org/wiki/Psychogram)[[12]](https://en.wikipedia.org/wiki/Graphology#cite_note-ROMAN1952-12)[[46]](https://en.wikipedia.org/wiki/Graphology#cite_note-46)[[47]](https://en.wikipedia.org/wiki/Graphology#cite_note-47) is another method which uses specific diagrams to analyze handwriting. The Personal Worth Chart is one such method developed by the Handwriting Consultants of San Diego[[48]](https://en.wikipedia.org/wiki/Graphology#cite_note-48) during the early 1980s. The [psychograph](https://en.wikipedia.org/wiki/Psychogram#Psychograph) is an additional psychogram method.[[49]](https://en.wikipedia.org/wiki/Graphology#cite_note-49) was developed by Leslie King during the 1970s .The Wittlich Character Diagram,[[50]](https://en.wikipedia.org/wiki/Graphology#cite_note-Wittlich_1956-50)[[51]](https://en.wikipedia.org/wiki/Graphology#cite_note-Wittlich_1951-51) and the Muller-Enskat Protokol[[52]](https://en.wikipedia.org/wiki/Graphology%22%20%5Cl%20%22cite_note-M.C3.BCller_1973-52)[[53]](https://en.wikipedia.org/wiki/Graphology#cite_note-M.C3.BCller_1943-53) are other psychogram methods.

Psychologists [Leopold Szondi](https://en.wikipedia.org/wiki/Leopold_Szondi), Augusto Vels, and Girolamo Moretti invented their personal schools of graphology.[[54]](https://en.wikipedia.org/wiki/Graphology#cite_note-54)[[55]](https://en.wikipedia.org/wiki/Graphology#cite_note-55)[[56]](https://en.wikipedia.org/wiki/Graphology#cite_note-56)[[57]](https://en.wikipedia.org/wiki/Graphology#cite_note-57)[[58]](https://en.wikipedia.org/wiki/Graphology#cite_note-58)[[59]](https://en.wikipedia.org/wiki/Graphology#cite_note-59)[[60]](https://en.wikipedia.org/wiki/Graphology#cite_note-60)[[61]](https://en.wikipedia.org/wiki/Graphology#cite_note-61)[[62]](https://en.wikipedia.org/wiki/Graphology#cite_note-62)[[63]](https://en.wikipedia.org/wiki/Graphology#cite_note-63)[[64]](https://en.wikipedia.org/wiki/Graphology#cite_note-64)[[65]](https://en.wikipedia.org/wiki/Graphology#cite_note-65)

Four academic institutions offer an accredited degree in handwriting analysis:

* The [University of Urbino](https://en.wikipedia.org/wiki/University_of_Urbino), Italy: MA (Graphology)
* Instituto Superior Emerson, Buenos Aires, Argentina: BA (Graphology)[[66]](https://en.wikipedia.org/wiki/Graphology#cite_note-66)
* Centro de Estudios Superiores (CES), Buenos Aires, Argentina: BA (Graphology)[[67]](https://en.wikipedia.org/wiki/Graphology#cite_note-67)
* [Autonomous University of Barcelona](https://en.wikipedia.org/wiki/Autonomous_University_of_Barcelona), Barcelona, Spain: MA (Graphology)

The majority of material in the field is oriented toward the Latin writing system. Courses offered in the subject reflect that bias.

**Vocabulary**

Every system of handwriting analysis has its own vocabulary. Even though two or more systems may share the same words, the meanings of those words may be different. The technical meaning of a word used by a handwriting analyst, and the common meaning is not congruent. Resentment, for example, in common usage, means to feel or exhibit annoyance. In [Graphoanalysis](https://en.wikipedia.org/wiki/Graphoanalysis), the term indicates a fear of imposition.[[68]](https://en.wikipedia.org/wiki/Graphology#cite_note-68)[[69]](https://en.wikipedia.org/wiki/Graphology#cite_note-69)

**Legal considerations**

**In Hungary**

A report by the Hungarian Parliamentary Commissioner for Data Protection and Freedom of Information says that handwriting analysis without informed consent is a privacy violation.[[70]](https://en.wikipedia.org/wiki/Graphology#cite_note-nagymaros-70)

**In the United States**

**Gender and handwriting**

There have been a number of studies on gender and handwriting.[[71]](https://en.wikipedia.org/wiki/Graphology#cite_note-71)[[72]](https://en.wikipedia.org/wiki/Graphology#cite_note-72)[[73]](https://en.wikipedia.org/wiki/Graphology#cite_note-73)[[74]](https://en.wikipedia.org/wiki/Graphology#cite_note-74) Uniformly the research indicates that gender can be determined at a significant level. The published studies on ethnicity,[[75]](https://en.wikipedia.org/wiki/Graphology#cite_note-75)[[76]](https://en.wikipedia.org/wiki/Graphology#cite_note-76)[[77]](https://en.wikipedia.org/wiki/Graphology#cite_note-77) race,[[78]](https://en.wikipedia.org/wiki/Graphology#cite_note-78)[[79]](https://en.wikipedia.org/wiki/Graphology#cite_note-79)[[80]](https://en.wikipedia.org/wiki/Graphology#cite_note-80) age,[[81]](https://en.wikipedia.org/wiki/Graphology#cite_note-81)[[82]](https://en.wikipedia.org/wiki/Graphology#cite_note-82)[[83]](https://en.wikipedia.org/wiki/Graphology#cite_note-83) nationality,[[84]](https://en.wikipedia.org/wiki/Graphology#cite_note-84) gender orientation, weight, and their relationship to handwriting have had mixed results.

**Americans with Disabilities Act of 1990**

One of the rules of thumb in [human resources](https://en.wikipedia.org/wiki/Human_resources) is that if an individual who has an [ADA](https://en.wikipedia.org/wiki/Americans_with_Disabilities_Act_of_1990)-defined disability cannot take a test, then nobody can. As a result, tests that cannot be adapted for use by those individuals will not be used by a company.

Handwriting clearly falls into the group of tests that cannot be adapted to be administered to individuals who fall within one or more ADA-defined disabilities. Blind people, for example, do not develop the required fluency in handwriting, for the writing to be correctly analyzed.

Questions that handwriting analysts ask before doing an analysis can be illegal under this act.[[85]](https://en.wikipedia.org/wiki/Graphology#cite_note-85)

**Applications**

**Employment profiling**

A company takes a writing sample provided by an applicant, and proceeds to do a personality profile, matching the congruency of the applicant with the ideal psychological profile of employees in the position.[[86]](https://en.wikipedia.org/wiki/Graphology#cite_note-86)

A graphological report is meant to be used in conjunction with other tools, such as comprehensive background checks, practical demonstration or record of work skills. Graphology supporters state that it can complement but not replace traditional hiring tools.

Research in employment suitability has ranged from complete failure[[87]](https://en.wikipedia.org/wiki/Graphology#cite_note-87) to guarded success.[[88]](https://en.wikipedia.org/wiki/Graphology#cite_note-88) The most substantial reason for not using handwriting analysis in the employment process is the absence of evidence of a direct link between handwriting analysis and various measures of job performance.[[89]](https://en.wikipedia.org/wiki/Graphology#cite_note-89)

The use of graphology in the hiring process has been criticized on ethical grounds[[90]](https://en.wikipedia.org/wiki/Graphology#cite_note-90) and on legal grounds in the United States.[[91]](https://en.wikipedia.org/wiki/Graphology#cite_note-91)

**Psychological analysis**

Graphology has been used clinically by European counselors and psychotherapists.[[50]](https://en.wikipedia.org/wiki/Graphology#cite_note-Wittlich_1956-50)[[51]](https://en.wikipedia.org/wiki/Graphology#cite_note-Wittlich_1951-51)[[52]](https://en.wikipedia.org/wiki/Graphology#cite_note-M.C3.BCller_1973-52)[[53]](https://en.wikipedia.org/wiki/Graphology#cite_note-M.C3.BCller_1943-53) When it is used, it is generally used alongside other projective personality assessment tools, and not in isolation. It is often used within individual psychotherapy, marital counseling, or vocational counseling.[[92]](https://en.wikipedia.org/wiki/Graphology#cite_note-92)

**Marital compatibility**

In its simplest form only sexual expression and sexual response are examined. At its most complex, every aspect of an individual is examined for how it affects the other individual(s) within the relationship.[[93]](https://en.wikipedia.org/wiki/Graphology#cite_note-93) The theory is that after knowing and understanding how each individual in the relationship differs from every other individual in the relationship, the resulting marriage will be more enduring.[[94]](https://en.wikipedia.org/wiki/Graphology#cite_note-94)

**Medical diagnosis**

Medical graphology is probably the most controversial branch of handwriting analysis.[[95]](https://en.wikipedia.org/wiki/Graphology#cite_note-95) Strictly speaking, such research is not graphology as described throughout this article but an examination of factors pertaining to [motor control](https://en.wikipedia.org/wiki/Motor_control). Research studies have been conducted in which a detailed examination of handwriting factors, particularly timing, fluidity, pressure, and consistency of size, form, speed, and pressure are considered in the process of evaluating patients and their response to pharmacological therapeutic agents.[[96]](https://en.wikipedia.org/wiki/Graphology#cite_note-96) The study of these phenomena is a by-product of researchers investigating motor control processes and the interaction of nervous, anatomical, and biomechanical systems of the body.

*The Vanguard Code of Ethical Practice*, amongst others, prohibits medical diagnosis by those not licensed to do diagnosis in the state in which they practice.

**Graphotherapy**

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This is the practice of changing a person's handwriting with the goal of changing features of his or her personality. It originated in France during the 1930s, spreading to the United States in the late 1950s.[[97]](https://en.wikipedia.org/wiki/Graphology#cite_note-destpaul-97)[[98]](https://en.wikipedia.org/wiki/Graphology#cite_note-destpaul2-98) The purported therapy consists of a series of exercises which are similar to those taught in basic [calligraphy](https://en.wikipedia.org/wiki/Calligraphy) courses, sometimes in conjunction with music or positive self-talk.

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**Further reading**

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**What is Graphology?**

We were all taught to write in a specific way when we were children at school, but it is evident that no one continues to write exactly the way they were taught and everyone's handwriting looks different. In fact as soon as someone can write, he or she gradually alters the shapes and sizes of letters in accordance with individual likes and dislikes.

Why is this?

The reason is that our personalities affect the way our handwriting develops after we were taught to write. This is because handwriting is the pattern of our psychology expressed in symbols on the page and these symbols are as unique as our own DNA.

When you get to know a person's handwriting well enough, you recognise whose script it is, just as if it were a well-known painting or photograph. Graphology is based on the principle that every individual's handwriting has a character of its own and this is entirely due to the uniqueness of the writer's personality.

So it is the writer's deviations from the copybook learnt that allows expert graphologists to assess, with the greatest accuracy, the character and capabilities of the writer.

In fact graphologists are exceptionally fortunate in that they see before them, in black and white, the pattern in symbolic form of a writer's *whole* psychological profile. By contrast, psychoanalysts and psychotherapists all over the world must formulate their own opinions solely on the basis of what is *told* to them over a period of time by the client in question.

**How does graphology work?**

**Graphology is a blend of art and science**. It is a ***science*** because it measures the structure and movement of the written forms - *slants, angles* and *spacing* are accurately calculated and the pressure is observed in magnification and with precision. And it is an ***art***because the graphologist has constantly to keep in mind the total context in which the writing is taking place: the 'gestalt' of the writing as a whole.

Writing consists of three things - *movement, spacing* and *form*. A graphologist studies these variations as they occur in each of these aspects of writing, and attaches psychological interpretations to them. Expert graphologists can achieve a very high degree of accuracy.

**The uses of graphology**

**Do you think you are a good judge of character? Have you always been right? Or have you sometimes found that your first impressions have been wrong?**

The truth is that appearances can be deceptive, but handwriting never lies. Handwriting reveals how the writer thinks, feels and behaves, and it does so directly and immediately. It shows the motivation that lies behind actions, and outlines the writer's propensity to behave in ways that may not be expected.

Graphology not only examines behaviour, but the subconscious or the *whys* that lie behind actions, providing information that could not be established in any other way or in such a quick time.  This makes graphology a very powerful tool. Handwriting analysis is therefore highly effective in a wide variety of practical situations.

It can be used for personality assessment in any area of human activity where people interact. It is ideal, for example, within the following areas:

* **Recruitment** where it is an invaluable aid because an experienced graphologist can pick out the best candidates, and advise over suitability.
* **Management selection** in commerce and industry where it is employed in conjunction with psychometric testing.
* **Corporate training** where it can highlight staff strengths and flag up weaknesses, potential and motivation.
* **Security checking** and the evaluation of honesty and integrity.
* **Career guidance** for those seeking employment or a change of direction.
* **Compatibility** **assessments** for business and personal relationships.
* **Personality profiling** for individuals seeking self awareness for self development.
* **Child and family guidance** to help resolve sensitive issues.
* **Historical profiling** for genealogists and biographers who want to learn more about people who have died.
* **Document examination and forensic analysis** for assessing forgeries and poison pen issues. (Note: B.I.G. tutors do not teach this specialist area.)

**Graphology as a professional skill**

For those wishing to become professional graphologists, the Institute offers a series of [exams](http://www.britishgraphology.org/education/exams/) leading to diploma level (M.BIG). The B.I.G. not only fosters best practice and the highest standards of graphology but also, through its diploma course, trains experts to apply accurate graphological interpretation and to give a clear and thorough account of their findings.

# What is Graphology?

Graphology is the study of how an individual’s handwriting indicates their character traits. This is based on the psychological concept of ‘deviance’. The way we learn to write in school is standard. School teachers teach their students to write in a uniform way. Nevertheless, we usually choose to ‘deviate’ from how the teacher taught us. This is why every individual's handwriting reflects what is unique about them.

Over a decade ago many school systems*,* including ours, adopted D'NealianManuscript for writing instruction. Lower case letters are primarily rounded, written at normal speed and with average writing pressure.

Let's say someone who was taught this system, diverges. Instead of the round traditional way, now varies and writes angular in its place. Angles cut, like knives. This may indicate a hurtful trait. This writing is speedy. This usually impatient nature could specify a tendency toward quick temper, when considering the hurtful trait.

Additionally, the script is written with heavy pressure, which signifies getting very uptight and reacts to what they might see as criticism. The definitions of the sum of these components express aggressiveness.

Then, the astute graphologist looks if the writer repeats these nuances, i.e., is this a pattern? If there is a pattern, this is conclusive evidence that the trait of aggressiveness exists.

**Requirements for a graphologist:**

Although a background in psychology is an advantage, simply, the desire to know what makes people tick is helpful. If you are privileged with the wish to help others with your talent, you are blessed.

**Learn Graphology Course**

Your handwriting is unique like your fingerprints. Fingerprints identify your physical body. Handwriting reveals your whole personality – your mind, heart and soul. The LearnGraphology Course will teach you how to reveal personality traits through handwriting analysis. It is an art and a science, a branch of psychological studies.

When a person writes, it is his hand that does the writing, but his brain that does the dictating. There have been many cases of amputees who, having lost the hand or arm with which they wrote, relearned the art with either the other hand, or the feet, or the mouth. Aside from a certain understandable shakiness caused by the difficulties of the feat, the writings were extremely similar to the originals. Trained graphologists had no trouble recognizing the same individual. From this, we see that it is the personality that is expressed on paper by the handwriting. When a person writes in a given fashion, it represents a particular personality trait, which comes directly from the brain. As a child, you were taught to write. Why don’t you continue to write the way you were taught? The fact that you do not is the reason The Learn Graphology Course exists….

# Handwriting













Various examples of different handwritings in different languages throughout history; clockwise from top left: [Isaiah Scroll](https://en.wikipedia.org/wiki/Isaiah_Scroll), a breviary, [Voynich manuscript](https://en.wikipedia.org/wiki/Voynich_manuscript), [The Communist Manifesto](https://en.wikipedia.org/wiki/The_Communist_Manifesto), [Constitution of the United States](https://en.wikipedia.org/wiki/Constitution_of_the_United_States), [Description of Greece](https://en.wikipedia.org/wiki/Description_of_Greece)

**Handwriting** is the [writing](https://en.wikipedia.org/wiki/Writing) done with a writing instrument, such as a [pen](https://en.wikipedia.org/wiki/Pen) or pencil, in the [hand](https://en.wikipedia.org/wiki/Hand). Handwriting includes both [printing](https://en.wikipedia.org/wiki/Block_letters) and [cursive](https://en.wikipedia.org/wiki/Cursive) styles and is separate from formal [calligraphy](https://en.wikipedia.org/wiki/Calligraphy) or [typeface](https://en.wikipedia.org/wiki/Typeface). Because each person's handwriting is unique and different, it can be used to [verify a document's writer](https://en.wikipedia.org/wiki/Questioned_document_examination).[[1]](https://en.wikipedia.org/wiki/Handwriting#cite_note-huber_note1-1) The deterioration of a person's handwriting is also a symptom or result of several different diseases. The inability to produce clear and coherent handwriting is also known as [dysgraphia](https://en.wikipedia.org/wiki/Dysgraphia).

## Uniqueness

Each person has their own unique style of handwriting, whether it is everyday handwriting or their personal signature. Even identical twins who share appearance and genetics do not have the same handwriting. The place where one grows up and the first language one learns meld together with the different distribution of force and ways of shaping words to create a unique style of handwriting for each person.[[2]](https://en.wikipedia.org/wiki/Handwriting#cite_note-Srihari-2)

**Characteristics of handwriting include:**

* the specific shape of letters, e.g. their roundness or sharpness
* regular or irregular spacing between letters
* the slope of the letters
* the rhythmic repetition of the elements or arrhythmia
* the pressure to the paper
* the average size of letters
* the thickness of letters

## Medical conditions

Children with [ADHD](https://en.wikipedia.org/wiki/ADHD) have been found to be more likely to have less legible handwriting, make more spelling errors, more insertions and/or deletions of letters and more corrections. In children with these difficulties, the letters tend to be larger with wide variability of letters, letter spacing, word spacing, and the alignment of letters on the baseline. Variability of handwriting increases with longer texts. Fluency of the movement is normal but children with ADHD were more likely to make slower movements during the handwriting task and hold the pen longer in the air between movements, especially when they had to write complex letters, implying that planning the movement may take longer. Children who have ADHD were more likely to have difficulty parameterising movements in a consistent way. This has been explained with motor skill impairment either due to lack of attention or lack of inhibition. To anticipate a change of direction between strokes constant visual attention is essential. With inattention, changes will occur too late, resulting in higher letters and poor alignment of letters on the baseline. The influence of medication on the quality of handwriting is not clear.[[3]](https://en.wikipedia.org/wiki/Handwriting#cite_note-3)

## Uses of handwriting samples

Because handwriting is relatively stable, a change in the handwriting can be indicative of the nervousness or intoxication of the writer.

A sample of a person's writing can be compared to that of a written document to determine and authenticate the written document's writer; if the writing styles match, it is likely that one person wrote both documents.

## Graphology

[Graphology](https://en.wikipedia.org/wiki/Graphology) is the [pseudoscientific](https://en.wikipedia.org/wiki/Pseudoscience)[[4]](https://en.wikipedia.org/wiki/Handwriting#cite_note-Graph_Beyer_PBS-4)[[5]](https://en.wikipedia.org/wiki/Handwriting#cite_note-NYT1-5)[[6]](https://en.wikipedia.org/wiki/Handwriting#cite_note-ps-6) study and analysis of handwriting in relation to human psychology. Graphology is primarily used as a recruiting tool in the applicant screening process for predicting personality traits and job performance, despite research showing consistently negative results for these uses.[[7]](https://en.wikipedia.org/wiki/Handwriting#cite_note-kingkoehler-7)[[8]](https://en.wikipedia.org/wiki/Handwriting#cite_note-8)[[9]](https://en.wikipedia.org/wiki/Handwriting#cite_note-nevo1986-9)

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* [*Renton, Alexander Wood*](https://en.wikipedia.org/wiki/Alexander_Wood_Renton) (1911). [*"Handwriting"*](https://en.wikisource.org/wiki/1911_Encyclop%C3%A6dia_Britannica/Handwriting). [*Encyclopædia Britannica*](https://en.wikipedia.org/wiki/Encyclop%C3%A6dia_Britannica_Eleventh_Edition). **12** (11th ed.). p. 916.

# Handwriting movement analysis

**Handwriting movement analysis** is the study and analysis of the movements involved in [handwriting](https://en.wikipedia.org/wiki/Handwriting) and drawing. It forms an important part of [graphonomics](https://en.wikipedia.org/wiki/Graphonomics), which became established after the "International Workshop on Handwriting Movement Analysis" in 1982 in Nijmegen, The Netherlands. It would become the first of a continuing series of International Graphonomics Conferences. The first graphonomics milestone was Thomassen, Keuss, Van Galen, Grootveld (1983).

Handwriting is historically considered the widest taught motor skill. It is also one of the first, and often the only motor skill that children will learn at elementary school. It takes years of practice and maturing before a person has mastered the adult handwriting skill. Handwriting is not considered only as a movement that leaves a visible trace of ink on paper (product) but it can also be considered as a movement (process). Understanding of the handwriting product will not be complete until the handwriting process is understood. Therefore, handwriting movement has been researched since measurement techniques became available.

However, before recording and processing handwriting movements were within reach for those interested in studying handwriting movements, three components were required: Devices to capture handwriting movements, laboratory computers to store and process the movement data, and computer software which enables the researcher to do this under specific experimental paradigms without the need to program untested custom software. Handwriting movement analysis software is also used for studying drawing, eye–hand coordination, or any other situation where the researcher wishes to record movements using a pen.

## Earliest devices to capture handwriting movements

Elisha Gray's "Telautograph", US Patent 386,815 (1888), followed by four more similar patents (1891–93). See the "Annotated Bibliography in Pen Computing and Handwriting Recognition" by Jean Renard Ward (<http://users.erols.com/rwservices/biblio.html>). Handwriting could only be transmitted by wire and reproduced elsewhere in real-time. Scripture (1895) developed a writing apparatus that enabled storage of pen positions on paper at 100 Hz. This apparatus permitted measurement of durations of individual handwriting strokes (McAllister, 1900).

## Earliest laboratory computers

Handwriting movements are fast, non-repetitive with a primary frequency around 5 Hz and a bandwidth of about 10 Hz. While sampling rates of 20 Hz would theoretically suffice, up-sampling will be needed to properly visualize the [Lissajous](https://en.wikipedia.org/wiki/Lissajous_curve)-like handwriting and drawing strokes. Higher-than-necessary sampling rates such as 100 Hz are preferred as this would also allow low-pass filtering or smoothed data with reduced equipment and quantization noise by factor √100/20 = √5. A laboratory computer will be needed to store, process, and visualize massive numbers of samples. It took more than 50 years for computers to be available in laboratories. Electronic [analog computers](https://en.wikipedia.org/wiki/Analog_computer) were used until digital [computers](https://en.wikipedia.org/wiki/Computer) came within reach for research: [Wang Laboratories](https://en.wikipedia.org/wiki/Wang_Laboratories), [Digital Equipment Corporation](https://en.wikipedia.org/wiki/Digital_Equipment_Corporation) (DEC), [Apple Inc.](https://en.wikipedia.org/wiki/Apple_Inc.), [IBM PC](https://en.wikipedia.org/wiki/IBM_PC) (Personal Computer), [Norsk Data](https://en.wikipedia.org/wiki/Norsk_Data), [Atari](https://en.wikipedia.org/wiki/Atari), [Osborne Computer Corporation](https://en.wikipedia.org/wiki/Osborne_Computer_Corporation), and [Data General](https://en.wikipedia.org/wiki/Data_General). Most of these innovative mini and microcomputer companies have discontinued their operation.

## Pen movement recording devices

The first devices to accurately record handwriting that could be connected to computers were [graphics tablet](https://en.wikipedia.org/wiki/Graphics_tablet), or digitizer, x-y-tablet, graphics pad, with electronic pens as we know them today. Among the earliest tablets are the Styalator electronic tablet with pen for computer input and handwriting recognition in 1957 [[1]](https://en.wikipedia.org/wiki/Handwriting_movement_analysis#cite_note-1) and the commercial products by *Vector General*. The Vector General products reported the position of the stylus at 100 Hz and claimed an accuracy of 0.1 cm. Typical tablets sense the position of the pen electromagnetically. Touch-sensitive tablets cannot be used when the hand is resting on the tablet unless they implement some form of hand rejection. Tablets can have a display built in (e.g., as in a tablet PC). Still today, handwriting tablets are the gold standard to record handwriting. Sampling rates used to be 100 Hz until it was decided that the minimum rate for Human Input Devices [HID](https://en.wikipedia.org/wiki/Human_interface_device) should be at least 133 Hz, bumping the sampling rates up to 133 – 200 Hz. The advantage is a 15%–40% reduction of device noise and quantization noise. The digitizer technology belongs to the most accurate and cost-effective [pointing devices](https://en.wikipedia.org/wiki/Pointing_device). Dynamic accuracy of 0.01 cm at constant frequency is achievable. Opaque tablets are produced by [Wacom](https://en.wikipedia.org/wiki/Wacom_%28company%29) who also produces display digitizers, Euronovate SA, Hanvon,[[2]](https://en.wikipedia.org/wiki/Handwriting_movement_analysis#cite_note-2) VisTablet,[[3]](https://en.wikipedia.org/wiki/Handwriting_movement_analysis#cite_note-3) Adesso,[[4]](https://en.wikipedia.org/wiki/Handwriting_movement_analysis#cite_note-4) Genius.[[5]](https://en.wikipedia.org/wiki/Handwriting_movement_analysis#cite_note-5)

Pen-based handwriting capturing devices [[6]](https://en.wikipedia.org/wiki/Handwriting_movement_analysis#cite_note-6) have been developed but never achieved the accuracy of tablets. Currently many novel systems appear on the market that "record" handwriting, such as those by [Anoto](https://en.wikipedia.org/wiki/Anoto), and also EMG-based systems.

Many pen movement recording systems capture, not only the x and y coordinates of the pen top, but also axial pen pressure, an x an y tilt or altitude and azimuth of the pen barrel.

Handwriting movement measurement systems can capture:

* **x** = Horizontal coordinates; parallel to the baseline in Western script
* **y** = Vertical coordinates; perpendicular to the horizontal base line and in the writing surface.
* **z** = Axial pen pressure; as pressure data are often non-linearly related to actual pressure, pen orientation will be needed to estimate normal pressure.

Optionally, digitizers can deliver the orientation of the pen barrel relative to the tablet:

* **Altitude** = How steep the pen is held; this angle can be used to estimate pen pressure perpendicular to the paper from the axial pen pressure.
* **Azimuth** = Direction of the pen barrel projected on the x-y plane.

Ideally, each set of coordinates should be sampled simultaneously and at a fixed frequency, and include times stamps per coordinate to correct non-isochronous sampling. Additional features that can be measured by the digitizers (mostly in past models) include pen height, pen barrel rotation, and grip forces (e.g., at the 3 finger grip areas).

## Handwriting movement analysis software

Handwriting movements are being studied from many disciplines including [kinesiology](https://en.wikipedia.org/wiki/Kinesiology), human movement science, [biomechanics](https://en.wikipedia.org/wiki/Biomechanics) of the hand, [fine motor control](https://en.wikipedia.org/wiki/Fine_motor_control), [handedness](https://en.wikipedia.org/wiki/Handedness), [human-computer interaction](https://en.wikipedia.org/wiki/Human-computer_interaction), visuomotor control, visual feedback, goal-directed movements, [drawing](https://en.wikipedia.org/wiki/Drawing), [experimental psychology](https://en.wikipedia.org/wiki/Experimental_psychology), [psychiatry](https://en.wikipedia.org/wiki/Psychiatry), [extrapyramidal symptoms](https://en.wikipedia.org/wiki/Extrapyramidal_symptoms) (EPS) or movement side effects due to medication, [neurology](https://en.wikipedia.org/wiki/Neurology), [movement disorders](https://en.wikipedia.org/wiki/Movement_disorders), [Parkinson's disease](https://en.wikipedia.org/wiki/Parkinson%27s_disease), [dystonia](https://en.wikipedia.org/wiki/Dystonia), [writer's cramp](https://en.wikipedia.org/wiki/Writer%27s_cramp), [physiotherapy](https://en.wikipedia.org/wiki/Physiotherapy), remedial handwriting instruction, [occupational therapy](https://en.wikipedia.org/wiki/Occupational_therapy), [child development](https://en.wikipedia.org/wiki/Child_development), [developmental disorders](https://en.wikipedia.org/wiki/Developmental_disorders), [education](https://en.wikipedia.org/wiki/Education), [elementary education](https://en.wikipedia.org/wiki/Elementary_education), [home schooling](https://en.wikipedia.org/wiki/Home_schooling), [reeducation](https://en.wiktionary.org/wiki/reeducation), [linguistics](https://en.wikipedia.org/wiki/Linguistics), [language](https://en.wikipedia.org/wiki/Language), [communication](https://en.wikipedia.org/wiki/Communication), [stuttering](https://en.wikipedia.org/wiki/Stuttering), [forensic document examination](https://en.wikipedia.org/wiki/Forensic_document_examination), [document analysis](https://en.wikipedia.org/wiki/Document_analysis), forensic document examination or [questioned document examination](https://en.wikipedia.org/wiki/Questioned_document_examination), signature verification and identification, handwriting image analysis, [computer science](https://en.wikipedia.org/wiki/Computer_science), [artificial intelligence](https://en.wikipedia.org/wiki/Artificial_intelligence), [handwriting recognition](https://en.wikipedia.org/wiki/Handwriting_recognition), etc.

The next wave consisted of packaged software that could be made available to record handwriting at many locations. Most initial software systems were developed by university researchers who, often, were the only ones capable of using it. Even today, it is a major accomplishment to make software available as a package that can be installed on an unknown computer and can be used after a brief familiarization time by other users who have not been involved.

Over the last several years, software packages have appeared on the market that can be used by many other researchers interested in the field of handwriting movement analysis.

### CSWin

The first handwriting movement analysis offered for sale (around 1980) was CSWin by Science And Motion[[7]](https://en.wikipedia.org/wiki/Handwriting_movement_analysis#cite_note-7) and developed by Christian Marquardt and Norbert May in Munich, Germany. CSWin was marketed in Germany and is being used in many German hospitals. It was used for treating 500 writer’s cramp patients. The present company focuses on golf training and was established in 2003 and is run by the owner, Christian Marquardt. Their oldest publication is by Marquardt and Mai (1994).

### Oasis

Another early system was Oasis by KikoSoft, The Netherlands, which was established in 1995 by Peter De Jong. Oasis can be customized by its flexible macro language. In 1998, this system was used to develop an automated test-battery for psychopharmacological research: Orgabat. One of the oldest references to Oasis is De Jong, Hulstijn, Kosterman, and Smits-Engelsman (1996).

### Pullman spiral acquisition and analysis

At Columbia university, Prof. Dr. Seth Pullman developed Pullman Spiral Acquisition and Analysis.[[8]](https://en.wikipedia.org/wiki/Handwriting_movement_analysis#cite_note-8) It is used to test tremor in Parkinson patients. In 2002, Pullman received US Patent 6,454,706: "System and method for clinically assessing motor function". Patients with motor disorders such as Parkinson's disease draw spirals. The software calculates first-order smoothness, second-order smoothness, tightness of the spiral, zero-crossing rate, second-order zero-crossing rate, and derives from these score a degree of severity score. Their system enables objectively assessing motor function by physicians who are not skilled or experienced in evaluating motor disorders, for example general practitioners or pediatricians who are not certified in the practice of neurology. An early publication about his spiral analysis is by Pullman (1998).

### Neuroskill

Another [Handwriting Analysis](https://en.wikipedia.org/wiki/Graphology) system is Neuroskill by Verifax, Boulder, Colorado, USA, which was founded in 1990 by Dr. Ruth Shrairman and Alex Landau. Neuroskill was designed for biometric measurement, security purposes, and Parkinson medication effects and has many applications in movement disorders. Verifax began operations with the aim of developing a biometric tool for the verification of signatures from a distance (VeriFax Autograph Technology). Verifax developed two more applications using application-specific modifications of their customized Neuroskill software: Applications for substance abuse screening and detection, monitoring for toxic inhalants and environmental distress, and accurate signature identification for security/privacy protection and forgery detection. Target markets could include neuromuscular disease centers, drug and alcohol abuse clinics, occupational health centers and the security industry. In the process, they applied their technology to biometric measurements as a clinical monitoring tool for physicians investigating neuromuscular diseases.

In 2003, NeuroSkill received a US patent 6,546,134: "System for assessment of fine motor control in humans". Their method estimates stability, smoothness and synchronization of the writer's motion as quantifying measures of the neurological function using their Correlation Function Analysis (CFA) of behavioral signals. CFA returns numerical scores and charts expressing stability of the handwriting strokes and the characteristics of the phase distortions in reproducing cursive samples.

Another application was to evaluate persons with critical skills (e.g., airline pilots, bus drivers) for physical and mental performance impairments caused by stress, physiological disorders, and alcohol and drug abuse using their proprietary VeriFax Impairoscope writing instrument. This last application raised the possibility of using a space-qualified Impairoscope variant to evaluate astronaut performance with respect to the impacts of stress, fatigue, excessive workload, build-up of toxic chemicals within the space habitat, etc.

In 2009, the iNeuroskill web portal was established under a new business entity: iNeuroskill. The website enables Parkinson patients to upload their signatures that were recorded using a digitizing tablet. They receive immediate feedback regarding their fine motor function in the form of a chart analysis.[[9]](https://en.wikipedia.org/wiki/Handwriting_movement_analysis#cite_note-9) Their oldest article is by Morgenthaler, Shrairman, and Landau (1998).

### MovAlyzeR

[MovAlyzeR](https://en.wikipedia.org/wiki/MovAlyzeR) was developed by NeuroScript,[[10]](https://en.wikipedia.org/wiki/Handwriting_movement_analysis#cite_note-10) Tempe, AZ, USA. NeuroScript was founded in 1997 by Prof. Dr. George Stelmach, who has since retired, and Dr. Hans-Leo Teulings. In 1999 Gregory M. Baker joined as MovAlyzeR’s designer and implementer. This handwriting movement analysis software is the first to demonstrate that it can discern movement side-effects due to [schizophrenia](https://en.wikipedia.org/wiki/Schizophrenia) medication better than with any conventional evaluation method used in psychiatry today (international patent pending) (Caligiuri et al., 2009a, b). MovAlyzeR is currently the only handwriting movement analysis software that is certified for Microsoft Windows XP and Vista. It can be integrated with [MATLAB](https://en.wikipedia.org/wiki/MATLAB) and perform image processing on scanned handwriting exemplars. It is used in fields ranging from research in human movement sciences, [kinesiology](https://en.wikipedia.org/wiki/Kinesiology), [psychology](https://en.wikipedia.org/wiki/Psychology), [education](https://en.wikipedia.org/wiki/Education), [aging research](https://en.wikipedia.org/wiki/Aging_research), [psychiatry](https://en.wikipedia.org/wiki/Psychiatry), [neurology](https://en.wikipedia.org/wiki/Neurology), [occupational therapy](https://en.wikipedia.org/wiki/Occupational_therapy), [forensic document examination](https://en.wikipedia.org/wiki/Forensic_document_examination), [computer science](https://en.wikipedia.org/wiki/Computer_science) ([handwriting recognition](https://en.wikipedia.org/wiki/Handwriting_recognition), [signature verification](https://en.wikipedia.org/wiki/Digital_signature)), to educational demonstrations or student projects in these fields. The oldest references to MovAlyzeR are Teulings and Romero (2003), Teulings and Van Gemmert, (2003), Romero and Teulings (2003).

### ComPET

At the University of Haifa, Dr. Sara Rosenblum and Patricia L (Tamar) Weiss and colleagues developed a computerized handwriting evaluation system called POET: Penmanship Objective Evaluation Tool using MATLAB. It was used to administer visual stimuli and to record and analyze handwriting movements. They researched the Air Phenomenon: Pen movements above the paper (air strokes). The oldest mention of POET is in Rosenblum, Parush, Epstain, and Weiss (2003).

Soon afterward, POET was developed further and renamed to ComPET: Computerized Penmanship Evaluation Tool. It is used to study children with dysgraphia, Developmental Coordination Disorders (DCD) and adults with several pathologies as Multiple Sclerosis (MS) Depression, Alzheimer, Parkinson as well as aging effects.[[11]](https://en.wikipedia.org/wiki/Handwriting_movement_analysis#cite_note-11) It is also used with verbal-based lie detection technology such as the polygraph.

### Eye and Pen

Eye and Pen [[12]](https://en.wikipedia.org/wiki/Handwriting_movement_analysis#cite_note-12) is a software developed at the University of Poitiers (France) to synchronously record handwriting and eye mouvements. Its first version aims at studying periods of pause and writing in text production (G-Studio; 1994). After a complete rewriting to support MS-Windows, eye mouvement recording was added to get insight into reading during writing and information retrieval. Its evolution is the fruit of collaborations with handwriting researchers, mostly of the psychology lab of the University of Poitiers (Denis Alamargot, Eric lambert, Cyril Perret, Thierry Olive). Now it integrates audio recording, synchronization signals (from/to other computers, software or devices), data tagging tools as well as various data filtering and extraction modules, opening ways to multimodal researches. After a commercial distribution (2004-2018), it is now freely distributed. The oldest references to Eye and Pen are Chesnet and Alamargot (2005), Alamargot, Chesnet, Dansac, Ros, C. (2006).

### MedDraw

MedDraw is a computer-based drawing-task diagnosis and rehabilitation system project between the University of Kent, UK and the University of Rouen, France, coordinated by Dr. Richard Guest and started in 2003. The project aims to develop a robust, state-of-the art, yet easy to use clinical system producing objective diagnostic recommendations across a range of clinical conditions. Their focus is to detect spatial neglect in the visual field and organization of movement disorder. They will remain focused on drawing-based diagnosis of these disorders. The first research publications that mention MedDraw are by Kaplani, Guest, and Fairhurst (2005), and by Glenat, Heutte, Paquet, and Mellier (2005). The programm goes offline since 2006.

### Extended Drawing Test (EDT)

The Extended Drawing Test is a computerized graphonomic assessment for arm and hand function. The EDT measures the ability of the subject to draw vertical lines, with both the left and right hands. To compare performance between gross arm movements and fine finger control, the subjects draw lines holding either the tablet's pen (held by the fingers) or a mouse (held by the whole hand). The latter movements do not include finger movements. Norms have been established for 3- to 70-year-old healthy persons. Deviations from the healthy norms will reflect different pathologies for different patient groups, e.g., hemiplegic stroke patients. The first paper mentioning EDT is Vuillermot, Pescatore, Holper, Kiper, and Eng (2009).

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PAST PAPER

**KAMPALA INTERNATIONAL UNIVERSITY**

**COLLEGE OF EDUCATION, E- AND DISTANCE LEARNING**

**UNIVERSITY EXAMINATIONS**

**MASTER OF ARTS IN LINGUISTICS**

**ENL 7101 ENGLISH PHONOLOGY AND GRAPHOLOGY**

**DECEMBER 2017**

**TIME: Three hours**

**Answer any THREE questions. Illustrate amply.**

1. a) Explain the basic ways in which humans produce sound symbols.

b) Describe points of articulation in humans by manner and by region.

1. a) Discuss the main paralinguistic features in the English language.

b) Explain the International Phonetic Alphabet. How does it affect the writing system?

1. a) Draw and explain the Organs of Speech in humans.

b) How is speech enhanced at **any five** organs?

1. Define any FIVE of the following terms:
2. Phonemes
3. phonology
4. graphology
5. glottal
6. Intonation
7. Plosive
8. Affricate

1. a) Name the eight diphthongs in the English Language.
2. Illustrate how they are used in the English Language.
3. a) Do you think that it is necessary for all speakers of English to learn English pronunciation?

b) What is Received Pronunciation in the English Language?

 7. (a) Assess the use of graphology to ascertain personality of a person.

(b) Why do some Job advertisements require the applicants to hand in handwritten applications?

***END***

 KAMPALA INTERNATIONAL UNIVERSITY

COLLEGE OF EDUCATION OPEN AND DISTANCE E-LEARNING

MASTERS OF ARTS IN ENGLISH

END OF SEMESTER EXAMINATION – INSERVICE

ENGLISH PHONOLOGY AND GRAPHOLOGY

COURSE; MAE

COURSE UNIT: ENGLISH PHONOLOGY AND GRAPHOLOGY

COURSE CODE: **ENL 7104**

========================================================================================

INSTRUCTIONS: ATTEMPT FOUR QUESTIONS.

1. Give the phonetic transcription of the following. ( 15 marks)
2. Education
3. Women
4. Oven
5. Good
6. Data
7. Divide the following words into syllabic divisions. ( 15 marks)
8. Accountability
9. Aggrieve
10. Command
11. Accommodate
12. Banana
13. Draw the picture showing speech organs and places of articulation in humans. ( 15 marks)
14. Define the following.

i). Phonetics

ii). Phonology

iii). Semi-vowel

iv). Stress

v). Intonation

vi. Plosives

vii). Affricate

1. a) Explain the basic ways in which humans produce sound symbols. . ( 15 marks)

b) Describe points of articulation in humans by manner and by region. . ( 15 marks)

1. a) Discuss the main paralinguistic features in the English language. . ( 15 marks)

b) Explain the International Phonetic Alphabet. How does it affect the writing system?

1. a) Draw and explain the Organs of Speech in humans. . ( 15 marks)

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1. Define any FIVE of the following terms: . ( 15 marks)
2. Phonemes
3. phonology
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5. glottal
6. Intonation
7. Plosive
8. Affricate

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2. Illustrate how they are used in the English Language.
3. a) Do you think that it is necessary for all speakers of English to learn English pronunciation? . ( 15 marks)

b) What is Received Pronunciation in the English Language?

 11. (a) Assess the use of graphology to ascertain personality of a person. . ( 15 marks)

(b) Why do some Job advertisements require the applicants to hand in handwritten applications?

***END***

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