

Speech Recognition, Dyslexia and Disabilities

“Dictating to your computer is so easy. No typing, no more spelling mistakes, it’s the dyslexic person’s dream.”

This is often how speech recognition is described and in the past has, at times, led to disappointment for some users. Today, however, the reality is nearer that description.

The User – The Most Important Factor in Speech Recognition

Dragon NaturallySpeaking will, for a person with a clear voice, a new computer, a good microphone, and some training, produce some very good recognition results.

However, speech recognition (SR) can still lead to frustration and a lack of success. Today, the main reasons for this will be human, not technical.

Speech recognition is more likely to be successful if the user is **motivated** because, for instance:

- The user has a disability:
 - **RSI**, which makes typing difficult
 - **Dyslexia**, which makes spelling difficult
 - **Dyspraxia**, which makes handwriting and using the keyboard difficult
- The user needs to write whilst **using their hands** for something else (e.g. radiologists or pathologists).
- The user receives some high-quality **training**. A lot of time can be saved with the right type of support: for example advice to slow down, speak more softly, readjust the microphone, etc.
- The user can **speak clearly** (although people with severe speech impediments can also achieve good results).

Accuracy

If producing good quality text is the primary objective, then accuracy is an important factor. Each mistake takes time to correct, so it is important time is taken to improve accuracy. This is particularly important for dyslexic people who are liable to have more difficulty finding and correcting an error than somebody who reads and spells well. Accuracy can be improved by considering the position of the microphone. It is critical to have the microphone properly adjusted, and failure to do this is often the most likely cause of frustration and failure in using SR. Unfortunately, the set-up program will only state if the microphone reception is acceptable not optimal.

Performance and System Requirements

Most new computers will be sufficiently powerful for speech recognition. However, it is important to note that the minimum specification required is the absolute minimum, and will not really give the best results. The minimum-spec performance can be so slow as to be impractical, particularly if the user is trying to dictate into a large application like Microsoft Word. This can also result in recognition errors.

Therefore, on minimum-specification computers, or on older computers, it is recommended that the software is used independently of MS Word.

Laptops versus desktops

Generally, laptop computers are slower than a desktop machine of the same specification. So it is important to have more than the minimum spec for a laptop to perform well. However, performance can be improved by using a USB pod or USB microphone.

Microphones

Microphones provided with the SR software are adequate for sound input quality under favourable conditions; however, they are not the best. Often the supplied microphone doesn't fit the user well, resulting in it slipping and changing its position. This is a serious fault, for if the microphone moves too much the optimal position is lost and this will result in poorer recognition.

Better recognition will be produced with a good-quality microphone. Sometimes the microphone can make the difference between success and failure. An example of a good-quality microphone is the Andrea NC91.

Speech Feedback

Proof reading, especially from a computer screen, is a difficult skill. There is a tendency to see what we want to read, rather than what is actually written. Proof reading is particularly difficult for dyslexic people. The best dictation system, even after training, will still make some recognition mistakes. It may be easy to find some mistakes if the wrong word is quite different. But mistakes can often be in quite small items and difficult to see.

Speech feedback can be useful to spot these types of error. Using speech-feedback software, the computer will read back to the user what has been actually written. Dyslexic people often find that speech feedback helps with grammar and punctuation. Perhaps the best programme for speech feedback is TextHelp's **Read & Write**. **Dragon Naturally Speaking** also includes its own text-to-speech synthesis program, which can be useful. However, Dragon's feedback facility is not a full and adequate substitute for **Read & Write**, which reads with intonation and highlights each word as it reads it out. In addition, Read & Write's other features, for example its spell checker and word prediction, can also be useful even in dictation: they can help with entering a correction when the program hasn't supplied the correct alternative.

Training

Training can be very valuable, both to know how to use the system, and, more fundamentally, to be able to recognise when it is not working at its full potential.

When first using speech recognition there are a number of new skills to learn, e.g. diction style, microphone adjustment and positioning, making corrections, punctuation and the voice commands. Having an experienced trainer can help learn these and other skills much more quickly and effectively.

Training the Software

In the past, time was required to enable the computer to recognise each user's voice to develop an acceptable level of accuracy. Each user was required to read a prepared script (approximately 15 minutes) from the screen with the software adjusting to better understand what was being said. With the latest version of **Dragon Naturally Speaking** it is now possible to skip this stage and start dictating immediately. This is very useful for anyone with a reading difficulty, or for whom the training would be difficult, although it is still recommended that the training is completed if possible.



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