Microphone Set-Up
and Troubleshooting Guide:

A guide to setting up, successfully integrating and, when necessary, troubleshooting a computer microphone.

A publication of Speech Recognition Solutions, LLC

Microphone Set-Up and Troubleshooting Guide: A guide to setting up, successfully using and, when necessary, troubleshooting a computer microphone.

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Microphone Set-up and Troubleshooting Guide

Thank you for purchasing a microphone from Speech Recognition Solutions, LLC. Our goal is not simply to put the right product in your hands, but also to assure it works properly and provides you with the best possible results with your planned application.

Over the years we have come to realize that 99% of products returned due to suspected product failure turn out to be perfectly working products that simply have not been set up properly. The goal of this guide is to assist you in the critical set-up process.

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Preliminary Considerations: Microphone vs. Soundcard

Keep in mind that there are two key factors involved with converting your voice into a signal used by your computer – the <u>microphone</u> itself (an analog device) and the <u>sound conversion device</u> that converts the analog signal emanating from the microphone to the digital signal utilized by your speech recognition software.

The sound conversion device could be one of 3 things:

1. Your computer's on-board "sound card"
2. An external sound adapter that plugs into a USB port
3. A sound adapter incorporated into your microphone

When changing to a new microphone it is critical to consider what you are actually changing.

- Are you simply plugging a new microphone into an existing sound card? If this is the case, your job is simple, because your software is not aware of the microphone itself but looks for and is critically affected by the sound card (either internal or external). If the sound card is not changing, then there isn't much to do but plug in your new microphone and at most recalibrate the microphone input volume with your software.
- Are you changing the sound card itself by moving to an external sound adapter or a microphone that includes the sound conversion capability? If this is the case, you need to be sure that your software recognizes this change. Depending upon your software, this may be extremely simple (Dragon 15) or a bit more nuanced (earlier versions of Dragon).

With the above in mind, let's get a bit more specific.

Using a Microphone for Teleconferencing

Although many businesses have been moving the direction of teleconferencing, with the COVID-19 pandemic of 2019/2020, teleconferencing suddenly became the norm. Whether using Zoom, GoToMeeting, WebEx or other solutions, at the heart of a successful meeting is a good audio signal. The choice of microphone depends upon your work environment. For the purpose of this guide, we will assume you are working from home or another somewhat isolated environment and are using either a laptop or desktop computer.

Consider a few basic principles:

1. If you are using a separate webcam, it may already include a microphone. Although you can use this, your signal will not be as pure to your listeners than if you had a dedicated "close-up" microphone.
2. Although your computer probably has a built in sound card and in the case of a notebook or laptop computer probably has a small microphone built into the case somewhere, this tends not to provide the best signal, since you are likely to be located 1-2 feet away from the microphone
3. The big advantage of a headset microphone in which the microphone is placed just an inch or so from your mouth and you have a separate speaker, is that you will not be susceptible to "feedback" and/or an echo phenomenon which will degrade the quality of the signal.
4. Virtually all conferencing systems, particularly those that run on your home or personal computer, allow you to determine which microphone will be used. You will need to

explore the audio "Options" within the conferencing software to select the microphone you plan to use.

5. If you are a Mac user, you are best off using a microphone that interfaces with a USB port on your computer, rather than trying to plug an analog microphone into the audio jack. The audio jacks on Macs tend to be prepared for a "line-in" device and NOT a microphone.

6. Before setting up your microphone, read the brief discussion in the prior section of this guide to understand the issue of soundcards and USB (digital) versus analog microphones.

The bottom line is that when you purchase a new microphone for teleconferencing, it is key that you understand whether your microphone is an analog microphone which you will plug into the mic jack on your computer and will use the computer's on-board sound card or if you have purchased a microphone which includes it's own soundcard and which will plug into a USB port on your computer. With either option, it is a good practice to go to the audio setup menu of your conferencing software and be sure that you are choosing the correct sound source for your connected microphone.

- If you plugged an analog microphone into the sound jack on your computer, be sure that this sound source is being used by your conferencing software. If there are no other sound devices attached to your computer, this is likely to be correct by default.

- If you are using a microphone which is connecting via USB, your conferencing software will have the option of using either the on-board sound software or the USB sound software. Be sure that the externally attached sound source is selected by your software.

- The method of checking (and changing) the sound source used by your conferencing software is variable and depends upon the software you are using. In general, from your conferencing software you should look for something called "audio settings". From the audio settings you can choose your preferred sound input and output device.

Some specific tips to assist in your teleconferencing:

1. If you are having problems with your microphone, make sure your computer or mobile device is actually using your microphone. Just because it is plugged in does not mean the conferencing software is using it.

   On a Mac computer, click the volume control in the menu bar and pick "sound options". In the "input" tab, make sure that your external microphone is selected. Once selected, make sure that the input level bar is moving to show that the computer is picking up your voice.

On a Windows based computer, either go to the sound control panel and select the "recording tab" to confirm your device is chosen and is working , or right click on the microphone icon on the tool bar at the bottom of your screen and select "Open Sound Settings".

2. Maintain a proper distance from the microphone. For most headset, the microphone should be positioned about an inch from your mouth. For desktop microphones, ideally you should be within 3-5 inches of the microphone (exception: with SpeechWare microphones you can be positioned 10-20 inches from the microphone).
3. Control your environment as best you can. Avoid wind and background noise.
4. Keep yourself muted when not talking
5. Since your computer may have only so much "bandwidth" for the various connections it is making to the internet, free up as much of this as possible by shutting down programs you are not needing during a teleconference.

For additional information, please check out these resources:

- https://zoom.us/docs/en-us/covid19.html
- https://biz30.timedoctor.com/productive-teleconference-tips/
- https://www.onsip.com/voip-resources/smb-tips/conference-call-etiquette-10-tips-for-having-a-smoother-meeting

Windows Set-up: Dragon

The beauty of Dragon 15 is that it has greatly simplified the handling of microphones. If it starts up and does not find the last sound source it used, it will query you about which of any available sound sources it should use. All you need do is attach your microphone (and any included USB sound adapters) before starting Dragon and you will get a message such as the one shown below:
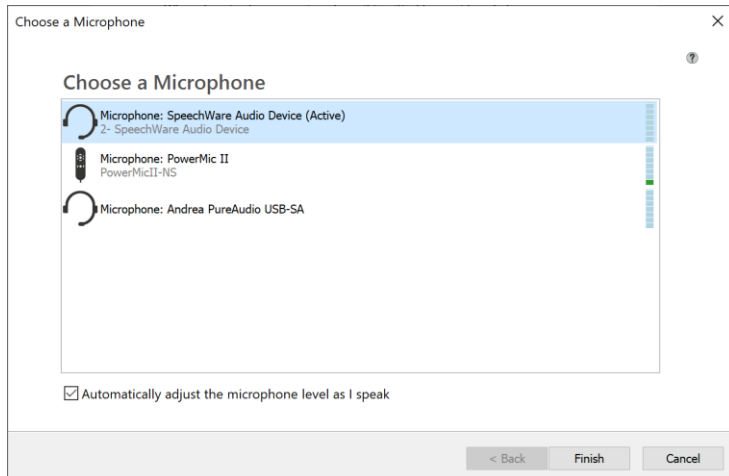
In this case, Dragon is seeing 3 potential sound sources and you simply need select the one you plan to use and then click "Finish". If you like, you can run the microphone check by selecting Settings > Microphone > Check Microphone.

And that's it!

> If you are using Dragon 15 or DMPE4, you are done, and you can ignore everything below this text box. Seriously!!

Older Versions of Dragon

If you haven't made the move to Dragon 15, we strongly suggest you do. It comes with a lot of improvements, particularly when it comes to handling audio sources.

Before using your new microphone with a pre-15 version of Dragon, **it is important to realize that it is not always possible and rarely recommend that you simply replace one microphone with another.** Microphones differ in their sensitivity, acoustic properties, and means of integrating with your computer. Also appreciate that each time Dragon starts, it looks for the *last sound source* it used (either the on-board sound card or a sound device attached via USB or Bluetooth). So if you are switching from a microphone plugged into your computer mic input jack (therefore using the onboard sound card) to one which attaches via USB or Bluetooth, Dragon will definitely not automatically change to the new microphone.

There are three basic options when switching to a new microphone:

1. **Add the new microphone as a new "Source" to your existing profile – RECOMMENDED METHOD**
2. Simply connect the new microphone, run the audio setup wizard to set volume and assess accuracy, and use it without making any additional modifications to Dragon – THIS WILL NOT ALWAYS WORK.
3. Create an entirely new user profile with the new microphone – good as a last resort if you're having trouble setting up a new microphone, but time consuming and not usually necessary.

Overview of methods of adding new microphone:

Method	Create New "Source"	Run Mic Set-Up Wizard	Create New User Profile
Time Involved	< 5 min	1 min	5-10 min
Preservation of words/commands	Yes	Yes	No, unless manually moved
Optimizes performance new mic	Yes	No	Yes
Leaves old source intact	Yes	No	Yes
Comments	Preferred method	Not recommended if changing type of sound source	Good but time-consuming; requires manual export/import of old words and commands

Preferred Method: Adding a new source to your existing user profile: Adding a new "source" to an existing user profile has the effect of maintaining the entirety of your old user profile (with the exception of your microphone settings), including all of your customized training, acoustic information, customized words and commands, and yet tailoring it to the new microphone. Depending upon your Dragon version, this method may require you do the mandatory 5-6 minutes of reading. After creating the "source", each time you start Dragon you will have the choice of which source to use. If you want, you can remove any old source(s).
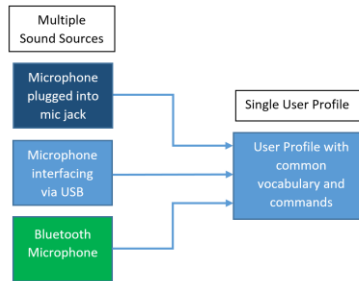
The beauty of this method is that you can have multiple "sources" on the same user profile. You might for instance, sometimes use a Bluetooth microphone, sometimes a hand-held USB microphone, and sometimes a file from a digital recorder. When having multiple sources for the same user profile if you add words, commands or make other changes to the profile, these will be retained when you open the user profile with any of the sound sources.

Steps for adding a new source to your existing profile: Simply follow this procedure from the Dragon toolbar:

[Note: with all of the versions described below, if you are adding a microphone interfacing with your computer the same way as your old microphone/source, during the step in which you are asked to choose the type of your new source (microphone-in, line-in, USB, Bluetooth, etc.) it may not offer you the type of source which you were previously using. In other words if your old source was based on a USB mic or source, this will likely not be a choice. In this situation, just ignore this and pick another available source, such a microphone-in or line-in. It won't make any difference.

Dragon 13,14 & 15:

1. Go to Profile > Manage Dictation Sources
2. From the "Manage Dictation Sources" window select your new audio source
3. Click "Add New Dictation Source"
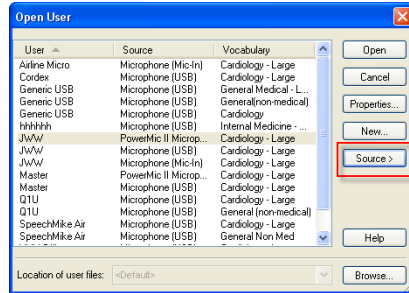4. Follow subsequent instructions

Dragon 12 (DMPE2) or Equivalent

1. Go to the Profile menu and select "Add dictation source to the current User Profile …"
2. On the next screen select the appropriate type of sound source from the drop-down menu
3. On the next screen select the actual sound source
4. Follow all subsequent instructions

Dragon 11 and earlier

1. If the sound source Dragon was expecting is not available upon opening, you will be presented with the "Open User" profile.
2. If Dragon is already open, Select Profile > Open User Profile …
3. On the far right of the Open User dialog, click on "Source" and then "New" (Don't click on the separate "New …" button shown on the image below.)
4. Select the new source from those listed and follow the usual steps to complete the training for the new source.

5. If you want to delete your old source (doing so will prevent it from showing up for potential selection each time you open Dragon), simply go to Dragon > Open User and select the old profile. Then click on "Source" and then "Delete".

Alternate Method: Simple substitution of one microphone for another: The simplest way to switch to a new microphone is simply to plug it in, run the "audio set-up wizard" (renamed "microphone check wizard in most recent versions) to set the microphone volume and confirm basic accuracy, and use it. This method is recommended only if a) you are using the same sound source with the new microphone and b) you are using the same basic type of microphone (example changing from one wired headset to another).

How do you run the audio set-up wizard? If the microphone is attached and Dragon running, the simplest way is simply to say "Check Audio". If this doesn't work or for any reason you need to run the audio set-up wizard manually, this is the way to do it:

❖ Dragon 15, 14, 13 and 12: Navigate to Audio menu and select "Check Microphone"; follow recommended steps
❖ Dragon 11 and earlier version: Navigate to Tools > Accuracy Center > Check My Audio Settings, and follow the resulting instructions.

The advantage of this method is simplicity. When moving from one wired microphone to another (especially when moving to a more accurate microphone) this method may be adequate.   If you are changing the type of microphone (i.e. moving from a wired to a wireless microphone or vice versa, switching from a simple microphone [3.5 mm plugs] to a USB microphone, or switching to or from a Bluetooth microphone) this simple method is not advisable and we recommend you use the "preferred" method described above.

Last resort method: Creating a New Profile: This is the least preferred method, in that it requires you create an entirely new user profile from scratch, using the new microphone, which is time consuming. We recommend this only if you have an existing profile which is either

extremely new (you haven't invested much time and training into it) or extremely old (AND suspected to be somewhat corrupted). There is nothing wrong with this method and it creates a brand new profile, which is occasionally a good thing to do, but it leaves you losing all the training and personalization you put into your last profile.

Here are instructions for creating a new user profile from scratch.

1. Before doing anything, open Dragon with your old microphone and export any words and commands from your old profile so you can import them into your new profile once created. This will give your new user profile a huge "jump start".

    a. Export your old words from the Dragon toolbar by going to Vocabulary > Export custom word and phrase list (in version 11 and earlier go to Words > Export.) Save your words to a location that you will remember.

    b. Export your commands by opening the Command Browser (Tools > Command Browser). Under the Mode menu, select "Manage". Click the box next to the command category you want to export and then click on Export on the left menu
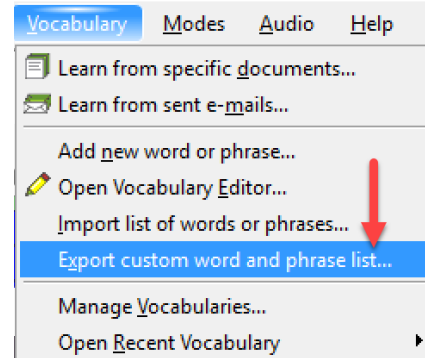
2. Create a new profile in version 14 and 15 by navigating to Profile > New User Profile. In earlier versions, from the Dragon toolbar select Profile > Manage User Profiles. In Dragon 12 and earlier navigate to Dragon > Manage User

3. Select New (see image above)

4. Follow the subsequent steps, being sure to select the new microphone or device as your audio source.
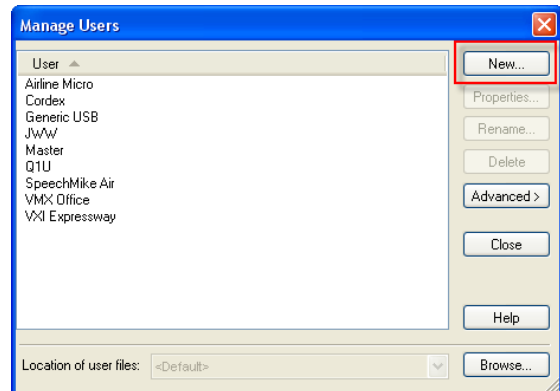
Windows Set-up: Other Applications

While the breadth of Windows applications makes is impossible for us to provide detailed set-up instructions, the basic process is simple and involves the following few steps:

1. Plug in your microphone
2. Assure that your microphone is being seen by your operating system
3. Configure your software to use the new microphone

While in most cases it is not necessary to worry about step 2 above, as a last resort and reality check, there is never harm in doing so. The process of assuring your microphone is being sensed and is active is fairly identical in most recent Windows operating systems and involves the following:

1. From the Start Menu select Control Panel
2. Open the "Sound" control panel
3. Click on the "Recording" Tab
4. Assure that your microphone or sound source is listed and showing as the default device. In the example shown below, our microphone shows up and the green circle with check mark indicates that it is the default microphone.
5. If another microphone is connected to your system and is listed as the default device, simply right click over the new microphone and select "Set as the default communication device."
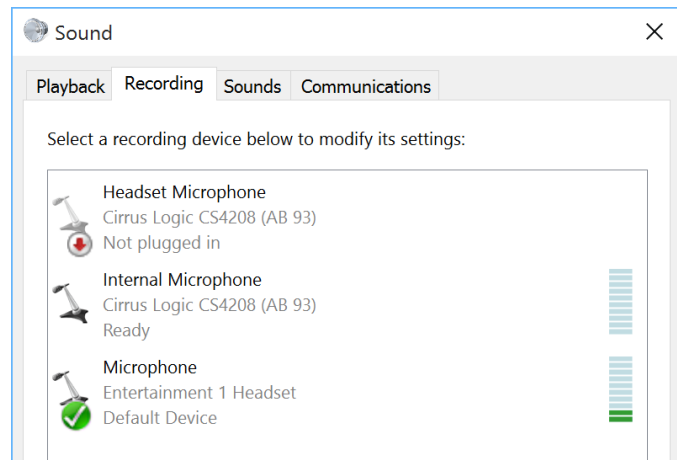
The remainder of the set-up process involves steps taken from the perspective of your audio application.


Mac Set-up: Dragon for Mac

[Note: Nuance is no longer making speech recognition products for the Mac and new versions of the Mac OS software are no longer compatible with the previously created Dragon for Mac product. The instructions below are intended for users with older software that are simply upgrading the microphone.]

Adding a new microphone for users of the Mac version of Dragon (currently called "Dragon for Mac" and previously "Mac Dictate") is a simple process and involves the following basic steps:

1. If your microphone is a USB microphone, insert it into an available USB port and allow the drivers to be installed. If a Bluetooth microphone, go through the procedure for pairing it to your Mac. You should not attempt to insert analog microphone into the audio jack on your Mac.
2. Open System Preferences and click on the "Sound" icon in the hardware section.

3. Confirm that your microphone is present and select it. Speak into your microphone and confirm activity in the area labeled "Input Level"

4. Open Dragon Dictate

5. Open the Profiles window by selecting "Profiles" from the Tools menu. You will see the screen below. Note that any existing profiles are shown on the left and sound sources assigned to the selected profile are shown on the right.

6. To add a new sound source to your existing profile, click on the "+" sign under Audio Sources. You will need to select your sound source in the lower drop down menu and give it a name in the text entry box.
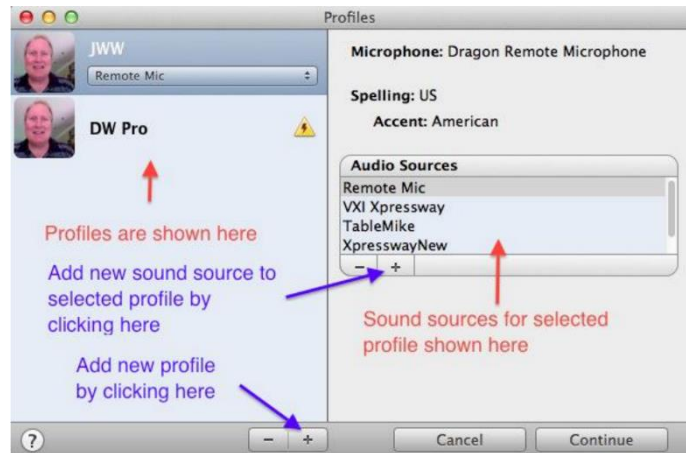
7. Click "Continue" and you will then be brought through the microphone set-up procedure for the microphone and then be asked to read the usual training text. Follow all subsequent instructions.

For more information on setting up a mic for a Mac versions of Dragon and other Mac resources, please see the following sources in our "Support" section at speechrecsolutions.com:

http://www.speechrecsolutions.com/tutorials.html#macuser

http://www.speechrecsolutions.com/assets/Adding_Microphone_Dragon_Dictate.pdf (spaces in URL are underscores).

Special Issues for the Mac User

For those purchasing a microphone for use with other applications within the Mac OS, we offer a bit more advice. There are two important issues to consider:

1. From the beginning, Macs have generally had a sound-in jack (and sound card) expecting "Line-in" voltage and not "Mic-in" voltage. The difference is that a line-in signal has been amplified, while the mic-in signal has not. As a result, if you plug an ordinary headset microphone into the sound-in jack on a Mac, it doesn't provide a strong enough signal to the sound card and it generally won't work. While this has changed in some recent vintage Macs, the issue continues as a result of #2 below:

2. Recent vintage Macs (like other computers) have tended to change to a single integrated audio jack which handles both sound in and sound out. In general, this jack is designed to work with a male plug having 4 terminals. Plugging the microphone plug from a typical headphone microphone into this jack simply doesn't work.

Although there are rare and finagled situations in which you can use an ordinary analog microphone with a Mac, you will likely waste a lot of time trying to do so and we recommend, rather, that you simply buy a microphone that interfaces via USB or interface your existing analog microphone using an "external USB sound adapter". These are relatively inexpensive (as little as $20 or so). A typical adapter which works fine with a Mac is the Andrea EDU-USB adapter and is shown to the right. You can see more USB adapters on our site at this URL:

https://store.speechrecsolutions.com/usb-sound-adapters-c21.aspx

Microphone Troubleshooting

Part 1: Microphone with Loss of Accuracy

A drop in recognition accuracy is an occasional scenario and may or may not be the result of a dysfunctional microphone. Keep in mind that accuracy is dependent upon many factors and the most important of these is your dictation style. In this situation we recommend a sequential approach, as follows:

1. First, rule out obvious audio issues by listening to a recording of your speech. There are many ways to do this depending upon your operating system. Within Dragon, the simplest method is simply to dictate some text and then use Dragon's playback functionality to hear your speech. This is done by selecting some or all of the text you dictated and then issuing the command "Play that". You will hear your dictation replayed, in your own voice, and get a sense of the audio quality. Listen to the recording to be sure it sounds clear and that there are no word cut-outs, static or other interfering sounds. If so, you likely have a mechanical problem related to the microphone or sound

card. If the sound seems to be clean, then proceed to the next step.

[Note: Mac users can create a sound recording using the built in QuickTime application. Instructions can be seen at this link: http://www.mactip.net/how-to-record-sound-on-a-mac/]

2.   Run the audio set-up wizard (Dragon users). This takes just a couple of minutes and resets your microphone gain and also provides a crude check of your system integrity by means of providing a speech to noise ratio. The audio set-up wizard can be access either by saying "check audio" or manually opening the wizard (Dragon 15: Settings > Microphone > Microphone Check; Dragon 14, 13, and 12: Navigate to Audio > Check Microphone; Dragon 11 and earlier go to Tools > Accuracy Center > Check My Audio Settings.) Depending upon which version of Dragon you are using, you may simply get a "check mark" if the audio was acceptable (Dragon 13), a "Pass" indication (Dragon 11 and 12), or a specific speech to noise ratio indication (Dragon 10 and earlier - anything between 15 and 25 indicates your system is probably OK.)

3.   If you are using a laptop computer, it likely has an on-board microphone. If you are using a microphone plugged into the sound/microphone jacks, it is possible that Dragon is using the on-board microphone and not the one you have plugged in. You should manually disable the on-board microphone from the sound control panel and this will likely resolve your issue. Alternatively, use a USB interface for your microphone (external USB sound adapter). These are inexpensive devices that substitute for your on-board sound card.

4.   If the above did not help, we suggest that you devote extra attention to your dictation style. Keys to optimal dictation are the following:

• Enunciate clearly
• Speak in a smooth manner, neither overly slowly or excessively rapidly. Speak in either sentences or phrases. Recognition is worst when speaking one word at a time.
• Maintain a relatively consistent pitch and tone when dictating

5.   Consider switching to a USB microphone or use your current microphone with an external USB adapter. This may be particularly helpful if you are using a laptop computer. The external USB adapter substitutes for your internal sound card and offers the possibility of removing internal electrical interference which may be negatively impacting your accuracy.

6. Consider upgrading to a higher quality microphone. Be aware that the microphone that came with your version of Dragon cost Nuance about $10 or less. There are many better microphones that offer better accuracy and rejection of external noise.

Part 2: Microphone Not Working at All

This is a rare situation, but one which leads to great frustration. Keep in mind that Dragon will only use a microphone that is being recognized by the operating system. In our experience in 10 years or so of selling microphones, if your mic is new and doesn't seem to be working at all, it's usually because it hasn't been set up properly. Please read the early sections of this guide to review the proper set-up instructions.

Here is our basic protocol:

1. Visually inspect the microphone and cord (and external sound device if being used) to be sure there is no evidence of damage to the wire.
2. Be sure your microphone doesn't have a mute switch. If so, be sure that the muting function is not activated
3. If you are using a USB adapter, be sure that it doesn't have a mute switch, and if it does, be sure the sound is not being muted.
4. If possible, use the microphone with another application, either on your current computer or another to assess its integrity in another environment. For instance, try your microphone with Skype or another audio application which uses a microphone. If it works fine in another application, you know the issue isn't the mic but rather the integration with your software program.
5. Confirm that your operating system is sensing the microphone:

    a. Windows 8 and 10: Go to Control Panel > Sound > Recording tab. You should see your microphone and when talking, you see green deflections in the sound magnitude scale. If not, your system is not recognizing the microphone. If you search "sound recorder" on Windows 8 it will launch a sound recorder which can be used to record a sample recording for use in assessing microphone sound quality.
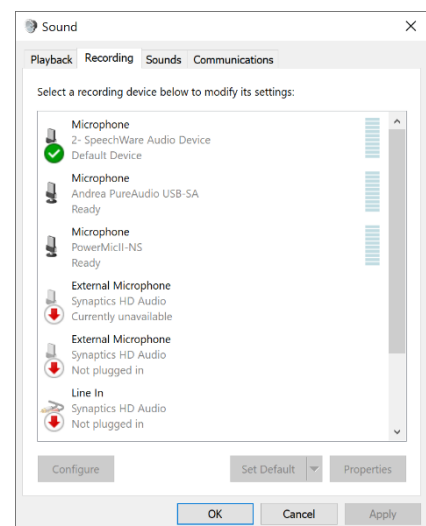
b. Windows 7 & Vista: Go to your Control Panel > Hardware and Sound > Sound, and click on the recording tab.   You should see your microphone. When talking, you should see deflections in the green sound magnitude scale.

c. Windows XP: Confirming a microphone is more difficult in XP than in 7. Often, the simplest method is to try a sample sound recording. This is done as follows:

   i. Click on Start > All Programs > Accessories > Entertainment > Sound Recorder

   ii. On the sound recorder Edit menu, select Audio Properties

   iii. Under the Sound Recording section, be sure your sound device is correctly chosen (select your on-board sound card if using a microphone plugged into the mic and sound jacks; if using a USB microphone or device, select the name corresponding to the device – many USB sound adapters show up as AK5370 in windows XP)

   iv. Make a sample recording by clicking on the record button. If audio is being recorded you will see deviations in the green signal line in the center of the recording.

   v. Hit the rewind button to bring you back to the beginning of the recording

   vi. Hit the play button and listen to the recording

6. If you are using a laptop and have a microphone plugged into the sound-out and microphone jacks, it should be disabling the on-board microphone, but there are many examples of this not being the case. It is possible that Dragon is taking the sound signal from the on-board microphone and not the microphone you have plugged in. In this case you should attempt manually disable the on-board microphone. This method varies from machine to machine and may not be possible. As a last resort (but nonetheless an excellent solution), get yourself an external USB sound adapter and do away with the problem. Dragon will be directed to take it sound signal from the USB device into which you microphone is plugged and the on-board microphone will no longer harass you!

7. If you are plugging your microphone into the sound and microphone jacks on your computer, confirm that you have these properly selected. In general the sound jack is marked in green and the microphone jack in pink or red. If you have more than one set of jacks (front and rear), try plugging the microphone into the other set. If you know your microphone is otherwise working but not with your PC, consider the route of using an external USB sound adapter.

Additional Resources

For further assistance with microphone issue, we recommend the following resources:

- Reading our "Accuracy Improvement Guide" at
  http://www.speechrecsolutions.com/accuracy.htm

- Post a question on our forum at http://forums.speechrecsolutions.com/ Alternatively, visit another online forum devoted to speech recognition technology

- Send an email to Speech Recognition Solutions support inbox at
  support@speechrecsolutions.com

- Call us at 866-778-0524 and select the support option. If we don't answer, please leave a message. We are a small business and do not have someone on-site 8 hours per day. But we always return calls!