

# Technology in Singing Education

*From a Media Specialist's Perspective*

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## **State of Use**

Last semester, my research project was focused locally, and I discovered that Danish singing teachers don't use singing software that much. I was curious to find out *why* that was the case. With the participation in the EVTA Conference, I have seen that it is an international issue as well, as most teachers present at the conference were unfamiliar to the use of technology in their teaching.

There are many considerations in the inclusion of technology, for example, in terms of both the financial expense as well as the time needed to get to know the software.

Through observation of teachers and students trying out different programs during the conference, there appeared to be a lot of interest as well as scepticism towards the software, both with good reason.

## **Problems with current singing software**

The spectrogram is apparent in most singing software, but it can cause confusion, as it is not always clear what it shows. The energy of the acoustic signal can be confusing when the microphone distance isn't constant, being held too close, for example, (Filipa La), which causes disturbances.

Teachers are uncertain about what to look for in the spectrograph. Inexperienced teachers might overinterpret the display. It might be more useful to use the display to indicate that it makes a difference when you change your way of singing.

They want to see things that they cannot explain. The singer's formant cluster consisting of a cluster of the third, fourth, and fifth formant, is a good example of something abstract that a technical display might be able to show. And yet, it might be better initially to look for things that they are able to explain, but which can be difficult for the student to understand. The visual display could serve as a good support for the student in these cases.

The differences in singing styles also make it difficult to know how to use it. In one example, a singer using "twang" common in popular music styles using with the EGG and VoceVista, the display showed that the closed quotient was not ideal, but the sound to the ear was fine, and he claimed that he was able to sing with his technique without trouble.

The displays vary in content, but the appearance is very similar to one another – for instance people were confused about whether or not you could use the narrow band spectrogram to look for formants. There is also still general confusion with terminology and understanding the concepts of partials, harmonics, fundamentals, and overtones, which was apparent as well.

Standard singing education and use of the technical displays do not really have much in common. First of all, teachers usually use verbal metaphors, that are much more visually descriptive than the technical display (if you don't understand it) – in the sense that it might be easier to relate to.

We were told that originally many of these currently available singing software programs were designed for voice and speech research.

Compared to the edutainment genre or other educational programs, these programs lack explanation. Ideally, however, they should be more or less self-explanatory.

### **Future perspectives**

Future developers should consider another way of designing the programs. Instead of a very technical display, showing the voice as waves, lines and numbers, this information could be translated into visual metaphors. For instance, the display of the closed quotient would easily be translated into an image of something closing – or not closing (a door, a square that is filled with air flossing from it, an image of the vocal folds that closes/opens etc.), instead of numbers and waves.

Seen from a future perspective, I believe that technology will become part of singing education. It can serve as a great tool to support things that are difficult to explain, and it is interesting to be able to "see" the voice in all its complexity.