



## Text-to-Speech: Improving students outcomes

**Niclas Bergström**

[niclas.bergstrom@readspeaker.com](mailto:niclas.bergstrom@readspeaker.com)

ReadSpeaker (Sweden)

### Abstract

*Speech enable your e-learning content and platform to increase student achievement as well as making content accessibility for all learners while transforming the learning experience.*

*Listen to text being read aloud assists students in many different situations. Apart from the added support for students with various forms of reading difficulties, it is a technique that increases student performance for all learners. Students have many learning styles and adding speech to content gives learners options as well as students benefit from bi-modal learning as they read and listen to content increasing comprehension. With the ReadSpeaker service for websites and Learning Management Systems educators can offer a convenient technology for students to consume all text content while transforming the learning process. The ReadSpeaker service does not require any download and installation on the student's computer or mobile device and there is no need to install specific software or hardware in the e-learning platform because of the software as a service architecture.*

*With the ReadSpeaker service enabled, the students can select any text on screen to have it read out using the best and most natural text-to-speech voices available. In addition to just reading, the text on-screen will be highlighted in full synchronization as it is being read. The service can read any kind of text including blogs, discussion boards as well as online documents in Word, PDF and ODT format. There are also other powerful features that allows for interactive reading support for online forms such as assessments where not only the questions is read aloud, but also the choices selected or answers entered by the student. The addition of ReadSpeaker services demonstrates how the move to online learning is more than just moving content from paper to online. It transforms the learning experience for all.*

### 1 Introduction

For many people, the fact that there is text to be read is a problem in itself. People of all ages that suffer from reading handicaps, insufficient literacy skills or languages related problems can often find it hard to consume literature as efficient as others. This can affect their performance in many learning situation where a lot of reading is required. This has been the case for as long as literature has existed. In order to support people that suffer from different kinds of print handicaps, solutions such as human narrated versions of literature has been produced. However, the speed of which literature has been made accessible usually becomes an issue for learners with a deadline. Also, the process of producing alternative versions of literature is either expensive or slow. Or both.

As literature is getting digitized and published electronically, the problem itself remains but the number of possible solutions grows. Thanks to assistive technology that can be used for visually impaired or reading handicapped, the possibility to get up to speed with fellow students increases.

The digital revolution that is transforming the way we educate and learn can make a difference for students with reading difficulties. New technologies often bring new challenges and that is what I am about to talk about.

### 2 Where are we heading?

Content published on the web has a tendency of being dynamic. That is really one of the great advantages compared with for example printed text books. It can also show reach media content such



as videos, audio recordings and animations. Introduction of learning management systems (LMS) enables students to collaborate also on a distance, use interactive self services and communicate with fellow students. All using the same technical platform and used from any standard web browsing device.

### **3 Where is the problem?**

Moving the learning experience from the printed text books and onto the web using LMS platforms or other systems introduces even more text to be read. And if reading text is a problem, the problem just got bigger. The amount of text from books and literature might be the same but adding the text of chat rooms, blogs, discussion boards and other online collaborating and discussion tools, it gets massive.

### **4 Are there any solutions?**

There are a number of technical solutions that tries to solve this problem for people that suffers from print handicaps. Assistive technology known as screen readers are widely used by visually impaired computer users. This technology requires the text that should be read (or displayed using Braille representation) to be fully accessible to the user. There is screen magnification software available on the market for computer users with reduced visual capabilities. For students with dyslexia or other reading difficulties there is software that the user need to install that enables them to have text on the screen read out to them using text-to-speech technology.

### **5 The value of speech**

Our approach is to speech enable the platform and the content itself. Doing so enables all students that use the platform to also listen to the texts online using nothing but a standard web browser on standard devices. This is not a sufficient solution for the visually impaired or blind users since they need their assistive technology to at all use a computer. But it helps students with reading or language difficulties and since it adds bi-modality it is also proven to increase the learning for students that do not suffer from these things at all. Being able to listen to the text being read out also adds a dimension of comfort and convenience as well as reading/language training when being able to see the text as it is being read out.

### **6 How is it done?**

We have developed a solution called ReadSpeaker that is a fully server based service that is provided from our servers on a 24/7/365 basis. What it does in short is that it speech enables the LMS platform and all content therein. It makes it possible for the users (being the students) to just select any text on-screen and it will be read back immediately using state of the art quality text-to-speech voices. Not only will it read, it also highlight the text on-screen as it is being read. Since ReadSpeaker is a web based service, the user is not required to download any additional software or plug-ins and it is built to work from any kind of web browsing device including mobile devices and reading tablets. There is a suite of ReadSpeaker services designed for a greater learning experience including interactive reading of online form (for example assessments or quizzes) that prompts the questions and echo the answer or choice inputted by the user. There are also sophisticated document reading functions that can speech enable any kind of text document in a very user friendly way. All speech is produced on-the-fly and on-demand guaranteeing that it will always be the latest content being read out. This is a great advantage compared with pre-produced recordings.

The service is integrated in the LMS by adding a small snippet of HTML code and there are no need for installations of software on the infrastructure that is hosting the platform. We are also working together with some of the leading platform providers to develop integration plug-ins that makes the implementation even easier.



## **7 Conclusion and final words**

Many people in many situations are helped by being able to listen to text as well as read themselves. Some use it for the convenience of it and others because they do not have a choice. Automatically offering an alternative (or complementary) format to text can offer students what is needed to understand and remember. To Learn.