A Personalized Case: Methods of Lecturing Sighted Students by Late-Blind Teacher

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Abstract: Late-blind people, who adventitiously became blind in their adulthood, are a special group of the blind. Each of them has his/her own characteristics when returning to work. In this paper, methods on how late-blind teachers can effectively lecture sighted students are presented based on experience of authors with blindness. For late-blind teachers, only having the basic teaching skills as the sighted teachers is insufficient to lecture sighted students. They shall fully explore the knowledge and skills they acquired before their blindness. Much to be important, they have to take advantage of their physiological advantages (e.g., good sense of hearing and touching) and modern teaching tools (e.g., PowerPoint slides with voice navigation and screen reading software). With the accessible technology, the paper provides a specific case to describe the personalized teaching process in the rear of it. Through introducing an instance of micro-course about braille teaching (digit and part of English letter), the case takes a true reproduction that basically covers the entire teaching procedure. In fact, only in this way can the teaching tasks like lecturing and Q&A be accomplished smoothly.

Keywords: Late-blind teacher; sighted students; Teaching procedures; Personalization

Introduction

With the rapid development of science and technology and the improvement of the education level, nowadays blind people can work in more and broader occupations, no longer limited to those traditional few ones such as massage therapy and music (in China). In terms of teaching, a blind teacher cannot only teach by dictation, but also can lecture sighted students by utilizing innovative and advanced teaching methods.

Late-blind people, who adventitiously became blind in their adulthood, are a special group of the blind (Jun, 2005). They typically have established roles in their lives before their blindness, which make it more challenging for them to re-integrating into society (Chunhui, 2011; Mingmei, 2001). The (first) author of the paper is one of them. He lost his sights completely when he was 30 years old. Before that, he was a university faculty, teaching undergraduate-level classes in engineering and computer graphics. After his blindness, through continued learning and efforts, he succeeded in finding a position in university to teach again (Yu, 2015). This paper presents the insightful teaching methods on how he has lectured sighted students.

Interaction Between Blind Teachers and Sighted Students

As a special group of the blind, late-blind people have both the common characteristics of the blind, and their own unique ones. In the following, unless otherwise specified, for "the blind", we refer to the common characteristics; for "the late-blind", we refer to the uniqueness; for "students", we refer to the sighted students. Sighted readers may think that some technical details that were presented in the following are simple, but please keep in mind that there are significant physiological differences between sighted and blind people. For example, walking is a simple task for sighted people, but not so simple for the blind (Guanming, 2012; Xiuli, 2014). On the other hand, when walking in a complete darkness, the blind may have an advantage.

From the perspective of blind teachers, the teaching methods shall be in line with the typical learning habits of students, such as the proper use of chalkboard writing. It is well known that, no matter how advanced the modern teaching methods are, chalkboard writing cannot be completely replaced in classroom teaching (Zhiping, 2011). For early-blind people, it would be difficult for them to write on chalkboard as they may not ever have a good understanding on the written language, especially for ideograms like Chinese characters (Yu, 2019). Late-blind people could do a better job, yet their chalkboard writing needs to be absolute concise to better control the board layout. So practicing chalkboard writing is an essential task for late-blind teachers, just like directional walking (Jianhui, 2001). In addition, the proper use of multimedia technologies (e.g., PowerPoint slides) is one of the major teaching methods nowadays, and this demand shall

be fulfilled by blind teachers as well, if possible. Indeed, late-blind teachers can manage to use PowerPoint slides to achieve the same teaching effectiveness. The contents presented to students are the same, despite different methods used in making and using the slides.

From the perspective of students, effective teacher-student interaction via oral language is an important issue. Unlike sighted teachers who can use eye contact and gestures, blind teachers mainly rely on oral language to interact with students. In the next section, lesson plans are discussed in more details.

Differences Between Blind and Sighted Teachers' Lesson Plans

Just like sighted teachers, blind teachers can have both paper (in Braille) and electronic versions of lesson plans. Designing and using the paper lesson plans is somewhat different in that the amount of required Braille paper is about 5 times more than the ordinary paper to store the same amount of Chinese characters. Furthermore, the Braille is designed for touching, so its reading speed is far lower than the visual reading (Yu, 2018; Yu, 2016). As lesson plans only serve as reminders for teachers, Braille plans need to be even more concise than ordinary ones. As a result, less important contents (e.g., teaching objectives and methods) shall not be included in lesson plans, and teaching contents shall keep as concise as possible. This, however, would require blind teachers to record more contents in their brains and get more familiar with those contents. Transiting from reading to touching is a painful yet must-do learning process for late-blind teachers. The author's own experience is that, during that learning process, the skin of index fingers would get damaged and patched several times before gaining a fair high sensitivity on the Braille. Only after going through this tough process, a late-blind person can master the Braille.

As for the electronic teaching plans, there is no much difference, as blind people can use screen-reading software (Kristina, 2012; Yoshihiro, 2017) on some other software (e.g., Microsoft Office) (Xiuyun, 2019) to read and write the texts. With the development of information accessibility technology, it is not uncommon for blind teachers to develop well-designed electronic teaching plans. Checking homework is not a difficult task either. As long as the format of electronic homework is well defined, blind teachers can interact with students effectively on homework through instant messengers or emails. Arguably, late-blind teacher can be fully qualified for teaching in Chinese, but early-blind teacher may not. Due to the fundamental difference between Chinese characters and other Latin Languages (e.g., English), it is not very likely for early-blind people to master Chinese completely and accurately. Late-blind teachers could do a better job on using Chinese characters to interact with students.
From the above descriptions, it is not difficult to imagine that blind teachers can also use electronic textbooks with the same contents. The general practice is to scan hardcopy textbooks into a computer, and then they can be easily read with the help of a kind of text-to-voice software.

Differences on Designing and Using Slides between Blind and Sighted teachers

As an indispensable means of modern educational technology, slideshow is widely used in teaching (Shaohong, 2017). Blind teachers' slides are of the same contents, but are very different in the way to make and use them. Blind teachers heavily rely on ears to locate a slide, while

others use eyes. Therefore, appropriate voice prompts and voice navigation need to be added in the slides. Sighted teachers use hands, eyes, mouth and ears in their slideshow: hands for operating, eyes for monitoring what is shown on slides, mouth for talking, and ears for monitoring what is said.

Without help from eyes, blind teachers use ears for monitoring both what they say and what is shown on slides, which put more burdens on the brain and ears. Thus, they need to remember more and be more familiar with the contents of slides. Voice navigation needs to be concise and catchy, and appears only at appropriate places to ease the ears' burden. With the development of blind aids, more work can be independently completed by the blind, while some work still needs other's assistance. Making slides is such an example.

With slides, screen-reading software and wireless Bluetooth headsets, blind teachers can independently operate the slideshow to teach. It should be noted that, interestingly early-blind people may do a better job on the slideshow, as they have a sharper hearing (Lili, 2018）. Late-blind people would typically have a slower response to voice. Thus, late-blind teachers shall try to reshape their hearing system, which is again a long and tough training process.

Some tips of using slides. Here are some tips for blind teachers to use slides to teach.
1. Use consistent voice prompts and slide contents. Voice prompts carry much less information than actual slide contents. Blind teachers shall maintain a high degree of sensitivity between the content and voice prompts. It is a process that requires repeated practicing.
2. Never forget the voice prompts. When students ask questions, teachers may temporarily shift their attention to the questions themselves. After returning to lecturing, it is possible that what is shown on slides does not match what the teacher says. In this case, the teacher needs to use the remote control to quickly move up and down to locate the correct slide. This also requires persistent practicing.
3. Be well prepared. Blind teachers can only rely on limited voice prompts. To overcome this disadvantage, they need to spend more time to prepare and getting familiar with the contents.

A Case Study

To further show the process of lecturing sighted students by blind teachers, the following micro-course is selected for a case study. It is short and concise, yet well demonstrates the teaching process. Lecture Topic: Write Arabic numerals and English letters in Braille. Course: The Braille in China. Discipline: Education. Major: Special education. Targeted Students: Undergraduate students in the field of special education.

Background. This micro-course is one of the lectures relevant to Mathematics, Science, and English Braille for the regular course "The Braille in China". The course "The Braille in China" includes four parts: Chinese Braille, English Braille, Mathematics and Science Braille, and Music Braille. It is a core and required course for undergraduate students majoring in special education.

Highlights. This micro-course focuses on writing Arabic numerals and some English letters (a-j, A-J) in Braille. Though belonging to different chapters, those two parts are closely linked. This arrangement encourages students to learn through comparisons. Moreover, we strive for combining teacher-lecturing with student-practicing to make the learning an enjoyable

experience. Teaching Objectives: From the micro-course, students shall learn to read (by touching) and write: 1) Arabic numerals (0-9) in Braille, 2) Some of the lower-case English letters (a-j) in Braille and 3) Some of the upper-case English letters (A-J) in Braille

Teaching Methods. Learning the Braille can be a boring experience. When lecturing sighted students majoring in special education, blind teachers shall take advantage of modern education technologies based on their own experiences and flexibly use heuristic or comparative teaching method, to better stimulate students' interests in learning and using the Braille.

Making PowerPoint Slides. First, make a Microsoft Word document. As far as we know, existing screen-reading software cannot yet fully support Microsoft PowerPoint. Then, insert a brief voice prompt at the beginning of each page of the Word document to describe the page number of the basic content of that page. Also add voice prompts for important contents on each page. Next, ask for someone's assistance to convert the Microsoft Word document to a PowerPoint one. Finally, make a Braille lesson plan which briefly summarizes the contents on each PowerPoint slide. With the help of multimedia slides with voice navigation and a Braille lesson plan, blind teachers can overcome their physical inconvenience smoothly lecture sighted students smoothly, and achieve the same teaching effectiveness as sighted teachers.

Summary

It is important to convert hard-copy textbooks to electronic ones by a scanner with optical character recognition (OCR). It is essential to make electronic lesson plans with the help of online resources and screen-reading software. During lecturing, in addition to reading (touching) Braille lesson plans, listen to three things: voice navigation on slides, his/her own voice, and students' feedback. For question and answer sessions, use the skill of directional walking to walk freely in the classroom. There are many email clients, online listening tools and instant messenger software suitable for the blind, which can be used for after-class question and answer sessions and homework checking.

Implications and Limitations

As blind people adapt to the dark world, they could obtain a better sense of hearing and touching than sighted people. They may also have linguistic competence as language is the main way for communication (eye-contact is unusable). These are the physiological advantages of the blind. The inconvenience due to the blindness can be greatly overcome if blind people improve their educational levels and utilize high-technology blind aids as well as the physiological advantages. However, the proposed methods is mainly a case based on the author's experience in spite of referring to a lot of teaching practice of teachers with total blindness or visual impairment. It is just a reference of value on a specific teaching flow.

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