History of Technology for the Blind

Presented by: John Hernandez,
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Topics to be covered

• What was used in the past?

• Where we are today and how did we get here?
  – Writing Codes
  – Braille Production and Devices
  – Print Reading Technology

• Where we are going?
Few Guideposts and Knowledge

- Europe started schools first
- Schools were poor and considered charities
- No government support or supervision
Valentin Hauy 1745 - 1822

In 1771, he witnessed an ensemble of people from a hospice for the blind being mocked during a religious street festival.
Essai sur l'éducation des aveugles

- By 5 December 1786, Haüy's pupils had embossed from movable letterpress type his "Essai sur l'éducation des aveugles" the first book ever published for the blind.

- With the patronage of Louis XVI, Haüy had also secured from various organizations the means to expand.

(1 An Essay On The Education Of The Blind)
New England Asylum for the Blind - 1829
New York Institution for the Blind
1831
Pennsylvania Institution for the Blind  1832
<table>
<thead>
<tr>
<th>Country</th>
<th>First Institute founded in the year</th>
<th>Number of Blind</th>
<th>Number of Educational Institutes</th>
<th>Number of Trade Schools and Asylums</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>1784</td>
<td>32,340</td>
<td>24</td>
<td>10</td>
</tr>
<tr>
<td>England</td>
<td>1791</td>
<td>26,330</td>
<td>24</td>
<td>54</td>
</tr>
<tr>
<td>Scotland</td>
<td>1793</td>
<td>4,000</td>
<td>5</td>
<td>2</td>
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<tr>
<td>Austria-Hungary</td>
<td>1804</td>
<td>41,400</td>
<td>11</td>
<td>17</td>
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<tr>
<td>Germany</td>
<td>1806</td>
<td>49,570</td>
<td>34</td>
<td>48</td>
</tr>
<tr>
<td>European Russia</td>
<td>1807</td>
<td>221,208</td>
<td>37</td>
<td>6</td>
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<tr>
<td>Sweden</td>
<td>1808</td>
<td>4,100</td>
<td>3</td>
<td>5</td>
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<tr>
<td>Switzerland</td>
<td>1809</td>
<td>2,500</td>
<td>4</td>
<td>5</td>
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<tr>
<td>Ireland</td>
<td>1810</td>
<td>5,120</td>
<td>6</td>
<td>7</td>
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<tr>
<td>Denmark</td>
<td>1811</td>
<td>1,961</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Spain</td>
<td>1820</td>
<td>21,000</td>
<td>11</td>
<td>5</td>
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<tr>
<td>United States</td>
<td>1831</td>
<td>64,763</td>
<td>44</td>
<td>24</td>
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<tr>
<td>Belgium</td>
<td>1836</td>
<td>4,935</td>
<td>8</td>
<td>4</td>
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<td>Italy</td>
<td>1838</td>
<td>30,210</td>
<td>19</td>
<td>5</td>
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<tr>
<td>Norway</td>
<td>1861</td>
<td>2,816</td>
<td>2</td>
<td>1</td>
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</tbody>
</table>
## Early Systems of Embossing Codes

|       | A | B | C | D | E | F | G | H | I | J | K | L | M | n | o | p | q | r | s | t | u | v | w | x | y | z |
| Hauty |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Gall  | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v | w | x | y | z |
| Howe  | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v | w | x | y | z |
| Moon  | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v | w | x | y | z |
| Braille |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Wait  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

### Six Principal Systems of Embossed Type

**Reference:**

http://www.newadvent.org/cathen/05306a.htm
Julius Friedlander

Came to Philadelphia from Germany with the expressed idea of starting a school for the blind.

An idea we are all celebrating today.
Philadelphia Line Embossed Print

- Samuel Howe of Boston School for the Blind was using embossed printing close to standard Roman characters.

- Julius Friedlander embossed in a system of all capital letters known as the Philadelphia Line. Later, William ChaPin, added lower case letters.

- The Missouri Institution f/t Blind was alone in the United States in 1861 using Braille type.

- The New York created its own dot code.
William Bell Wait

Inventor of the Kleidograph, a machine for embossing the New York Point system on paper.

- The Kleidograph was sold by the school and designed to be used with one hand leaving the other free to read.

- It uses the eight point alphabet not the six dots that the Braille alphabet uses today.
The Kleidograph - 1894
New York Point

New York Point was widely used by schools for the blind in the United States in the late 1800s. The 1910 US Census lists 57% of respondents using NY Point. Mary Ingalls, the sister of Laura Ingalls Wilder author of the Little House books, learned New York Point and embossed letters at Iowa Braille and Sight Saving School in the late 1870s and 80s.
War of the Dots

TACTILE PRINT ALPHABETS AND SLATES.

New York Point

American (Revised) Braille

French (Original) Braille

English Braille
Where we are today and how did we get here?
Overview:
Need + Technology = Solution

• There is a need that is not being properly served
• After years of experimentation, the technology has evolved to be time efficient
• The solution needs to be simple and intuitive
Some things never change
Production and Efficiency
NY Point Printing Press
A Need for Speed

- 300 characters per second
- Emboss 1000 pages an hour

$34,000
Apple II Production Using BEX

Braille Transcription

Apple IIe and BEX

Circa 1985
The original computer room - 1985
Braille Devices

Yes, we had laptops.
Braille Devices
See any print larger

- clear image
- full color and black and white
- completely safe
- portable
- low cost

$295.00

C.O.D./C.O.S. Hempstead, N.Y.

Overbrook 175th Anniversary Technology Conference
The VisualTek

As the ceremonial host to the Queen of England...
Digital Desktop Video Magnifiers

One button simplifies and enables all kinds of endless possibilities with monitors in height.

Overbrook 175th Anniversary Technology Conference
The Talking Book

In 1882, the PA Home Teaching Society and Free Circulating Library for the Blind were founded in Philadelphia and in 1899 was incorporated with the Free Library of Philadelphia.
The Talking Book Program

- Starting in 1934
- A typical book was 3 or 4 dozen 12 inch disks
- Turntable speed: 78 rpm.
- Playing time: 9 minutes

Overbrook - 1954
The Talking Book Program - By 1963

- 10 inch disks
  - 16 2/3 rpm
  - 90 minutes of playing time

- 12 inch disks
  - 8 1/3 rpm
  - 6 hours of playing time
Tape Talking Book

• **1969**: Cassette Pilot program using 2 tracks

• **1977**: The first cassette title recorded at 15/16 ips on four tracks was put in circulation.

• This first title, *Roots* by Alex Haley, requires five cassettes. Each four-track tape cassette held 6 hours of playing time.
Book on Compact Disc

Books such as RFB&D's AudioPlus have more than 40 hours of recorded material.

That means that a book traditionally recorded on 10 cassettes will now fit onto a single CD.
DAI SY formatted digital talking book CD player

- plays specially formatted 'Talking Books' CDs
- accepts standard CDs
- MP3 CDs
$32 Million grant to expand digital books

- The online community enables book scans to be shared.
- Bookshare.org will cease charging schools and students to join as members.
- Immediate plans are to add more than 100,000 new educational books and materials to their existing collection of over 34,000 titles.
1976: Kurzweil Computer Products

- The first Kurzweil Reading Machine was around $67,000
- 64 Kb of memory

1980’s: Kurzweil PC/KPR scanner, dedicated DECTalk synthesizer board, and DOS-based software
1992 - The Reading Edge

- A stand-alone and almost-portable reading machine was launched.

- $6,000

- A Kurzweil reading machine was finally falling into the range of possibilities for many consumers who were visually impaired.
The Kurzweil today

- Kurzweil 1000 $995

- KNFB Reader
  Combining a digital camera with a personal data assistant (PDA)
  The Reader combines character recognition with text-to-speech technology, all in the palm of your hand - and it's completely mobile! $2,595
Where we are going?
The Teaching of typing and writing
Vocational Training

Career Development

College Preparation

Valid goals of schools for the blind since their inception and today.
Vocational Training

1927 - 4th Grade Shop Class
Vocational Training

Broom making shop  1908
College Preparation

1904 - Physics Class
A Classroom from the past …

…was about preparing for the future.
A Classroom Today...

...is for preparing for the future.
Learning from the past

Looking to the future
Keeping ahead of the curve
Networking
What will the future bring?

- Smaller! – faster! – cheaper?

- Disposables –
  trends come and go

- Transparency
myReader

$4995

This will change the way you look at low...
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Opal

$795
Talking Graphics

The Talking Tactile Tablet from TouchGraphics

IVEO tactile-audio system from Viewplus
Kurzweil- NFB Reader as featured on CNN, "Seeing is Believing".
GPS Systems

- Trekker Bluetooth
- Humanware

- BrailleNote GPS
- Humanware

- StreetTalk GPS
- Freedom Scientific
Where to Get More Information

This presentation is available at:

http://www.nyise.org/osb175

Blindness Resource Center

http://www.nyise.org/blind.htm

Presenter: John Hernandez

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References