Braille Education Remote Tool
"BERT"
Manual and reference guide

Bert Application Software Overview

The BERT application used in conjunction with Zoom or Skype is made to connect a teacher and a student, engaged in a Braille and audio dialog over the internet. It can be used "live" as a classroom or "off-line" for assigned homework and responses. A teacher can create assignments or tests for a student who can respond when the teacher is not logged in. The teacher can be sighted or can be blind. A blind teacher needs screen access tools to use the application. A screen reader combined with a refreshable Braille device is recommended for a blind teacher.

The BERT program presents itself to the student in a way that is intended to be as easy to learn as possible. During an interactive session, it is the teacher who controls the embossing. By pressing the "Read" key combination, a student can read the braille of what they just typed. The teacher can edit a line and re-emboss it or enter an entirely new line to be embossed.

BERT presents itself to the teacher with additional user interface that gives the teacher control of classroom sessions and the ability to initiate homework assignments. Typically, an itinerant teacher may have ten students total and can see the presence of those who are using BERT at any given time. The teacher has the option of where to emboss Braille text, either at the student location or at the teacher location, mute the microphone or speakers, or access a blackboard where lessons can be posted or retrieved for individual students named on her total student list.

New lessons posted on-line by the teacher for a particular student can be embossed by the student. When the student completes the homework assignment using their Cosmo Braille Writer, the assignment can then be uploaded to that student's folder in the teacher's student directory. All students' work will be saved until the teacher archives the assignment. Archived assignments can be used by the student for review later.

The BERT Student Agent has a Session Screen when the student is on-line with the teacher. The session screen will display the Braille the student is inputting from the Cosmo Braille keyboard. There is a highlighted Braille to text line at the

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bottom of the screen which typically shows a line of back translated text representing the current line of Braille the student is typing. Using this feature the teacher aid or parent can read along with the student.

If the teacher is not on-line or the student is not invited to a session a "Blackboard Screen" will appear instead of a Session Screen. The Blackboard screen will show assignments that the teacher posted, their status, and a memo field for messages from the teacher. As with the Session Screen there is a highlighted translated text line at the bottom of the screen so that the teacher aid or parent can read along as the student is reading their assignment on paper or as the student inputs Braille to answer questions for their homework assignments given by the teacher.

For older students who no longer receive help from a teacher aid, the BERT Student Agent is screen reader accessible so that the student can navigate the screen themselves. The application can also be controlled through keystrokes on the attached Cosmo unit; audio help is available at any time to list the Cosmo keystroke shortcuts for control of BERT. BERT for older students can be a way for blind students to succeed with higher mathematics or science they might encounter in secondary school or university. A teacher having the ability to instruct in real time as the student learns the math and science is extremely valuable.

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Cosmo and BERT

Basic Issues

- BERT allows the direct interaction between a teacher and a student with a Cosmo Braillewriter via the internet.
- The student and the teacher can be down the hall from each other or could be in a different county or country.
- Both the student and the teacher need computers connected to the internet
- The student must have a Cosmo (connected to the computer via USB), the teacher might have a Cosmo.
- The BERT application needs to be installed and licensed for the student and for the teacher.
- Both the student and the teacher need to log on to BERT.
- The student must be a student of the teacher in the master database for them to interact.
- The student and the teacher must log on to the BERT application to interact.
- The student and the teacher can interact together in a back-and-forth discussion (like Skype) or can interact off-line (like E-mail).
- When the student and the teacher are interacting together, the communications are through voice and/or Braille.
- When the student and the teacher are interacting together, the teacher can see exactly what the student has brailled in real time.
- When the student and the teacher are interacting together, the teacher can choose to control what is being embossed.
- When the student and teacher are together the teacher can correct the student's mistakes during the on-line class.

### Installing and Launching BERT

Your school or organization will give you the URL for downloading BERT. They will also provide the log in credentials for both student and teacher.

Once you launch BERT, make sure you get the focus on the log in screen before you start typing in the Username and the Password.

Once BERT is started, the default location for the teacher is the classroom section of BERT. The default location for the student is the assignments or homework section. The student can only join in a classroom session when invited by the teacher.

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The BERT Screen (Student)
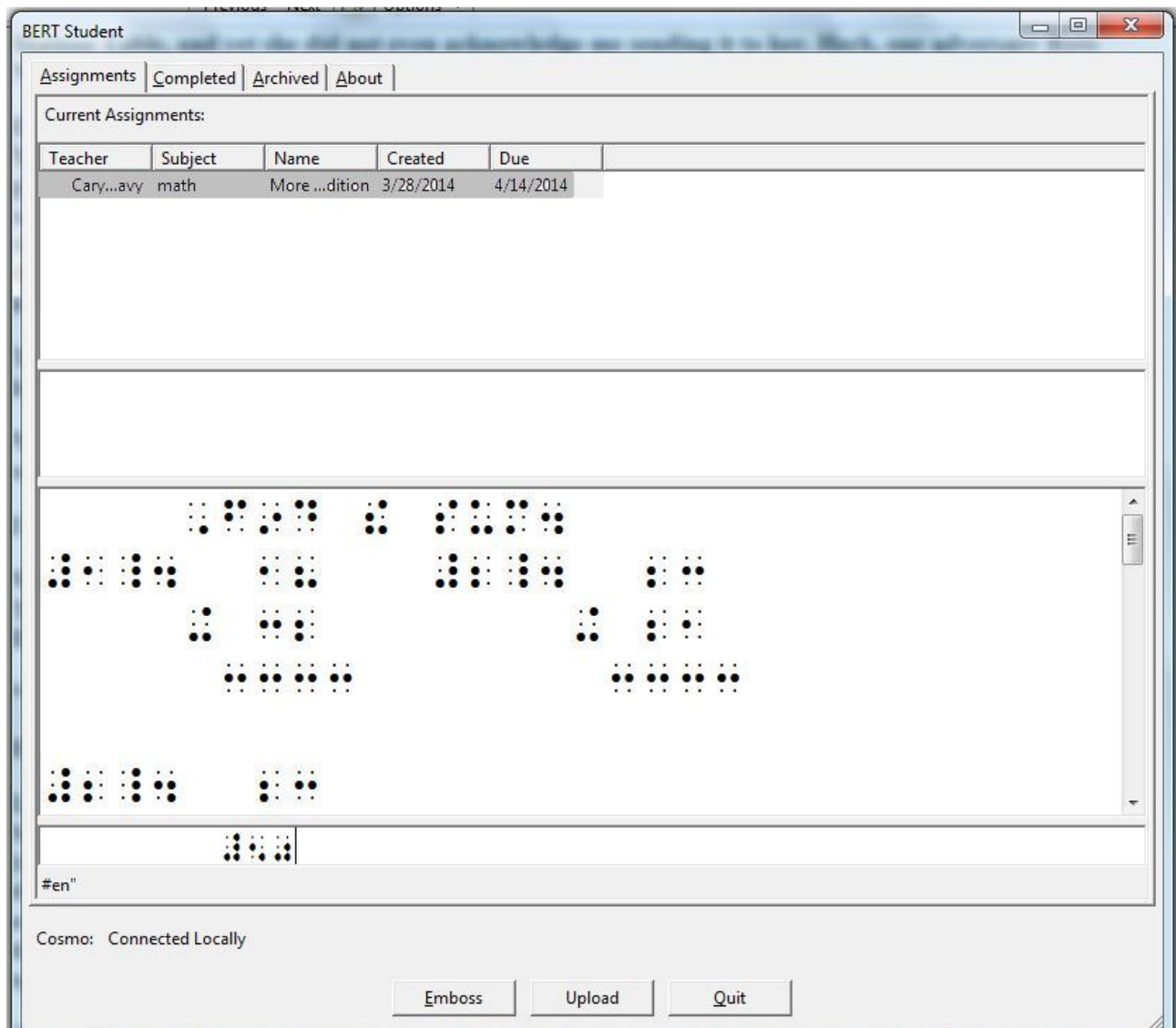
The Top third of the BERT Student Screen is focused on Assignments (Homework). There are three tabs related to Assignments: Completed and Archived. Usually, a student opening the BERT application will automatically be in the assignments (homework) screen Current Assignments (is the default).

Each Assignment has its own line. The display shows the Teacher, the Subject, the Name, Created Date. By clicking on an assignment, the memo field and the braille contents are displayed on the screen. If the student wants, he/she can click on the Emboss Button to have the assignment embossed on the Cosmo.

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The expectation is that the student will respond (answer) the assignment on the Cosmo. As the student uses the Cosmo, the braille also shows on the BERT screen. The student's answers are added to the assignment in braille at the bottom. When the student finishes answering the questions or completes the assignment task, by clicking on the Upload button on bottom center of the BERT screen, the response is sent directly to the Completed section in BERT where the teacher can grade the assignment. The teacher is the only person who can make changes to an assignment after the assignment has been uploaded to Completed. In Completed the teacher can post notes, make corrections, and then re-assign the test or homework or archive it for later review.

When the student is brought into a classroom screen, under the teacher's direction, the student and the teacher can send braille back and forth. The classroom gives a virtual side by side teaching learning experience. The teacher can communicate with the student using Braille and voice communication to instruct a student or to help clarify something for the student.

The assignment section and the classroom section are the only areas in BERT where the student can answer questions and input data. The default area where the student enters the BERT program is the assignment area. Only if the teacher invites or adds the student to the class can the student participate.

In the Archived section the student can retrieve past homework and tests for study or review. The student selects the subject and title of the assignment from the list of archived assignments. The student can then emboss the assignment or with a text to speech screen reading application can have the assignment read.

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The BERT Screen (Teacher)
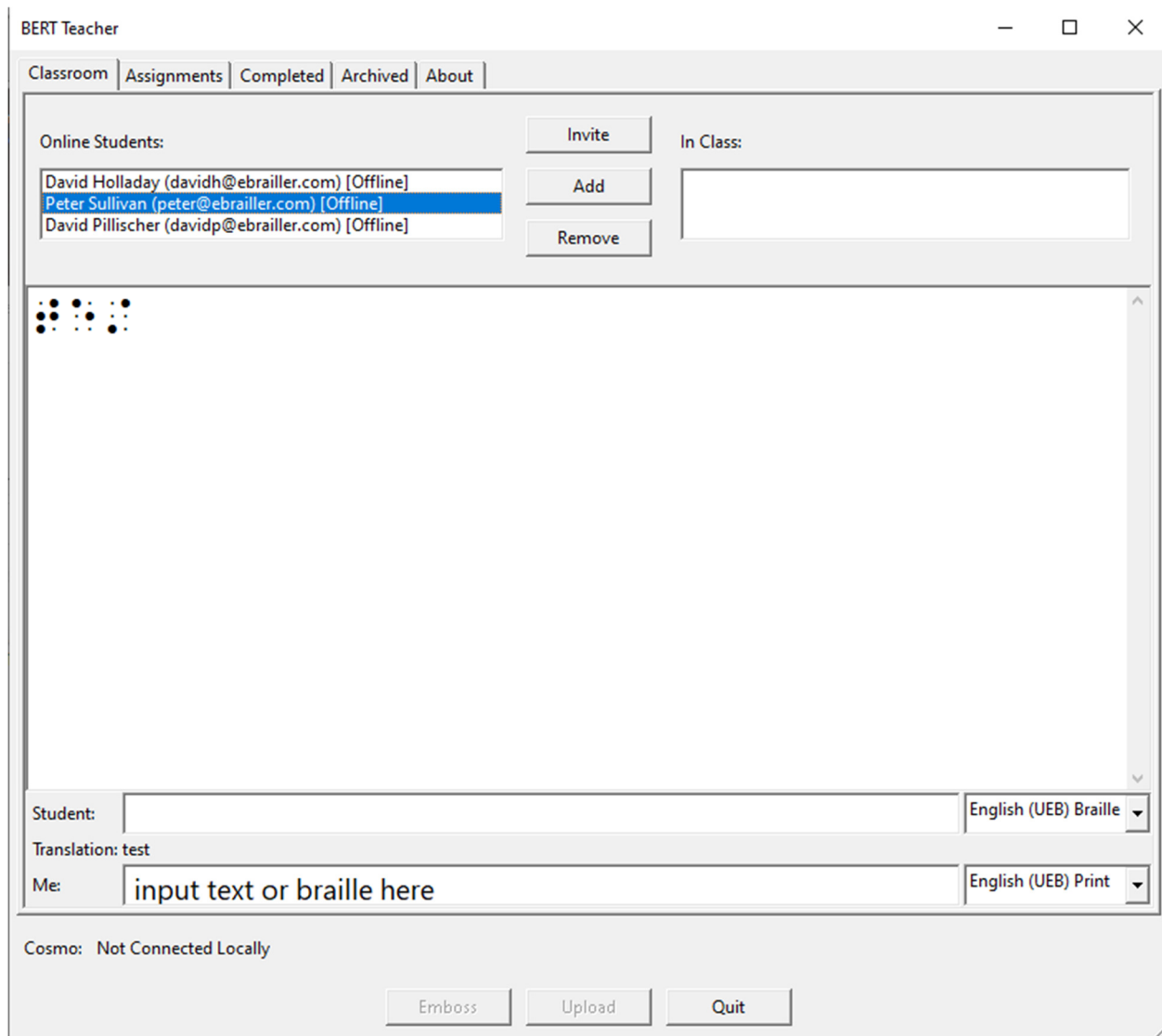
The BERT Screen for teachers allows for focus on assignments or classroom interaction

The BERT Screen for teachers allows the teacher to know which of his/her students are on-line and allows the teacher to invite one or more students to a class session. A teacher can make an assignment, grade assignments, and stop or start a session.

The BERT teacher screen description:

When the teacher enters the BERT application, the teacher enters directly into the classroom, the classroom tab of BERT and Classroom Tab is highlighted. Pressing

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Tab brings the teacher to different sections of the screen and using the up or down arrow keys will move you through names or Braille input etc.

Tab will bring the teacher to the list of students, either the student is off-line or if the student is on-line, he is listed (available) select the student highlight the name and tab over to the invite or add command prompt. This will either invite the student to join a class session or select add and the student is brought into the class session without invitation. The right-hand top of the screen shows the students attending that class session.

The Classroom main screen is in the center, it shows the Braille interaction between student and teacher. Moving the cursor up or down the screen allows a back translation of the Braille to text. The back translated text is displayed below the student Braille input line near the bottom of the screen.

Pressing Tab brings you to the student Braille input line where the teacher can read the braille the student is typing before it is input to the main text screen. The next tab selects the student input translation either UEB Braille or Raw Braille. Raw Braille is WYSIWYG or, "what you see is what you get". This is for the braille to text translation or if the student is using grade 1 or learning contractions.

Tab again and the line reads "me" which is the teachers input line. To the right of the teacher's input line the teacher can select TEXT input, UEB Braille, or Raw Braille. A teacher who is not proficient using Braille can input text. This way an English teacher or history teacher who does not know Braille can provide Braille to a blind student. As the teacher inputs standard text, when the line of text exceeds 30 characters or the enter key is pressed the text is back translated to UEB Braille and uploaded to the text screen. At the same time as it is uploaded to the text screen it is embossed on the students Cosmo Braille Machine. The same is for Braille input. If the teacher inputs UEB Braille or Raw Braille when there are 30 characters on the line the Braille will automatically upload to the text screen, if the input is less than 30 characters you must press enter to upload the information. I repeat; When the Braille is uploaded or moved to the classroom text screen it will automatically emboss on the students Cosmo Braille Machine.

Assignment Screen (Teacher)

The Assignment screen really belongs to the student. Once an assignment is posted by the teacher it can not be altered by the teacher. The teacher can read the subjects or topics assigned but the teacher cannot input anything into that screen except a new homework assignment or test. The teacher will select the "Upload" command box at the bottom center of the screen. A typical file menu screen will appear. Using your

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computer keyboard select a "brf" File (Braille Ready File) If you are creating Braille files be sure to save the file as a "brf" or BERT will not input the file. After the file is selected and OK is selected a new focus screen titled Upload will be displayed. There you will select and highlight the students name (even if you have only one student) fill in the subject, create a memo for the student to read if you have instructions these can also go into the memo field. Leave the due date alone it leads to errors. Then finally select ok. The file then is added to the homework assignments for the student to complete.

Assignment Upload Screen (Teacher)
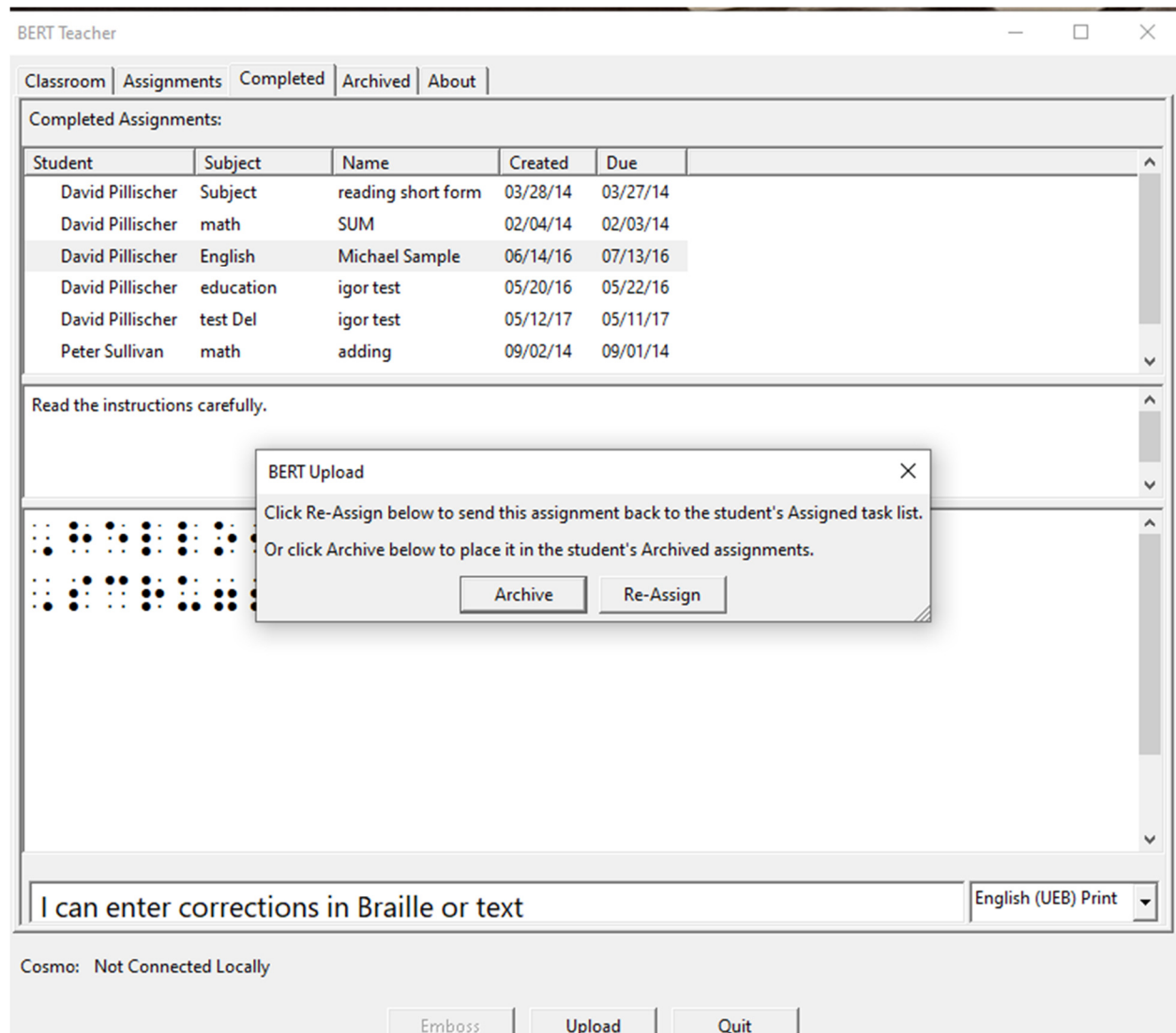
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 An assignment is a braille ready file (brf file). A brf file can be produced in a text editor by a Braille-knowledgeable teacher or created with a braille production program (such as Duxbury DBT). When creating an assignment, it is important to select a student name even if there is only one student listed. Without a student selected, the **OK** button to assign the assignment to a student is greyed out. If you find that the **OK** button is greyed out, do make sure you have highlighted a student's name.

Completed Assignments Teacher:

The completed assignments screen belongs to the teacher. Once the assignment is uploaded by the student into the completed section of BERT it now becomes the property of the teacher. Corrections can be written in text which will be translated to

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Braille in the text screen or in Braille. Corrections made are to be entered in the text line at the bottom of the screen and again when complete press enter. The corrections are added to the bottom of the page of homework. When the teacher is finished grading the assignment it can be re-assigned or archived. To do this the teacher selects upload and a new focus screen appears which says click to re-assign or place the assignment in the students Archive folder.

Key assignments for eBrailler Cosmo

The Keyboard has 8 Braille keys and a space bar. The key left of the space bar is "ALT" and to the right of the space bar is "CTRL". Braille Key7 is far left, and Braille Key 8 is far right. The key functions when using the Duxbury Braille Translation application allow Braille input and use of the function and file commands.

The space bar used with any key is sometimes referred to as a cord key function

5. Basic typewriter functions.

Key 8 ………… carriage return line feed, used either when inputting to Duxbury or in stand-alone mode

Key 7 ………… back space, used either when inputting to Duxbury or in stand-alone mode

Key 1+ space bar … cursor up or line up one line, only used when inputting into Duxbury

Key 45+space bar… Tab, only used when inputting into Duxbury.

Key 12+space bar … shift tab, only used when inputting into Duxbury

Key 4+space bar … line down, only used when inputting into Duxbury

Key 7+space bar … erase and back space, used When inputting into Duxbury or in stand-alone mode.

Key 8+space bar … read mode; after the user is finished reading, any key pressed brings paper back in their document and they can continue typing Braille, only used in stand-alone mode. **When using BERT key 8 and space bar must be used to bring the paper back to the proper line in the document**

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Key123456+space bar…. Escape - to main menu, only when inputting to Duxbury.

Key 4+ space bar …. Cursor arrow down, only when inputting to Duxbury and BERT

Key 1+ space bar …… Cursor arrow up, only when inputting to Duxbury and BERT

Key 3+ space bar….. Cursor 1 character back, only when inputting to Duxbury and BERT

Key 6+ space bar….. Cursor 1 character forward, only when inputting to Duxbury and BERT

Key 25+ space bar ….On Line / Computer mode, when the EBrailler is used to emboss documents from Duxbury or BERT

Key 36+ space bar….Off Line / Typewriter mode, only when the EBrailler is used to emboss documents from Duxbury or BERT

6. Brailler functions – these two functions are programmed into the Brailler Firmware

78 reset the embossing head home function

78+ space   Chord test

Control + alt … load paper

8+CTRL… if paper is loaded Form Feed

Read Key Function, key8 + spacebar

The read function brings the document up four lines so that you the user can read the document or last line of the document or view the last character typed. When the user is ready to continue typing press read function again on the keyboard and the paper will move back to the exact place where it was before read was pressed. Then after the paper is in place continue with the next desired character.

Back Space, key7

When typing a character, after the last selected character is embossed, the emboss mechanism moves to the next space on the paper ready for the next selected Braille character to be embossed. When back space is selected It moves the emboss mechanism back one character space and it is ready for the next command. Each time back space is selected the emboss mechanism moves only one space so if you need to remove a character or add a character three places from the last character typed you must press space bar and Braille key 3 together to move the cursor left to the proper position one character after the character to be erased, then key 7 to erase the previous

character. To move back to the end of the line press space bar and key six together to move the cursor right until you are at the position at the end of the line or where you might want to add text..

Some Notes on Remote Education

In the United States and Canada, during the mid 1980's and 1990's when the voice synthesizer was developed to be used with a computer and text to speech software applications also came into development, many agencies, and schools responsible for the education of blind children decided Braille was dead. For a period of approximately ten years Braille was not taught to blind children as it had been in years prior. Braille books were expensive and difficult to obtain, the requirements for teachers who specialized in education of blind students were relaxed. Most education degree programs no longer required educators for the blind to learn Braille. The result was a generation of blind people who did not read Braille. It has been researched and proven; blind adults are more successful when they know Braille. Seventy percent of blind adults are currently unemployed. Of the 30% who are employed 97% are Braille users. This fact has been researched by the National Federation of the Blind, The American Council of the Blind, The Department of Education as well as the Library of Congress.

Using BERT hardware and software, teachers trained to use Braille can monitor a student's work over the internet offering a real time side by side learning experience for both teacher and student. Most blind students are mainstreamed in to local schools near their homes where sighted students also attend classes. In many countries, teachers who specialize in teaching the blind students travel from home or the government agency where their office is located to remote schools where their students attend. The itinerant Braille teachers can now travel less and therefore be able to concentrate more of their time on individual students who are having difficulty learning. This will also make it possible for fewer teachers to work with a larger number of students. Government agencies responsible for teaching blind students would better utilize scarce funds currently being used for fuel and maintenance for their vehicles rather than direct educational deliverables.

In areas where teachers who are certified to teach Braille to children are not available or few in number, organizations or various agencies that teach Braille would be able to offer remote education for these students. Usually, a parent or teacher assistant would be able to be trained well enough about the BERT application and Braille writer to assist the remote educator

1. BERT provides an overlooked segment of disabled students the opportunity to get an education

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2. BERT Saves fuel and automobile cost for government agencies
3. BERT provides more time for teachers who specialize in Braille education to serve their students.
4. BERT saves government agencies millions of dollars in itinerant teachers travel expenses.
5. BERT alleviates the international shortage of teachers of Braille.