Braille2000, LLC

6801 Southfork Cir, Lincoln, NE 68516
Phone: (402) 423-4782, Fax: (402) 423-5154
http://www.braille2000.com

Automated Lesson Grader

Braille2000 V2 contains a braille transcriber training tool known as the Automated Lesson Grader. This tool is reached via the View button (or menu item) and the subordinate item "Grader Report". Grading is for individual lesson exercises in a transcriber training class. The system works with a "class identifier" (ClassId) and a "lesson identifier" (LessonId, usually a lesson number). The grader works by comparing the "student" file to a "master" file: differences between the two are noted, and are presumed to be student errors.

There are two basic modes of operation: instructor grading and student grading.

Instructor Grading
Each student lesson file is sent to the instructor and he/she operates the Automated Lesson Grader to generate a Grader Report and returns that to the student. The report consists of two parts: (a) a listing of the braille lines containing errors noting the types of error, and (b) markings in the text of the file (orange highlighting) each with a popup message noting the type of error (to view the message, hover the mouse over an orange-colored word).

The instructor can print the report (item (a) above) and hand it to the student, but more useful is returning the graded file to the student. That file (after having been graded) contains both the highlighted items (item (b) above) as well as the text of the report. After opening this file in Braille2000, the student has on-screen access to both the report and to the orange highlighting.

Lesson files are otherwise ordinary .B2K files and may be transmitted from student to instructor (and back) using B-mail or by any other means (e.g., via an e-mail attachment or on a flash drive). Note that grader notations or errors give only the type of error and not a specific fix: it is up to the student (with appropriate instructor guidance) to determine how to correct each error. Of course in some situations there may be multiple correct transcriptions, only one of which will mechanically match the master file. It is up to the instructor to interpret things correctly.

To assist with instructor grading, the student can use the Grader Report feature to tag the lesson file with the student's name, the class identifier, and the lesson identifier, prior to submitting the file to the instructor.

Student Grading
With appropriate instructor configuration, student grading can be offered. This is student self-grading: when the lesson file is thought to be ready, the student activates the Automated Lesson Grader on his/her computer and it generates a Grader Report instantly with a copy of the lesson file (containing the report) optionally forwarded (via B-mail) to the instructor. To facilitate student self-grading, an active Internet connection is required: the files used to perform grading

are dynamically obtained from the Web and then compared to student work. The master files remain invisible to the student.

Overview of Function

The Automated Lesson Grader offers the following functions (via View and Grader Report). Some features are reserved for the instructor and some featres operate only when the instructor has configured the student self-grading mechanisms. (An "instructor" is a Braille2000 user whose license includes the Automated Lesson Grader optional feature code, a software option with a small purchase fee.)

1. File signing. The transcriber student can identify himself/herself, the class, and the lesson, as an aid to the instructor who will review the file. This identification becomes part of the file submitted (data embedded into the file). This capability is available to everyone.

2. File transmission. Via the grader feature, the file can be transmitted to the instructor for grading using the B-mail system. If the instructor has "published" the ClassId and its B-mail address, that address is provided automatically. Otherwise, the student must know the instructor's B-mail address and then type it in. This capability is available to everyone who has signed up for B-mail (a free service to Braille2000 license holders). (A B-mail address is the user's license number enclosed in angle brackets.)

3. Report transmission. Via the grader feature, the report prepared by the instructor (the generated report from the Automated Grader along with instructor comments and orange highlighting) is returned to the student as part of the student lesson file that the instructor sends back to the student via return B-mail or via any other file delivery mechanism. This capability is available only to instructors who have purchased the Automated Lesson Grader feature.

4. Optional student self-grading. With an instructor-registered ClassId and other preparations, the student can submit his/her own work to the Automated Lesson Grader and receive a report immediately. An instructor must have purchased the Automated Lesson Grader feature and must have registered the ClassId with the system and have formally submitted one "master file" per LessonId. An active Internet connection is required by the instructror and students.

5. Instructor tracking. When self-grading is done by a student, the instructor can receive a copy of the graded lesson file, via B-mail. In this way the instructor can monitor the progress of each student even when the student is using self-grading. This optional capability is available only to instructors who have purchased the Automated Lesson Grader feature and have properly completed the setup for #4 above.

6. Instructor Tools. The instructor operates the grader on a lesson file received from the student (vi B-mail or any other means) and optionally adds additional comments to the report. The report can be printed to hand to the student or the lesson file containing the report can be sent to the student (via B-mail or any other means). The instructor can create and edit master lesson files (the correct version of student work, the master against which the student file is evaluated) and (optionally) post such files under an instructor-assigned ClassId to permit student self-grading. These capabilities are available only to instructors who have purchased the Automated Lesson Grader feature.

It is not necessary to use all elements of the Automated Lesson Grader. In a simplified situation, reports are produced only by the instructor and the student either does nothing special or simply uses the feature to sign their file prior to submission. At the next level, the feature is used to transmit lesson files to and from the instructor and to view the (embedded) returned report and orange highlighting. At the full-power level, the feature is used to let students generate a report on their own, and the instructor will grade lessons for those students lacking Internet access.

Availability
The Automated Lesson Grader is an optional component of Braille2000. It must be installed to be available (even for students): click the File Management button and select Fetch Software Update and then type in the component name: LessonGrader. Student operation of the Automated Lesson Grader is without a fee. Instructor use requires ordering a special Braille2000 license feature and paying a $45 fee (when using a pre-existing hardware Key, an exchange of Key devices is required to get the added feature onto the Key).

Security Alert: B-mail addresses are Braille2000 license numbers. When using B-mail features of the Automated Lesson Grader, the instructor's license number is revealed. If the instructor's Braille2000 license is an Internet type of license, the instructor should set the password value (via Adjust, Password) so that associates (students) handling the instructor's B-mail address cannot launch Braille2000 with the instructor's credentials.

For The Student

Your class instructor will give you a ClassId code word to use for all the lesson exercises you complete in the class. You will also be told the nature of the LessonId codes for each lesson file you prepare (often just the lesson number, but in some situations an alpha-numeric code assigned by the instructor).

Signing Your Lesson File

At some point prior to submitting each lesson file you should click View and Grader Report and enter the following information: your name, the ClassId code, and the LessonId code. Use the boxes in the Identification panel, as shown at the left. (If the dialog box displays with the Report tab selected instear, click the Settings tab to see the above panel.) Then click the "Set" button (to the right of the lesson code box). This signs your file with the identification information.

If your computer system has active Internet access, the following additional items come into play. If your instructor has registered the ClassId with B-mail, then the Instructor B-mail Address box will be filled in automatically as soon as you enter a valid ClassId code. If your instructor has not registered the ClassId, then he/she may have given you a B-mail address to use. (If neither of these has happened, leave the B-mail address box empty.) A B-mail address is twelve characters surrounded by angle brackets (you don't type the angle brackets themselves).

Sending In Your Lesson File

If you have an Instructor B-mail Address (automatically or by your own input) then you can use the Send File button to transmit your lesson file to your instructor. You can also send and receive B-mail messages in general. Your instructor will probably send back your graded lesson file via return B-mail. But to use B-mail (a free service to Braille2000 license holders), you must register to use the service. This is done via View and Mail. You only need to register once to activate the B-mail services within Braille2000. B-mail allows you to send messages and attached files from one Braille2000 user to another. Your B-mail "address" is your license number enclosed in angle brackets, such as <1101D38R9876>. (All Braille2000 license numbers are composed of 12 characters: 4 digits, 4 alpha-numerics, and 4 digits.) When sending your lesson file via B-mail, you may optionally add a message to the outgoing B-mail. To do this, put a checkmark in the box "I want to add a note" before you click Send File (if you don't do this, Send File builds an outgoing B-mail message with your lesson file attached and sends it immediately without a message body).

The outgoing B-mail message box is shown at the right. The "To" address is already filled in along with one Attached File (your lesson file). Type your message into the Message box and click Send.
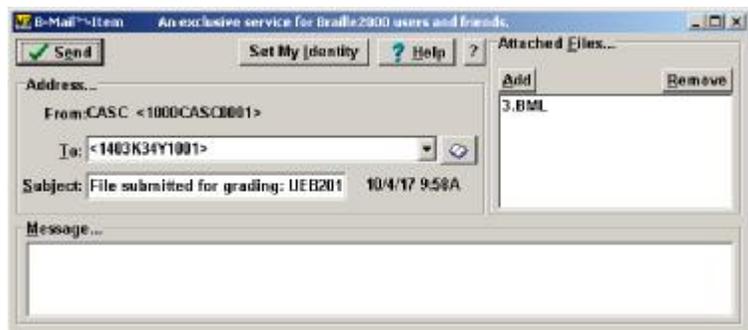
Without Internet and B-mail

Using B-mail should make lesson submission easier but it is not required. Without Internet service you can still use View and Grader Report to sign your lesson file (giving Name, ClassId, LessonId). You should then send it to your instructor some other way, such as by email attachment or handing it in on a flash drive device. The grader window normally interacts with the network (when an Internet connection is available). If this causes a slowdown of your computer (e.g., trying to use the network that is turned off), you can disable network interaction via the Network tab in the Lesson Grader dialog box (but then network features cannot be used by the Lesson Grader).

Viewing Your Grader Report

When your graded lesson file is returned to you (via return B-mail or by any other means), it contains (at the instructor's option) an embedded report and (if there are errors) orange highlighting in the braille text. You can view the report by opening the lesson file and clicking View and Grader Report. The dialog box should show you the Report tab (if not, click the Report tab to view the report).
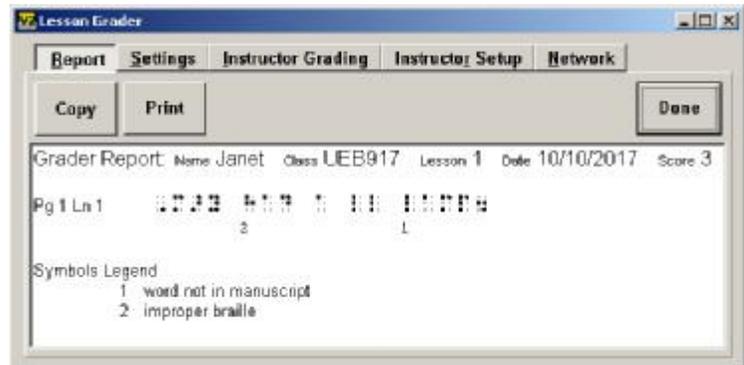
In a graded lesson file, errors are highlighted in orange. This kind of highlighting is in addition to highlighting for other purposes, such as when editing or doing cut/copy/paste. The orange highlighting endures through editing to correct the error. When you think an error word has been corrected, right-click on the orange word and then click "Selection" and "Deselect". The orange color will then vanish for that word.

The orange coloring is from a "selection" named "Grader" that is generated by the Automated Lesson Grader. Named selections are a standard (though little used) feature of Braille2000. You can determine whether any named selection is visible or not via the Selection Overlay control (example at the right). You get this by clicking View and Selections. The checkbox "Show with color" can be changed to hide or make visible the selections. For example, if you click to remove the checkmark and click Done, the orange coloring will disappear (you can later use this dialog box to make them visible again, just restore the checkmark). (But words you "Deselect" (above) are gone for good.)

Printing Your Grader Report

While viewing your report (as explained above), you will find two useful buttons: Print and Copy. The Print button will print the report to your computer's default printer. (There is no mechanism, via this Print button, to choose a different printer, but via your computer's "Devices and Printers" controls you can designate the default printer of your choice.) For additional manipulations (including choosing a non-default printer), click the Copy button, open Word or

WordPad (or some other print editing tool) and Paste the report into an empty document file and then print or arrange it from within that tool.

Grading Your Own Work

If you have an active Internet connection, and if your instructor has registered the ClassId and has done other preparations, you can generate your report on your own, almost instantly. Note that one option your instructor may use is to capture a copy of your lesson file for instructor information (thus, it would probably look foolish to run the grader too often on the same lesson).
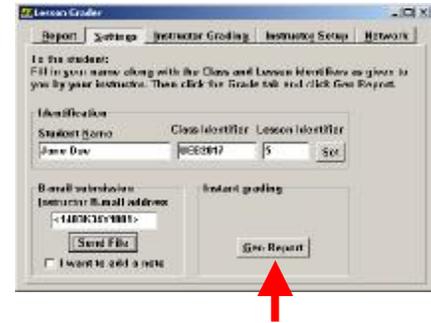
If the necessary setup for student grading exists, the "Gen Report" button on the Settings panel will be active. Clicking that button will switch to the Report panel, immediately showing you the new grader report for your lesson file.

Sample Lesson (transcribe the Gettysburg Address)

Suppose in some locale an enterprising instructor is conducting the class "T447" (might be at a community college) and that lesson "7" is to transcribe the Gettysburg Address. Janet, a student, does the transcription and then displays the Grader Report tool and fills in the Seettings (right). She then saves her file and sends it to the instructor (say by e-mail).

When the instructor opens the file and uses View and Grader Report, she sees the Instructor Grading panel (left). She clicks the Gen Report button and the report appears in the Report panel. The hypothetical report for "Janet" is shown below.

Janet's Report (Janet made 5 errors)

Grader Report: Name Janet   Class T447   Lesson 7   Date 09/29/2017   Score 5

Pg 1 Ln 9 **D\$ICAT\$1 C 5DURE4 ,WE >E MET ON A GRT**
                                        +1
Pg 1 Ln11 **D\$ICATE A POR;N (! FIELD1 Z A F9AL RE/+**
                                             2
Pg 1 Ln12 **PLACE FOR ^? :O "H GAVE _! LIVES T T**
                         3
Pg 1 Ln20 **REMEMB] :AT WE SAY "H1 B X C N"E =GET**
           45

Symbols Legend
+n n words missing before this word
2 word not in manuscript
3 improper braille
4 should not be new paragraph
5 wrong indent or runover

The symbol +1 (in general, +number) in line 9 (first braille line above) denotes the number of missing words that were left out (one in this case). Numbers without + are error codes as listed in the Symbols Legend. On line 11, the "2" sits below "the" because the text actually has the word "that" there, i.e., a content error. On line 12, the "3" sits below a word not contracted properly although it does read "for" that is the correct word. On line 20, both "4" and "5" apply to the first word, and they indicate that the line is improperly paragraphed (no paragraph break should exist there) and that the paragraph (a 1-1 style) is not properly indented (these paragraphs in print were normal indented paragraphs).

The braille prose is also marked with the same errors, as shown to the right. When the lesson file is returned to the student after grading, the highlighted errors and the report are included.

If you "hover" the mouse over a highlighted word, the error legend is shown, as in
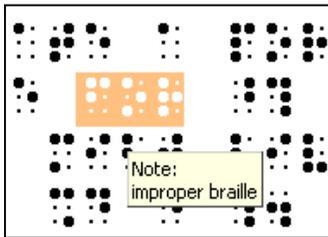
when hovering over "for".
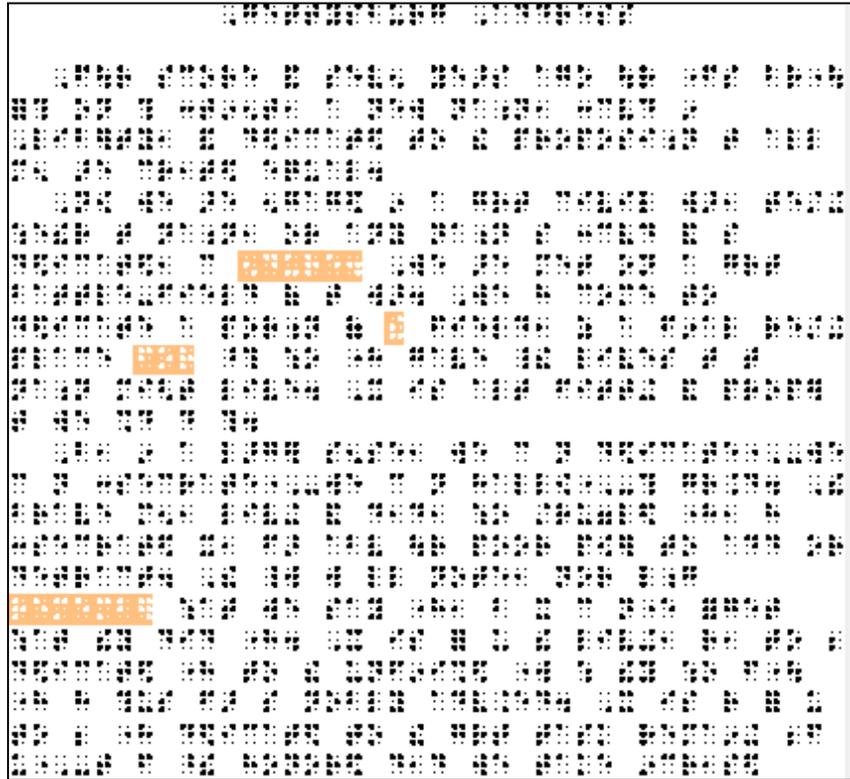
Note: via View and Selection, the "Grader" highlighting can be turned off. The highlight for individual words can be extinguished by right click, Selection, and Deselect.

For The Instructor

For instructor use, you need a Braille2000 license with the optional "Grader" feature. This is an extra-cost option for Braille2000. To use B-mail and student grading features, you need an active Internet connection to your computer.

> **Security Alert**: If the instructor's Braille2000 license is an Internet type of license, the instructor should set the password value (via Adjust, Password) so that associates (students) handling the instructor's B-mail address (which is the license number) cannot launch Braille2000 with the instructors credentials.

The Master Files

The general scenario is a class on braille transcribing with students learning braille by doing lesson exercises. From the Automated Grader's perspective, a sequence of lessons constitutes a "class" with a unique identifier called here the ClassId. A class identifier could be something like UEB917. Class and Lesson identifiers can be composed of letters, digits, and the hyphen (-) and underscore(_). Each lesson must have a unique identifier (called here the LessonId), often just a lesson number (1, 2, 3, and so on). LessonId identifiers need not be sequential.

It is up to the instructor to get or create a master file for each LessonId. Such files are installed on the instructor's computer (using Braille2000 and the Automated Lesson Grader) into a ClassId folder of braille files. On the instructor's computer, this is in a "project folder" called "Grader" and thus if the first lesson has a LessonId of "1" in the class with ClassId of "UEB917", that master braille file would have the path …\My Braille\Grader\UEB917\1.BML. Additional lesson files would sit adjacent to this one. Note that grader files are automatically stored with the .BML suffix (although not used as often, .BML is a standard Braille2000 file type). When composing master files, you can use .B2K files (or whatever file type you wish), but as a master file is put into the grader file store, it is stored there in .BML form.

Once the master file is in place for a given ClassId and LessonId, the instructor may apply the Automated Lesson Grader to student submittions for that lesson. The instructor can use any mechanism to configure the master files, but the Install mechanism described next is particularly handy and must be used to install network master files for student self-grading.

Installing a Master File

The "Instructor Setup" panel is used to manage master files. If you don't have the instructor tabs it is because you are using a license that does not have the Automated Grader option (for which there is a fee).

Note that the "Instructor B-mail address" is always the instructor's Braille2000 license number. It is also the key to accessing network files, i.e., you must always use that license when doing instructor functions with the Automated Lesson Grader.
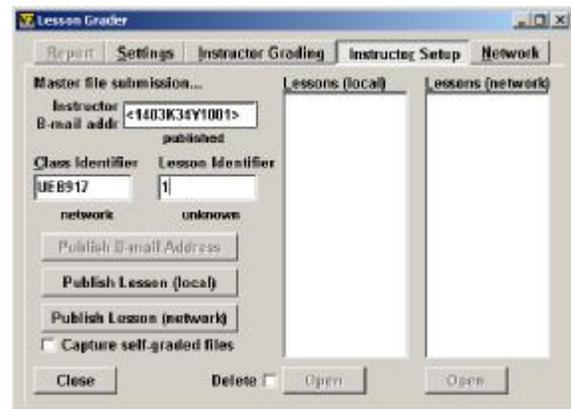
There are several tasks you can accomplish using the Instructor Setup panel, then include (a) publishing master lesson files for use with the lesson grader on your own computer (called "local" use), (b) publishing master lesson files to the network to facilitate student self-grading of their lessons, (c) publishing your B-mail address to make it easy for students to submit their files to you via B-mail (in lieu of self-grading), and (d) managing both local and network master files with such tasks as reviewing them and/or deleting them.

When you begin using the Automated Lesson Grader for a class, the first thing you need to do is to decide on a class identifier (classid). You should use that same identifier with all lessons in that course of study. If you plan to use either B-mail receipt of student files or allow student self-grading, you should publish your B-mail address right away. Class identifiers must be unique in the world (nobody else having the same id code) and the way to know that your identifier is yours is to publish your B-mail address (it takes "ownership" of the identifier). Enter the Class Identifier of your choice and click "Publish B-mail Address". If that button remains grayed it signals that someone else already owns that identifier (so choose something different). Once your B-mail address is published the word "published" will show below it, and once it is published, the button will remain grayed because you don't need to do that again. When you enter your classid for later setup functions, look to see that the "published" notation is showing, a sign that you have entered the proper classid for your course.

If you don't plan to use B-mail lesson submission nor the student self-grading options, it is not necessary to publish your B-mail address. In this case you will only use the "Publish Lesson (local)" button to establish master lesson files on your own computer for just your own use.

Query The Status of a Lesson

Each time you use the Instructor Setup panel you need to type in your ClassId value. Then enter a lesson identifier and wait a few seconds. The legend below the lesson id box will show "unknown" or "local" or "network" or "local & network" indicating where that master lesson file is presently stored. The "local" copy is on your hard drive. The "network" copy is at the Braille2000 web server. You are the sole manager of both copies, and they should be the same files (if both exist), lesson by lesson.

Publishing a Master File for a Lesson

Open the master braille file for a given lesson. It should be showing on the screen. Then display the Lesson Grader dialog box (via View, Grader Report) and select the Instructor Setup panel. Enter the proper Class Id and the desired Lesson Id and then the "Publish Lesson" buttons should become active (the "Publish Lesson (network)" button will be active only if the Internet is available and you have published your B-mail address). Click one or the other or both Publish Lesson buttons to save the current braille file in the proper place to act as the master lesson file for the given lesson identifier. As you publish master files, the lesson id codes will show up in one or the other or both of the two lists of published lessons, one for local files and one for network files.

Lessons that appear in the local list can be used by you to grade student files you receive. That is done via the "Instructor Grading" panel. Lessons that appear in the network list can be used by your students to do self-grading… they will use the Settings panel. In both cases, the generated report (after the file has been graded) will be in the Report panel. If you put a checkmark in

"Capture self-graded files" **before** you publish a master file to the network, then each time a student performs self-grading on that lesson, a copy of the graded student file will automatically be sent to you via B-mail. In that way you can see student work, including the Report that was generated.

Viewing an Existing Master Lesson File

You can view a published master lesson file by selecting its lesson id in either the list of local files or the list of network files and then clicking the "Open" button below that list. If you need to edit the master file, then open it, change it, and then re-publish it using its given lesson id code.

Deleting a Master Lesson File

If you wish to remove (delete) a master lesson file, put a checkmark in the "Delete" checkbox and then select the file (as when Opening it) but then click the "Delete" button below the list where the lesson was selected.

Deleting an Entire Class of Lessons

If you want to delete all lessons for the class, put a checkmark in the "Delete" checkbox and then use "Delete Class (local)" and/or "Delete Class (network)" buttons.

The Grading Process

The grading process is the same, whether you do the grading or your students do it for themselves. When you do the grading, the master file data come from your hard drive from the "local" store of master files, as mentioned above. When a student does the grading, the master file comes from the Internet and is never seen by the student.

The Automated Lesson Grader compares the sequence of words in the student file to the sequence of words in the correspoiding master file. The sequence is checked for print prose consistency (looking for omitted or extraneous material) and also for proper braille usage. Differences from the master file are noted. The student file is also checked for paragraph structure and formatting and for excess inter-word spaces, again by comparing to the master file. The grading process is mechanical and it is possible for the system to report differences that are not salient and that the instructor might ignore.

For each word whose attributes do not match the master lesson file, that line of braille is listed on the report and error-type symbols are shown below the word(s) that have problems. At the same time, "Grader" highlighting (orange by default) is added to the student lesson file along with popup text explaining the nature of the problem. Both the special highlighting and the text of the report are embedded into the student lesson file when you save the file to return it to the student. (Note: you must use standard Braille2000 file types: .B2K or .BML for the student files to support this automation; files sent by the Automated Lesson Grader via B-mail will be of the .BML type.)

After you have used the Automated Lesson Grader to generate a report, you may edit the text of that report before saving the student file and/or returning it to the student. You can delete errors you don't wish to be reported and/or you can add your own comments as you wish, before saving

the student file. You can print the report, but it will be easier to return the file to the student with the report embedded within, via B-mail or some other digital means.

When you have graded a student file (i.e., the file is open on your computer) you can view and edit the Report via the Report tab, as shown to the right. You can dispose of the student file by using the three checkboxes next to the Done button (these checkboxes appear only when an instructor is using the Grader). Click one or more of them **before** you click Done.
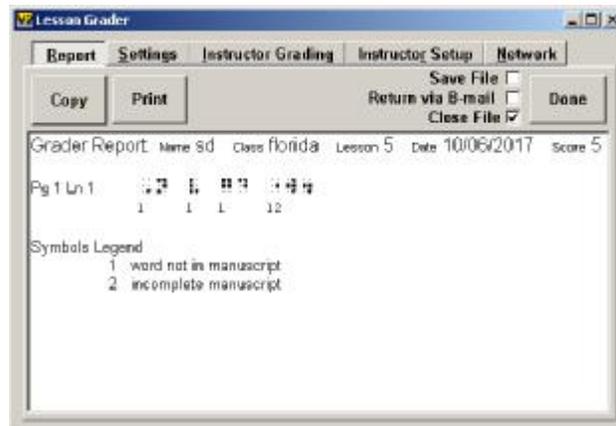
Save File causes the student file to be saved, thereby capturing within it the report and orange markings.

Return via B-mail (available only with an active Internet connection and only for files bearing the return B-mail address of the creator, i.e., the student) causes the file to be sent out as an attachment to B-mail.

Close File causes the student file to close (helpful so you can then open a lesson file from a different student).

Acknowledgement
The concept of an automated lesson grader was created by Joyce Hull for handling training classes conducted by herself and others in association with the Braille Association of Mid-Florida, Inc. The software she created was in the form of a separate tool that operated on lesson files crated by Braille2000 and other braille editors (if saved in a compatible format). Many of her concepts were used, with permission, to build the Braille2000 Automated Lessong Grader feature.