National Assessment
Governing Board

Developing Achievement Levels on the 2011 National Assessment of Educational Progress in Grades 8 and 12 Writing

Final Submitted: May 30, 2014

BoWTIE Administration User Guide

Submitted to:
Munira Mwalimu
National Assessment Governing Board
800 North Capitol Street, NW, Suite 825
Washington, DC 20002-4233

This study was funded by the
National Assessment Governing Board
under Contract ED-NAG-10-C-0003.

Standard Setting Software Deployment
June 27, 2014

Availability of Data – Open Data Policy
In accordance with the U.S. government's Open Government Directive, agencies are directed to share federal government data with the public, to increase transparency, participation, and collaboration (see http://www.howto.gov/web-content/technology/sharing-government-data. The Open Data Policy developed by the White House encourages making data available to the public, see http://project-open-data.github.io/. The U.S. Department of Education 2012 Open Government Plan can be found at http://www.ed.gov/sites/default/files/opengov-plan-v20.pdf.

Pursuant to this guidance, and in accordance with Federal Acquisition Regulations, the National Assessment Governing Board (Governing Board) is providing access to software and data prepared in support of the Governing Board's contract work on standard setting. This work was performed under the legislative authority of the Governing Board to set achievement levels, see http://www.nagb.gov/naep/naep-law.html. More information on the Governing Board's work is available at www.nagb.gov.

Background
The National Assessment Governing awarded two contracts in Fiscal Year 2010 to conduct standard setting work. Contract number ED-NAG-10-C-0003 was awarded to Measured Progress to develop achievement levels for the 2011 and 2013 National Assessment of Educational Progress (NAEP) writing assessments. Measured Progress developed a computerized process for conducting the achievement levels process.[1] The second contract, ED-NAG-10-C-0004, was awarded to WestEd to conduct Judgmental Standard Setting Studies (JSS) to identify the NAEP scores at the 12th grade representing the knowledge and skills in reading and mathematics needed to qualify for entry-level credit-bearing college courses and for job training programs in five selected occupations.[2] WestEd subcontracted with Measured Progress to conduct the studies implementing a computerized standard setting method. Both contracts utilized software developed by Measured Progress under contract, as detailed in the final technical and process reports posted on the Governing Board website.

Software Availability under the Federal Open Data Policy
The Governing Board is making the software developed under these two contracts—Computer-Aided Bookmarking (CAB) and Body of Work Technological Integration and

---

[1] See final reports available at http://www.nagb.gov/publications/achievement.html
[2] http://www.nagb.gov/what-we-do/preparedness-research/types-of-research/jss.html

Enhancements (BoWTIE) available for public use via our website with a link to an external site for the download. Technical guides and user manuals to accompany the software download are provided via the Governing Board's website. Please note that the software used for the contracts has been modified to remove confidential and personally identifiable information based on federal privacy and security requirements that can be found at http://www2.ed.gov/notices/privacy/index.html and at http://www2.ed.gov/about/offices/list/om/fs_po/ocio/ias.html. This requirement also adheres to OMB Circular A-130 provisions on electronic information dissemination policies and guidelines available at http://www.whitehouse.gov/omb/circulars_a130_a130trans4.

Limitations:

The Governing Board contracted for final products and deliverables that were developed under contract. The custom software developed to conduct the work was proposed by the contractors and accepted by the Governing Board, and the work was conducted with federal funds. The software and source codes are being made available to the public, as developed for the specific purposes specified under the contract, without technical modifications. The contractors, WestEd and Measured Progress have not asserted copyright to the software.

Therefore the National Assessment Governing Board is making the software available to the public under its unlimited rights contract authority (for both referenced contracts) under Federal Acquisition Regulation (FAR) 52.227-17 Rights in Data—Special Works (DEC 2007). The National Assessment Governing Board grants the public the worldwide, non-exclusive, royalty-free, perpetual right to use, disclose, reproduce, prepare derivative works, distribute copies to the public, and perform publicly and display publicly, the software created pursuant to the Computer-Aided Bookmarking (under Contract number ED-NAG-10-C0004) and Body of Work Technological Integration and Enhancements (under Contract number ED-NAG-10-C-0003), in any manner and for any purpose, and to have or permit others to do so, subject to a right of attribution. Users of the data are required to acknowledge in any use of the works, or derivatives created therefrom, that the software was initially produced under contracts issued by the National Assessment Governing Board.

THE NATIONAL ASSESSMENT GOVERNING BOARD IS PROVIDING THE SOFTWARE AS IT IS, AND MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND CONCERNING THE WORK—EXPRESS, IMPLIED, STATUTORY OR OTHERWISE, INCLUDING WITHOUT LIMITATION WARRANTIES OF TITLE, MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NON-INFRINGEMENT, OR THE PRESENCE OR ABSENCE OF LATENT OR OTHER DEFECTS, ACCURACY, OR THE PRESENCE OR ABSENCE OF ERRORS, WHETHER OR NOT DISCOVERABLE, ALL TO THE GREATEST EXTENT PERMISSIBLE UNDER FEDERAL LAW.

Technical Support
The Governing Board will not provide technical support to users, and will not respond to queries pertaining to the software based on the fact that this work was completed under contract, and was a tool used to provide contract deliverables. Both contracts have expired. In its current form, the software would require significant modification by end users, as detailed in the technical and user guides. The Governing Board therefore will not be providing any technical support regarding the software. To assist users of the software, user manuals and technical guides provide system requirements in detail, and step by step instructions on downloading the software.

Disclaimer: External Links
The data and external links provided in the software documentation and guides are solely for our readers' use, information, and convenience. When readers select a link to an external website, they are leaving the ww.nagb.gov website and are subject to the privacy and security policies of the owners/sponsors of the external website.

The National Assessment Governing Board:

- Does not control or guarantee the accuracy, relevance, timeliness or completeness of information contained on a linked website.
- Does not endorse the organizations sponsoring linked websites or the views they express or the products/services they offer.
- Cannot and does not authorize the use of copyrighted materials contained in linked websites. Users must request such authorization from the sponsor of the linked website.
- Is not responsible for transmissions users receive from linked websites.
- Does not guarantee that external websites comply with Section 508 (Accessibility Requirements) of the Rehabilitation Act.

Table of Contents

Introduction to BoWTIE WarRoom Application

BoWTIE (Body of Work Technological Integration and Enhancements) is a system of two applications that implements a fully computer-based standard-setting process using the Body of Work method. One application is for the use of standard setting panelists and another application is for the administration of the standard setting process.

The WarRoom application is used by System Administrators to control the BoWTIE application used by panelists.

To open the BoWTIE WarRoom application, double-click the **WarRoom** icon on your desktop. The application opens on the **Itinerary Manager** tab. In addition to the **Itinerary Manager** tab, other functional tabs are **User Manager**, **Booklet Manager**, and **Pinpointing Manager**. Functionalities contained in those tabs will be discussed in subsequent sections.

The **Psychometrics**, **Administration**, and **Monitoring** tabs were not fully developed. Intended functionalities of those tabs will also be discussed in subsequent sections.

This section contains the following:

- Acronyms
- Roles

Acronyms

This document uses the following acronyms:

Acronym	Definition
ALD	Achievement Level Description
ALS	Achievement levels-setting
BoW	Body of Work (student work sample)
BoWTIE	Body of Work Technological Integration and Enhancements
LTC	Linear Transformation Constants

Roles

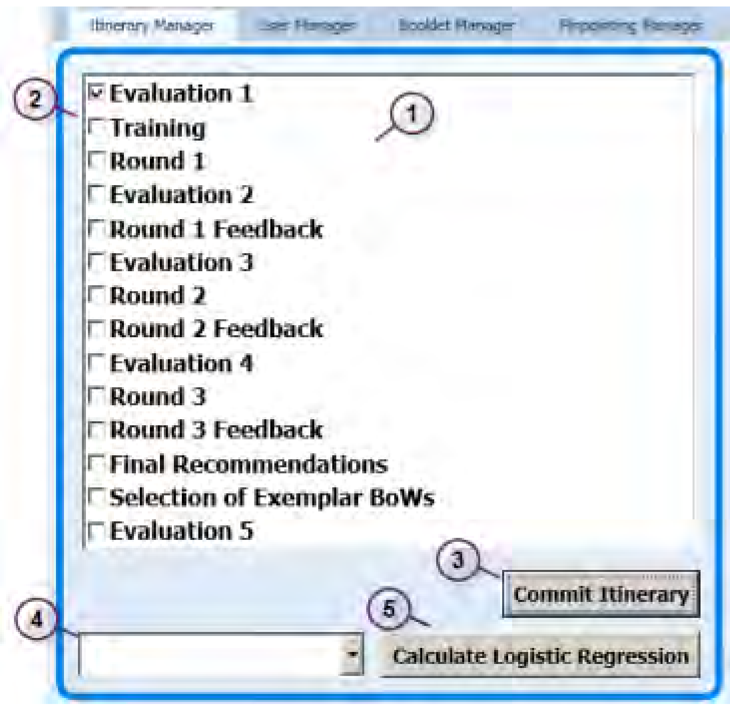
The following roles are available in the BoWTIE application:

Role	Action
System Administrator	Uses the WarRoom application to access and control available functionalities for proper implementation of the ALS process.
Panelist	Uses the BoWTIE panelist application to review and classify BoWs into the achievement levels categories, review feedback information, and provide evaluation data.
Observer	Uses the BoWTIE application to perform the same functions as a panelist, but BoW classifications provided by observers are excluded from cut score computations.

Itinerary Manager

Use the **Itinerary Manager** to determine functionalities available to panelists in the BoWTIE application.

IMPORTANT: Only one stage should be active at a time. Stages must be completed in the order they are presented; allowing panelists back into previous stages might result in inaccurate data presentation.



The **Itinerary Manager** tab contains the following elements:

#	Element	Description
1	Stages	Stages of the ALS process.
2	Check box	Click to select a stage to activate, or click to clear the check box to deactivate the stage. IMPORTANT: Only one stage should be active at a time.
3	**Commit Itinerary** button	Click to activate the selected stage and deactivate the other stages. See "Commit Itinerary" on page 4.

#	Element	Description
4	Round drop-down list	Click to select the round (Round 1, Round 2, or Round 3) for which cut scores will be computed and feedback information will be prepared.
5	**Calculate Logistic Regression** button	Click to calculate the panelist's individual cut scores for the selected round. Group cut scores will be automatically computed and appropriate feedback information will be made available for the selected round. See "Calculate Logistic Regression" on page 5.

This section contains the following:

- Commit Itinerary
- Calculate Logistic Regression

Commit Itinerary

To set stages as active or inactive for panelists, follow the steps below:

1. Click the **Itinerary Manager** tab.
2. Select the check boxes of the stage you want to be active for panelists.

IMPORTANT: Only one stage should be active at a time.

3. Clear the check boxes of the stages you want to be inactive for panelists.
4. Click the **Commit Itinerary** button.

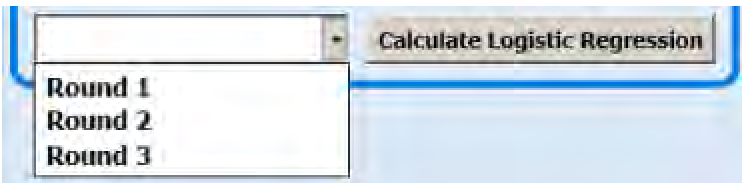
Calculate Logistic Regression

After panelists complete a classification round, logistic regression is used to calculate the individual panelists' cut scores. The computed cut scores are used to provide all the different feedback information provided to panelists. Before **Round 1 Feedback**, **Round 2 Feedback**, or **Round 3 Feedback** stages are made active, the System Administrator must calculate the logistic regression for the round. Feedback appropriate for each round are automatically available when that round's feedback is activated.

To calculate the logistic regression, follow the steps below:

1. Click the **Itinerary Manager** tab.

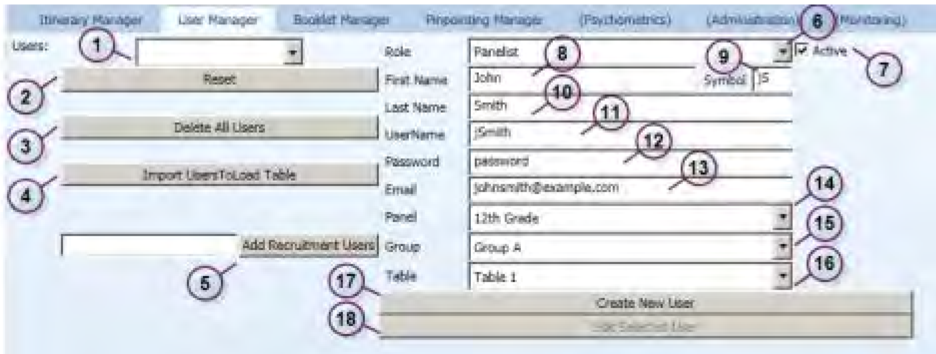
2. Click the drop-down list and select the round completed by panelists.



3. Click the **Calculate Logistic Regression** button. You can now make the selected round's feedback stage active for panelists.

User Manager

The **User Manager** controls user information in the BoWTIE application. You can add or edit users, and assign users to a panel, group, and table.



The **User Manager** tab contains the following elements:

#	Element	Description
1	**Users** drop-down list	Click to display the list of users by username, alphabetized by last name. Select a username to view or edit the user's information.
2	**Reset** button	Click to clear the fields in order to create a new user.
3	**Delete All Users** button	Click to delete all users currently in the BoWTIE application. IMPORTANT: This cannot be undone.
4	**Import Users To Load Table** button	Click to import users to load table. See "Import Users to Load Table" on page 8.
5	**Add Recruitment Users** button	Click to add multiple new users from an Excel template file. See "Add Recruitment Users" on page 8.
6	**Role**	Click to select **Observer** or **Panelist** from the drop-down list. See "Roles" on page 2.
7	**Active** check box	Select the check box to allow the user to log into the BoWTIE application, or clear the check box to prevent the user from accessing the BoWTIE application.

#	Element	Description
8	**First Name**	The user's first name.
9	**Symbol**	The users' symbol or secret code used on the Cut Score Location Feedback chart to protect confidentiality. IMPORTANT: Editing the symbol in the User Manager will cause an error; the symbol can only be set or edited in the **dbo.panelist** table in the SQL database. See the *BoWTIE Technical User Guide* for more information.
10	**Last Name**	The user's last name.
11	**UserName**	The user's username for logging into the BoWTIE application.
12	**Password**	The user's password for logging into the BoWTIE application.
13	**Email**	The user's email address.
14	**Panel**	Click to assign the user to a panel or grade from the drop-down list.
15	**Group**	Click to assign the user to a group (i.e., A or B) from the drop-down list.
16	**Table**	Click to assign the user to a table number from the drop-down list.
17	**Create New User** button	After entering information in the fields, click to save the information and create an individual new user. See "Create New User" on page 9.
18	**Edit Selected User** button	After editing a user's information, click to save the changes. See "Edit User" on page 11.

This section contains the following:

- Import Users to Load Table
- Add Recruitment Users
- Create New User
- Edit User

Import Users to Load Table

To import users to load table, follow the steps below:

1. Click the **User Manager** tab.
2. Click the **Import UsersToLoad** Table button.

Users are imported from the Recruitment Users list.

Add Recruitment Users

Use the **Add Recruitment Users** button to upload multiple new users from an Excel template file. To add a new user manually, see Create New User.

NOTE: Individual users cannot be deleted once added; however, you may edit their information or make them inactive. See "Edit User" on page 11.

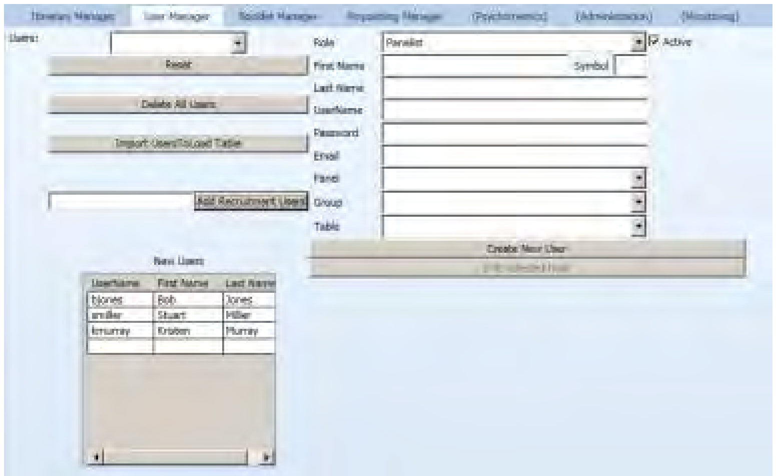
To add multiple new users from the Excel template file, follow the steps below:

1. Click the **User Manager** tab.
2. Click the **Add Recruitment Users** button. The **Open** pop-up window displays.

3. Browse to the Microsoft Excel file you wish to upload and select it.

IMPORTANT: Use the **RecruitmentUsers.xls** template file in the **BoWTIE.deploy.zip** file in the directory **MP.BoWTIE.WarRoom.Templates**.

4. Click the **Open** button.



5. The new users have been added. To view or edit the information for a user, see Edit User.

Create New User

Use the **Create New Users** button to manually add a new user. To add multiple new users from an Excel template file, see Add Recruitment Users.

NOTE: Individual users cannot be deleted once added; however, you may edit their information or make them inactive. See "Edit User" on page 11.

To create a new user, follow the steps below:

1. Click the **User Manager** tab.
2. Click the **Reset** button to clear the fields, if needed.
3. Click the **Role** drop-down list to select **Observer** or **Panelist**. See "Roles" on page 2.
4. Select the **Active** check to allow the user to log into the BoWTIE application, or clear the check box to prevent the user from accessing the BoWTIE application.

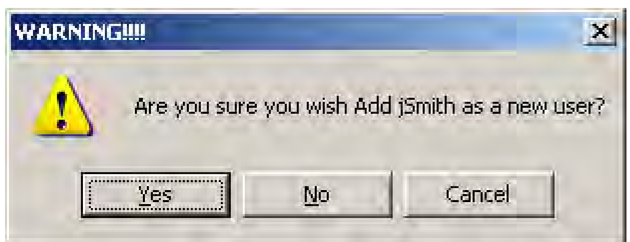
5. Enter the user's **First Name** and **Last Name**.

IMPORTANT: The Symbol field cannot be edited in the User Manager. The symbol can only be set or edited in the **dbo.panelist** table in the SQL database. See the *BoWTIE Technical User Guide* for more information.

6. Enter a **UserName** and **Password** for the user.

NOTE: Passwords are saved as plain text in the software and in the database. Be sure to create a unique password that is not used elsewhere.

7. Enter the user's **Email** address.
8. Click the **Panel** drop-down list to assign the user to a panel or grade.
9. Click the **Group** drop-down list to assign the user to a group (i.e., A or B).
10. Click the **Table** drop-down list to assign the user to a table number.
11. Click the **Create New User** button. The **WARNING** pop-up window displays.



12. Click **Yes**. The verification pop-up window displays.

13. Click **OK**. The new user has been created.

Edit User

NOTE: Individual users cannot be deleted once added; however, you may prevent a user from accessing the BoWTIE application by clearing the **Active** check box.

To edit a user, follow the steps below:

1. Click the **User Manager** tab.

2. Click the **Users** drop-down list and select the username of the user you would like to edit.

   NOTE: The **Users** drop-down list displays users by their usernames and is alphabetized by last name.

3. Edit the desired fields.

IMPORTANT: The **Symbol** field cannot be edited in the **User Manager**. The symbol can only be set or edited in the **dbo.panelist** table in the SQL database. See the *BoWTIE Technical User Guide* for more information.

4. To prevent the user from accessing the BoWTIE application, clear the Active check box. The user will not be able to log into BoWTIE.

   To allow the user to log into BoWTIE, select the Active check box.

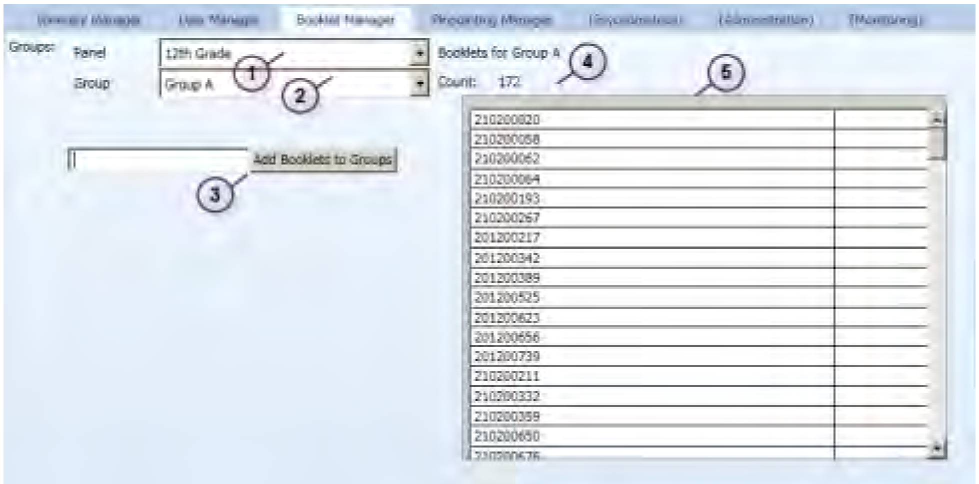
5. Click the **Edit Selected User** button. The verification pop-up window displays.

6. Click **OK**. The user's edited information has been saved.

Booklet Manager

Use the **Booklet Manager** to assign booklets to groups of panelists.

NOTE: The **Booklet Manager** may not be fully functional.



The **Booklet Manager** tab contains the following elements:

#	Element	Description
1	**Panel** drop-down list	Click to select a panel or grade from the drop-down list.
2	**Group** drop-down list	Click to select a group (i.e., A or B) from the drop-down list. A panel must be selected prior to selecting a group.
3	**Add Booklets to Groups** button	Click to assign booklets to a group. NOTE: Booklet(s) may be assigned to more than one group, if desired.
4	**Count**	The number of booklets in the selected group.
5	Booklet list	The list of booklets assigned to the selected group. Click the gray bar to sort the list in ascending or descending order.

To assign booklets to groups, follow the steps below:

1. Make sure booklets have been previously added to the BoWTIE Panelist application. See "Add Booklets" on page 13.
2. Click the **Booklet Manager** tab.
3. Click the **Panel** drop-down list and select a panel to assign booklets to.
4. Click the **Group** drop-down list and select a group to assign booklets to.
5. Click the **Add Booklets to Group** button. The **Open** pop-up window displays.
6. Browse to the Microsoft Excel file you wish to upload and select it.

IMPORTANT: Use the **AddBookletsToGroup.xls** template file.

7. Click the **Open** button.

The booklets have been added.

Add Booklets

Adding booklets or BoWs to the BoWTIE Panelist application consists of saving booklets to the computer running the WarRoom application, filling out the **AddBookletstoGroups.xls** template file (included in the **BoWTIE.deploy.zip** file in the **MP.BoWTIE.WarRoom.Templates** directory), and assigning booklets to groups.

To add booklets, follow the steps below:

1. On the server where the **I: Drive** is located, copy the questions PDFs to the shared directory so they appear in the mapped drive at: **I:\Documentation\Questions**.
2. Copy the student responses PDFs to the shared directory so they appear in the mapped drive at **I:\Documentation\Responses**.
3. Open the provided template file **AddBookletsToGroup.xls** from the **BoWTIE.deploy.zip** file in the **MP.BoWTIE.WarRoom.Templates** directory.
4. Fill out the columns as appropriate and save the file.
5. In the WarRoom application, go to the **Booklet Manager** tab to assign the booklets to groups. See "Booklet Manager" on page 12.

Pinpointing Manager

Use the **Pinpointing Manager** to select BoWs with performances around the cut scores resulting from the range-finding round. The intended function of the **Pinpointing Manager** is described in Section 2.6 of the ALS process report (Bay, 2012).

IMPORTANT: The **Pinpointing Manager** function was not used operationally. More development is needed to make this part of the application fully functional.

The **Pinpointing Manager** tab contains the following elements:

#	Element	Description
1	**Refresh Statistics** button	Click to update the page with the latest data from the panelists' session.
2	**Determine Pointed Booklets** button	Click to select Pinpointing BoWs.
3	**Panel Grade**	The grade level of the data below.
4	**Minimum**	The minimum score for the range within which pinpointing

#	Element	Description
		BoWs for the level are to be selected.
5	**Pinpointing Minimum**	The minimum score of the BoWs selected for pinpointing for the level.
6	**Median**	The median of panelists' individual cut scores, also the group cut score.
7	**Maxim**	The maximum score for the range within which pinpointing BoWs for the level are to be selected.
8	**Pinpointing Maxim**	The maximum score of the BoWs selected for pinpointing for the level.
9	**Booklet list**	The booklets in the achievement level and their scores. Click a column header - **Booklet ID** or **Score** - to sort the list in ascending or descending order.

Psychometrics

Use the **Psychometrics** tab to select the slope and intercept of the pseudo-NAEP scale (See section 2.7.1 of the Process Report[c] (Bay, 2012)).

IMPORTANT: This feature is not fully developed.

The **Psychometrics** tab contains the following elements:

#	Element	Description
1	**Grade**	The grade level.
2	**Scale Minimum**	The minimum value on the pseudo-NAEP scale.
3	**Scale Maximum**	The maximum value on the pseudo-NAEP scale.
4	**LTC Slope**	Linear Transformation Constants Slope.
5	**LTC Intercept**	Linear Transformation Constants Intercept.
6	**Save** button	Click to save and apply your entered values.

[c]Bay, L. (2012). *Developing achievement levels on the National Assessment of Educational Progress for writing grades 8 and 12 in 2011: Process report*. Dover, NH: Measured Progress. This report is available at http://www.nagb.org/content/nagb/assets/documents/publications/ALS_Process_Report_9-21-12_Final_Panelist_Names_Redacted.pdf.

Add Evaluations

To add or edit the evaluations for panelists, follow the steps below:

1. On the server where the **I: Drive** is located, navigate to: **I:\Documentation\Survey\Questions**. The evaluation template files are saved in this folder as Microsoft Excel files.

2. Double-click a file name to open the evaluation.

3. Edit the evaluation as desired.

4. Save the file, overwriting the existing file.

IMPORTANT: Do not change the evaluation file names.

Your new/edited evaluation(s) will now display to panelists in the BoWTIE Application.

View Evaluation Results

When a panelist completes and submits an evaluation, a new file is created with that panelist's identification on the file name. The completed evaluation files can be accessed by the System Administrator.

To view submitted evaluations, navigate to **I:\Documentation\Survey\Responses** on the server where the **I: Drive** is located. The evaluations can be viewed in Microsoft Excel. Alternatively, the data from the evaluations can be compiled and analyzed.

Index

R

S

T

U

V