



StratLogger

LAFAYETTE
COLLEGE

Department of Geology
and Environmental Geosciences

V I . O . O

sites.lafayette.edu/stratlogger

stratlogger@lafayette.edu

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*This manual is written for StratLogger on iPad in iOS6 but applies in nearly all ways to iOS8

StratLogger

Description

StratLogger is an iPad application for use in sedimentology and/or stratigraphy field projects as a complement to, or replacement for, the traditional paper geology field notebook or stratigraphic column drawing sheets. *StratLogger* integrates the iPad's GPS, camera, and data management capabilities to allow geologists to record sedimentological and stratigraphic information for successive layers in a stratigraphic column, automatically log geo-location data, and link images to each layer. *StratLogger* can then export a real-time, app-produced stratigraphic column as a *.jpeg* file as well as each of the layer records to formatted *.csv* files for easy integration into digital drawing and analysis applications. The app integrates a series of pedagogical tools intended to foster increased student learning while in the field.

1. The Welcome Screen

Upon launch, the *StratLogger* welcome screen appears. The app is formatted for use in landscape view only. In the upper left of the welcome screen there are three icons; the *Folders* icon, the *Import/Export* icon, and the *Settings/Feedback* icon (Fig. 1).

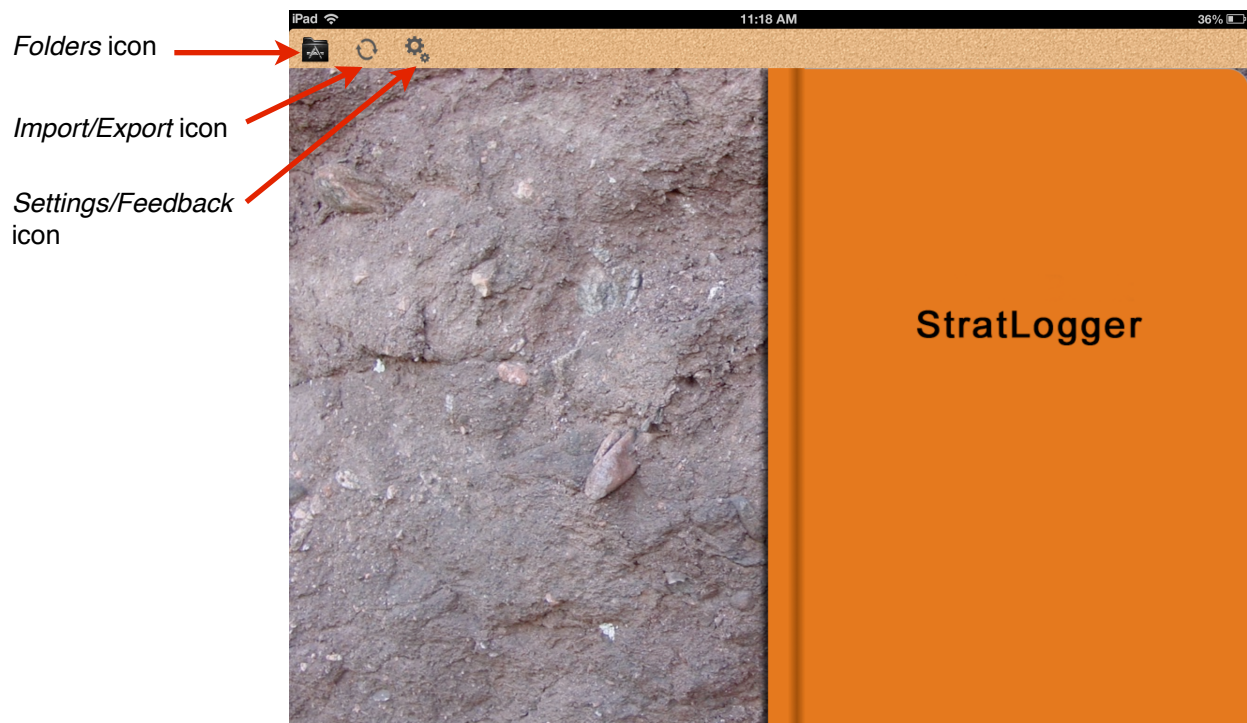


Figure 1. *StratLogger* welcome screen. Modeled after the style of the traditional orange field geology notebook.

2. Creating Project Folders

By selecting the *Folders* icon, a drop-down menu appears. Existing folders are listed. Create a new folder by selecting the “+” button. Folders may have many stratigraphic columns within and can be thought of as separate projects. Enter a project name and description (optional) (Fig. 2).

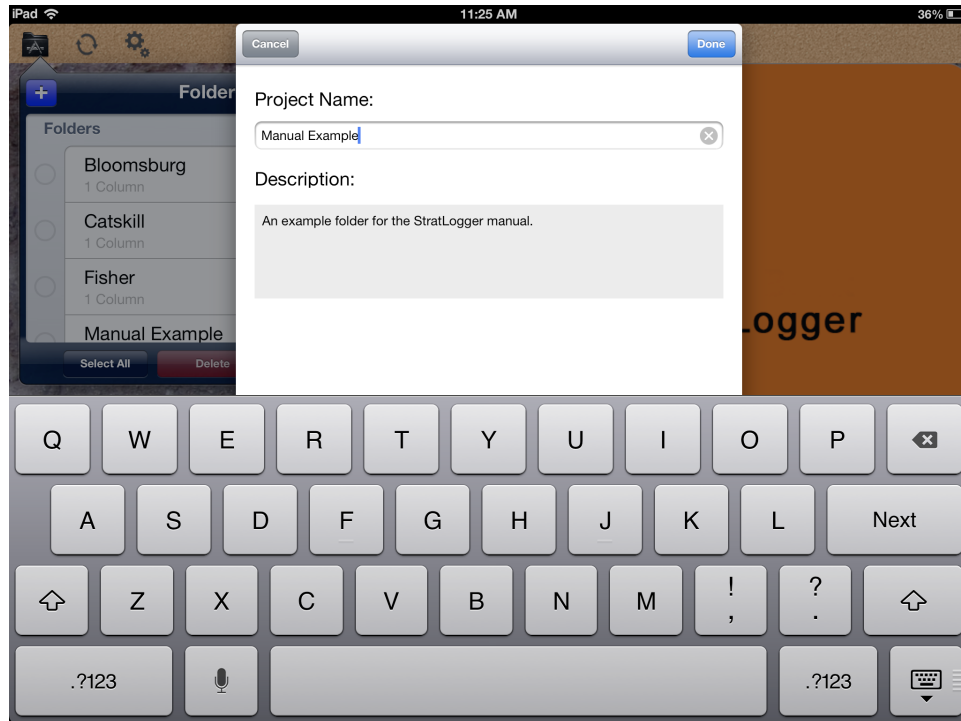


Figure 2. *StratLogger* project creation window. Text may be entered using the keyboard, through voice recognition software onboard the iPad.

3. Creating Columns in a Folder

Once a folder is made, many columns can be contained within it. Select the created folder, then the blue “Add Column” button. Provide a unique name for a new column to be contained within this folder using the keypad and click “Done” (Fig. 3).

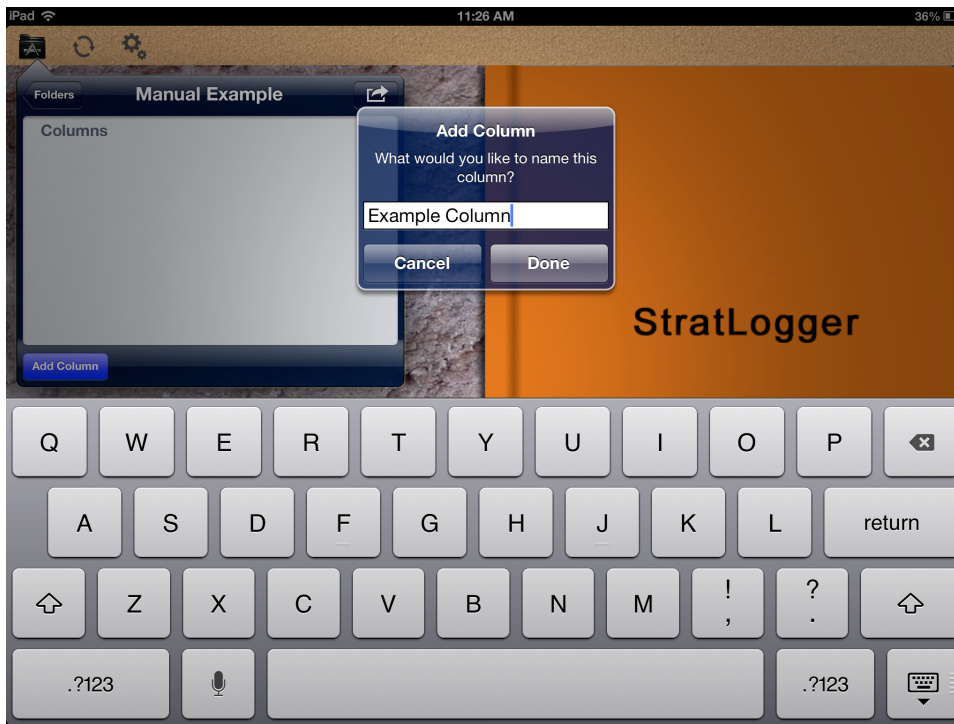


Figure 3. Adding a column to a folder in *StratLogger*. The given column name will become the prefix to each described bed in that column.

Once a column is created in a folder, selecting it will launch data recording in that column. The “front cover” of the *StratLogger* fieldbook will graphically appear to open. Tapping outside of the column list will show the entire data entry and display screen. To work in, or create, another column within the active folder, select the Folder icon in the top left of the screen to get back to the column list. To work in another folder or project, select the Folders button at the top left of the column list.

4. Recording Column Data

The initial active column data entry screen is shown in Figure 4. On the right hand “page” are fields for each layer’s lithological description as well as the geographic coordinates of the observations and the time and date. The left hand “page” includes a space for a photograph, an open field for other description of the layer, and the space where sequential bed descriptions will display in an interactive stratigraphic column diagram.

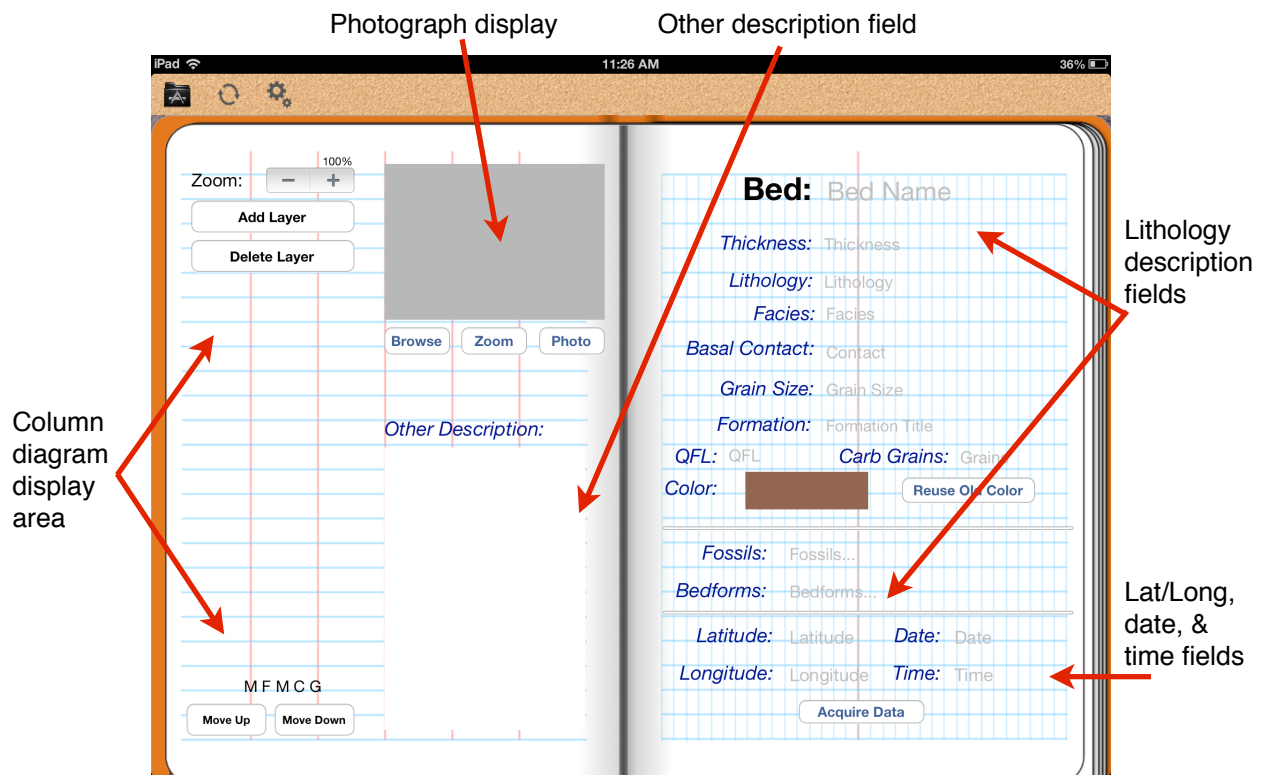


Figure 4. Initial layer/bed data entry screen in *StratLogger*.

To begin, select “Add Layer” on the left hand page. The first layer will, by default, be named the column name then “-A”. Successive layers will be “-B”, “-C” and so forth. This will appear on the top of the right hand page. At the same time the layer will appear on in the column diagram display area on the left hand page with a red outline to the bed indicating that it is the one actively being described. The bed letter is also indicated in this space to the left of the bed.

Bed thickness may be entered using a pop-up keypad. This field is purposely unit-less to allow for user preference. The thickness of the displayed bed in the column diagram will reflect the entered thickness. Thin beds below some threshold thickness will not display differently with regard to thickness in this diagram.

General bed lithology may be entered from the pop-up scroll list or may be user defined and saved for future use in the same column. Corresponding lithology patterns appear for the active bed in the column diagram. The lithology patterns are drawn from the FGDC standards (Appendix A).

Facies may be entered using a user-defined list. Facies names are created and saved within a pop-up scroll list.

The nature of the basal contact may be entered from a pop-up scroll list.

The grain size, although occasionally redundant with lithology, can be entered from a pop-up scroll list. Some users may choose to use this field as a maximum grain size.

The choice in this field is reflected in the bed width in the column diagram across the MFMCG scale (**M**ud - **F**ine Sand - **M**edium Sand - **C**oarse Sand - **G**ravel).

A formation name may be entered in a pop-up entry window. This field will automatically populate subsequent beds with the earlier formation name until the user decides to change it.

A general QFL (quartz/feldspar/lithic) composition description for siliciclastic beds may be entered in a pop-up scroll list.

Carbonate grain type may be entered from a pop-up scroll list or with a user-defined (and saved) entry.

Lithology color may be estimated using a pop-up hue, saturation, and brightness window. All colors must be saved with a unique name and may be used again in subsequent beds by selecting the "Reuse Old Color" button. A slightly transparent version of the selected color will be reflected on the active bed in the column diagram on the left hand page.

Fossil content of a bed may be selected from a pop-up scroll list or with a user-defined (and saved) entry. Multiple fossil types can be stored for the active bed and are indicated by checks in the scroll list. The FGDC symbology for up to three fossil types per bed are displayed in the column diagram.

Bedforms, or sedimentary structures, of a bed may be selected from a pop-up scroll list or with a user-defined (and saved) entry. Many bedforms may be selected for one bed.

By selecting "Acquire Data", *StratLogger* uses the iPad's on-board GPS to fix a latitude and longitude over a 10-second span. The action also date/time stamps the bed description.

A photograph may be tied to each bed record. It may be taken with the iPad's on-board camera or selected from the iPad's photo library. A photograph taken within *StratLogger* is stored at full resolution but displayed as a large thumbnail on the left-hand page. In order to replace an existing photograph, the user may simply take another one in its place.

The "Other Description" field is available for entering additional observations about the active bed.

Layers may be deleted using the "Delete Layer" button. All layers remain selectable and modifiable by selecting the layer on the column itself or by using the "Move Up" or "Move Down" buttons on the bottom of the left hand page.

The column diagram begins at 100% zoom but may be displayed at other scales using the - and + buttons on the top of the left hand page.

5. Exporting Data

Data may be exported from *StratLogger* by selecting the Import/Export icon in the top left of the screen, and then “Export Records” within the pop-up window (Fig. 5).

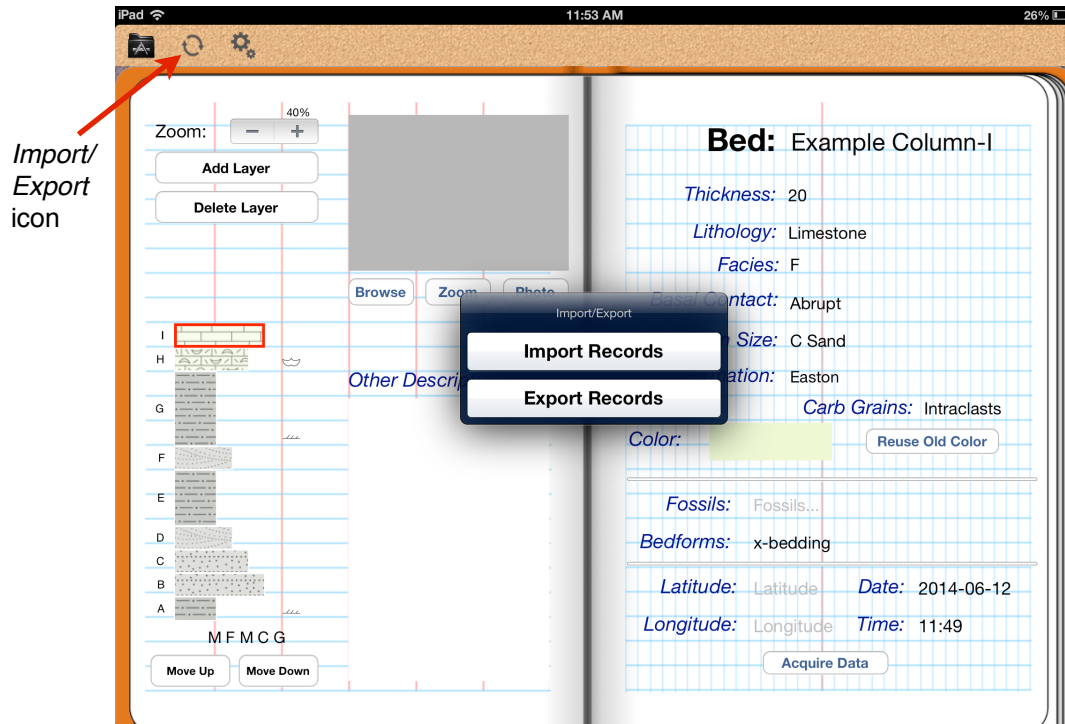


Figure 5. Import/Export window in *StratLogger*.

Select the folder(s) and column(s) to export and click the blue “Export ()” button in the top right of the pop-up window (Fig. 6). *StratLogger* will indicate when it is finished this task with a “Exporting Finished” pop-up window.

After completing an export, data is stored in the iPad’s memory. The stored files are a .csv file, a folder of column associated images (each file named corresponding to the associated bed for the image), and a .csv file of responses to set of student response questions (see section 11 below).

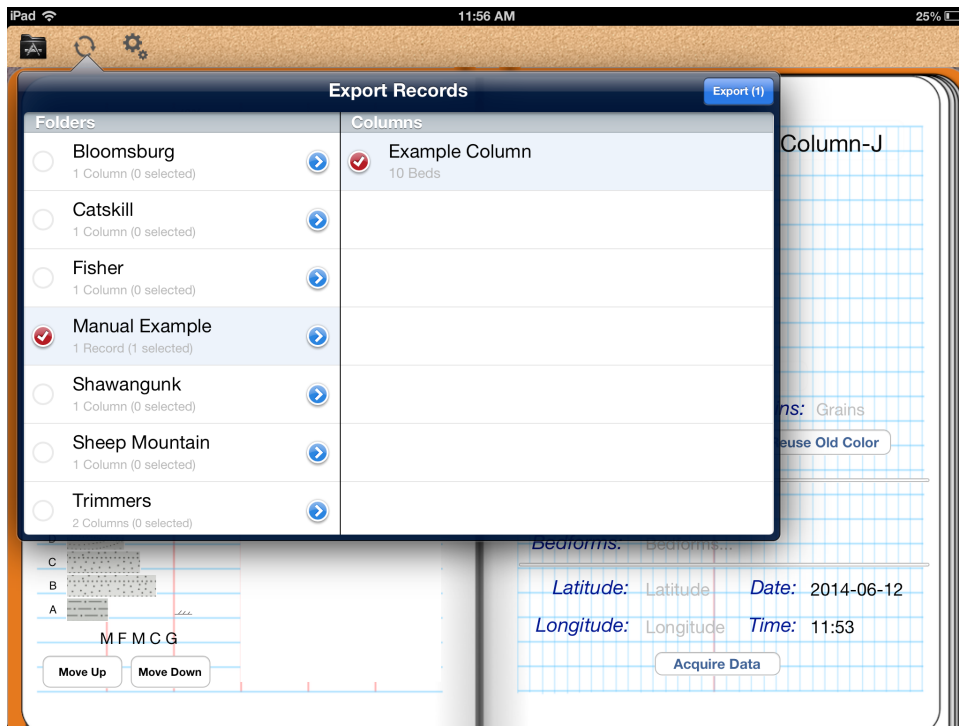


Figure 6. Export Records selection window in *StratLogger*.

To access the exported data, connect the iPad to a computer with *iTunes*. All data exported within *StratLogger* will appear under File Sharing > *StratLogger* (Fig. 7). Drag the folder to the desktop or select “Save to...”. A column’s folder contains the .csv file of bed-by-bed data and a media folder in which the column images are stored in addition to a .jpeg of the displayed column diagram in *StratLogger*.

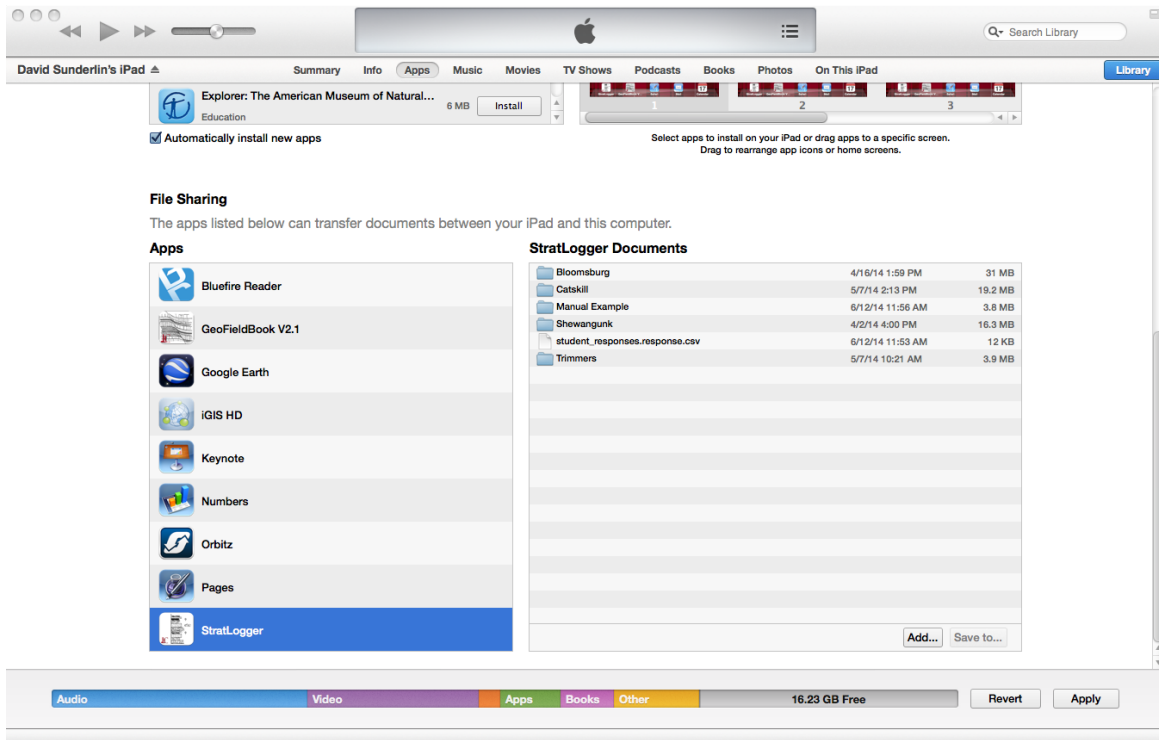


Figure 7. iTunes file sharing window.

6. Importing Data

Formatted .csv files and associated media may be imported into *StratLogger* for display purposes and for continued data acquisition within the app. Within the *StratLogger iTunes* File Sharing space (Fig. 7), select “Add...” and load a folder that contains the .csv file and a media file (if applicable).

Once the folder is loaded onto the iPad, select the Import/Export icon at the top left of the display in *StratLogger* (Fig. 5) and complete the import of the data.

7. Renaming Columns in a Folder

A column can be renamed at any time by choosing the edit icon and the blue arrow when within a folder. Renaming a column will automatically rename each bed within the column to the new column name plus the bed letter.

8. Moving Columns Between Folders

A column or columns may be moved to another folder by choosing the edit icon when within a folder and the circle on the left, then the blue “Move()” button. Select another folder of the column.

9. Deleting Columns From a Folders

A column or columns may be deleted from a folder by choosing the edit icon when within a folder and the circle on the left, then the red “Delete()” button.

10. Deleting Folders

A folder or folders may be deleted entirely by choosing the edit icon when within the list of all folders and the circle on the left, then the red “Delete()” button. All columns within the folder will be deleted when the folder is deleted.

11. Settings/Feedback & Student Response Questions

By selecting the Settings/Feedback icon (Fig. 1) the user can turn the integrated user feedback system on or off. With this function on, users will be prompted for responses to questions about the data collection process and how the data may be interpreted in hypothesized depositional environments. The feedback interval may be set to 1, 5, 10, 20, or 30 records. All responses, and the placement within the column where the responses were generated, are exported with the data in the *iTunes* File Sharing space under the filename “*student_responses.response.csv*”. After the first *n* records the user is prompted for response to the following question in a pop-up window (Fig. 8):

- Please list your 2 most likely hypothesized depositional environments (most likely first).

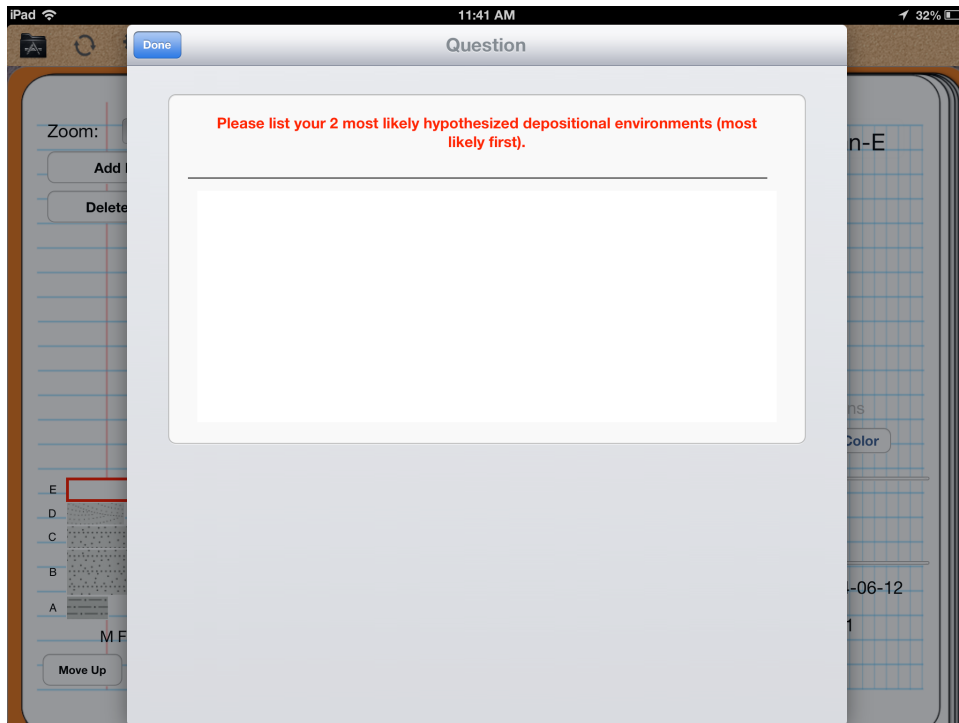


Figure 8. Initial response prompt in *StratLogger* after the first n beds of data.

In the process of subsequent data collection, the user will be prompted for responses to the following questions after every n beds in the pop-up window (Fig. 9):

- *Explain how your observations support your most likely hypothesized depositional environment. If your hypothesis has changed, please state the new hypothesis and the reasons for the change.*
- *Based on your most likely hypothesis, what do you expect to see in the next 10 measured beds?*

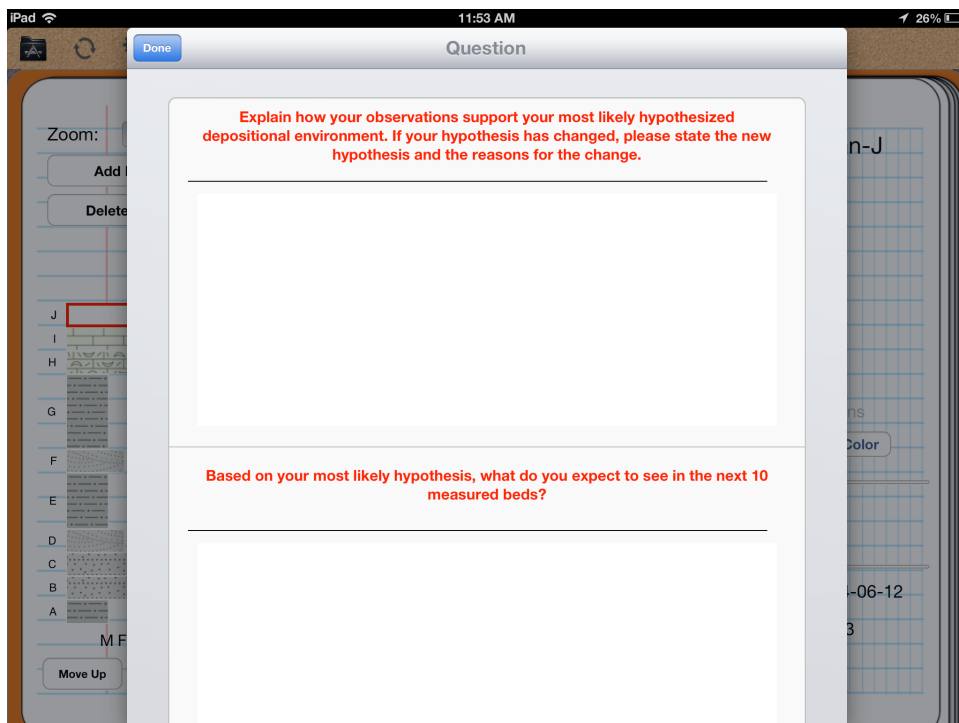


Figure 9. Repeated response prompts in *StratLogger* after each n beds of data.

12. Issues - Suggestions - Concerns

We welcome your feedback and will do our best to address issues in a timely fashion.

This document can be downloaded from:

<http://sites.lafayette.edu/stratlogger>

This application can be found online at:

Please contact us at:

stratlogger@lafayette.edu

Appendix A

Federal Geographic Data Committee (FGDC) lithology patterns used in *StratLogger*.

Conglomerate - 601	Intraclastic Limestone - 628	Lava Flow - 717
Breccia - 605	Bioclastic Limestone - 629	
Massive Sandstone - 607	Oolitic Limestone - 635	
Bedded Sandstone - 608	Pelitic Limestone - 636	
Cross-Bedded Sandstone - 609	Dolostone - 642	
Siltstone - 619	Chert - 649	
Shale - 620	Coal - 658	
Marl - 623	Gypsum/Anhydrite - 667	
Micrite - 626	Salt - 668	
Limestone - 627	Till - 681	