Overview
The reports generated by the AACR AutoReporter provide instructors with an overview of what ideas their students include when responding to questions about key concepts. The computer models are capable of automatically identifying and categorizing student ideas included in student written responses. Each idea is categorized by the computer model and returned along with a calculated probability that the computer categorized the idea in the same way a human would. While not intended for grading of individual responses, the report can be used to identify misconceptions and guide instructional decisions.

This guide includes a description of how to navigate to and interpret some basic data visualization functions as well as instructions for downloading computer-assigned scores.

Using the interactive report to analyze the data from your class responses
      Student Response Scoring
      Association Web Diagram
Downloading an AACR Feedback Report
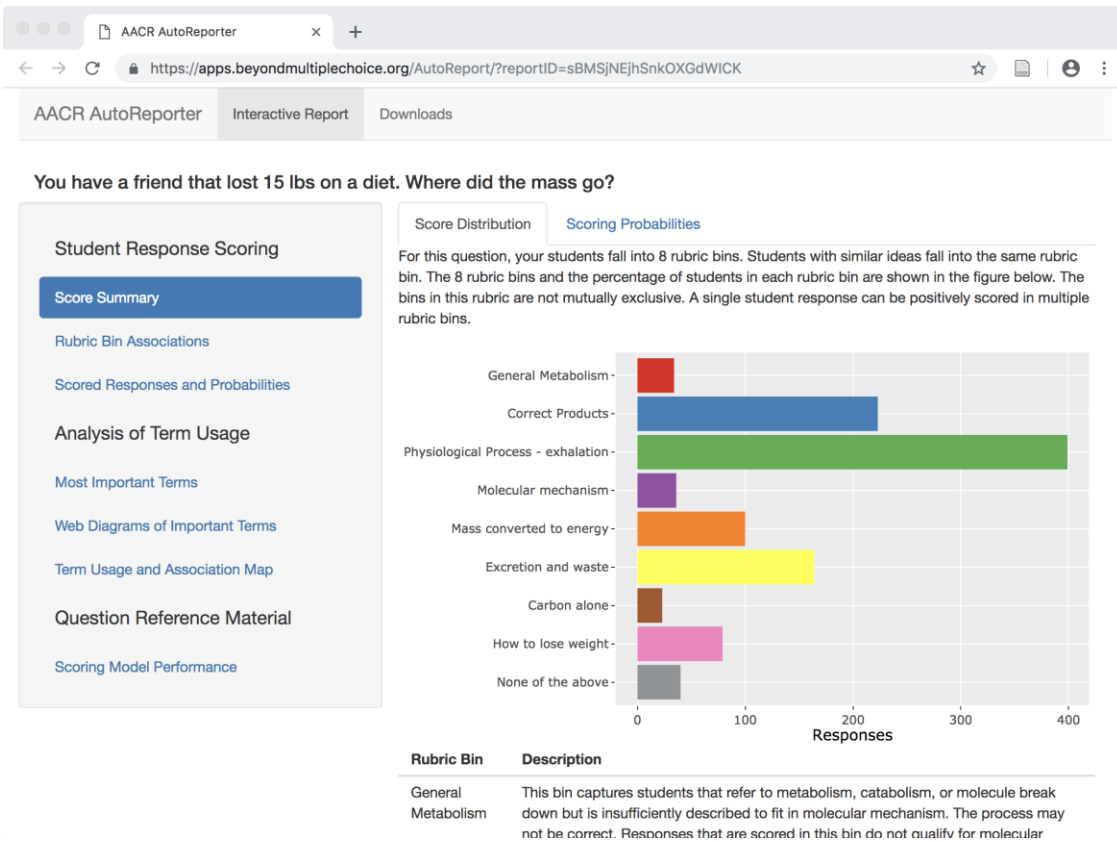   PDF Report
      CSV Report
Troubleshooting and Additional Help

The Automated Analysis of Constructed Response (AACR) research group creates computer models that can automatically score large numbers of student written responses. This guide includes instructions to describe using the output from the AACR apps to make instructional decisions; including two of the basic data visualization functions as well as downloading feedback repots and downloading predicted scores.
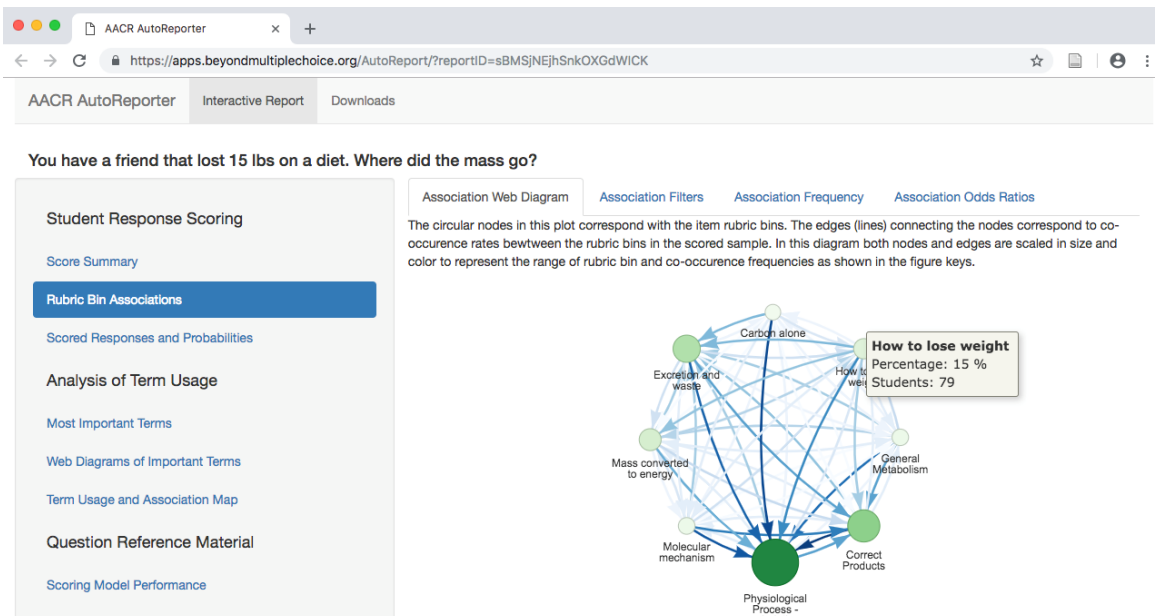
Using the interactive report to analyze the data from your class responses
This section describes two ways to visualize ideas included in responses at the class-wide level. The AACR scoring models use an analytic rubric, where each rubric bin captures an idea. Each student response can be classified into zero or more rubric bins. For example, the Weight Loss question contains eight rubric bins. One is 'Correct products' which captures the inclusion of CO_2 as a product of respiration, another is 'How to lose weight' which captures the inclusion of general dieting strategies. All rubric bin descriptions can be found on the report page.

1. After you have run your student responses through the AACR AutoReporter, you will receive an email from aacr.report@outlook.com that contains a unique link to your report. (Please do not respond to this email, it is not a monitored account).   You should retain this email for future access to this report so you do not need to resubmit your students' data.

2. Clicking on the link in the email will bring you to a page (example below) containing the results of the report for your students. At the top of the page, you will see the wording of the question.
   a. On the left, you will see links that allow you to visualize the student responses in several ways.
   b. The default view is the Score Summary. This graph gives you an overview of the proportions of responses scored in each bin.
   c. Below the graph, scroll down to read the description of each of the rubric bins.
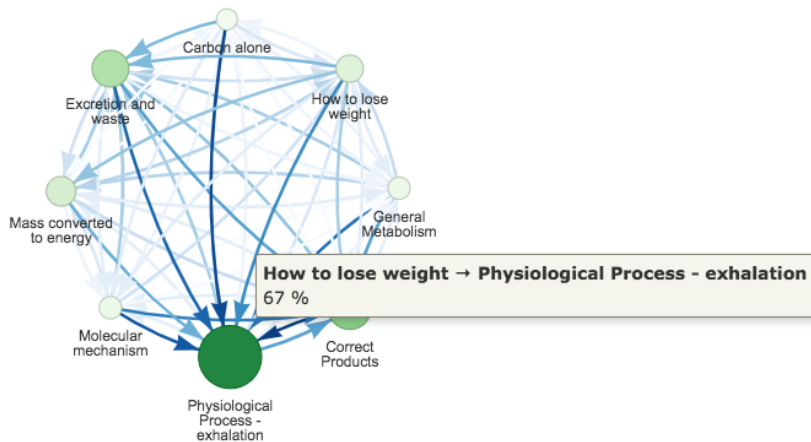
3. To see co-occurrence of ideas within your students' responses, click on <u>Rubric Bin Associations</u>. A page containing an Association Web Diagram will load (example below).

    a. In the Association Web Diagram, each rubric bin is depicted by a circular node and the lines connecting the nodes represent co-occurrence rates between rubric bins. The sizes of both lines and nodes are proportional to the frequency of co-occurrence and scores.

b. If you hover your cursor over a node, you will be able to see the percentage and number of student responses that were scored as that rubric bin. In the example above, 15% of student responses were scored as 'How to lose weight'.

c. If you hover your cursor over a line, you will be able to see the percentage of responses that included ideas scored in each of the two linked rubric bins. In the example below, 67% of student responses that were scored as 'How to lose weight' also were scored as 'Physiological Process – exhalation'.
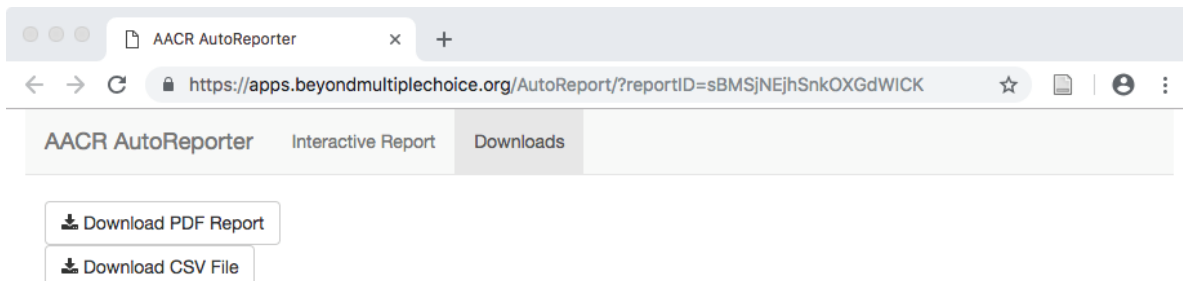

4. There are several other ways to view the information in the report. Find these by clicking on the links at the left and the tabs along the top of the diagrams. A short description of how each graphic represents the data is presented with each diagram.

To download an AACR Feedback Report:

AACR Feedback reports are pdf files that contains the Score Summary and Web Diagram, as well as other ways to interpret the report including Association Frequencies and Odds Ratios. If you are interested in the statistics and computer scoring details, you will find these in the report as well.

1. At the top of the webpage, click on Downloads. This will take you to the following page:

2. Click <u>Download PDF Report</u>. The default name is a shorthand name of the question; save with a filename and location you will remember.

To download scores for each student response:
This section describes the process used to re-associate the scores from each model with individual student identifiers. You may wish to do this to see what ideas were included in each students' response. The models use probabilities to assign a score for each bin, so we do not recommend using this to assign grades to students.

1. In the download tab, click <u>Download CSV File</u>. The default name is a shorthand name of the question; save with a filename and location you will remember.

2. Open the file in Excel. The file will contain a Student Response Column followed by columns for each rubric bin score and probability that the response falls in that bin. A "1" in the score column indicates that the model assigned the response a positive score for that rubric bin, a "0" indicates that the machine did not assign that response to that bin. Each score is also given a probability between 0 and 1 where 1 is the highest probability that the rubric bin was assigned a correct score.

3. The downloaded file will contain responses in the same order as the initial uploaded file. To associate the scores with student IDs or emails, copy the entire downloaded table and paste it into your original document text to the student IDs and responses.

Troubleshooting
If your report does not appear to be consistent with the student responses you submitted (e.g. if most responses are in the category 'None of the above'), check first page of the report as it will contain the text of the question for the report. If this is the wrong question click on the link for the correct question and resubmit your data there.