

## **GIKS User Manual (March 2025)**

### **Overview**

GIKS can be used for many purposes but was specifically designed for summary writing to learn STEM lesson content. For example, the prompt, “What did you do on your summer vacation?” or “what is the meaning of life?” are not good prompt for GIKS, while the prompt, “How does heat increase the rate of chemical reactions?” or “Summarize the main points that we just discussed in class” are acceptable GIKS prompts.

Because an outline of lesson content can be represented as a network graph, there is a 1-to-1 relationship between these two forms of information. So bottom line, if you can create an outline or a network graph that responds to the prompt that would be accepted by other instructors, then it is a good prompt for use with GIKS.

Because of screen-size limitations, although student essays in GIKS can be any length, GIKS was optimized to accommodate student essay summaries that are about 300-400 words in length that can be represented in a network that contains about 20 key terms. Although it varies by content density, as a rule of thumb, a 3,000 word text can be summarized in 300 words (a 10% compression rate). For practical purposes, this means that a 9,000 word-long textbook chapter would require about three, 300-word summary essays; and a typical PowerPoint lecture would require about one, 300-word essay.

The next sections provides step-by-step directions on using the Instructor Dashboard, on how to prepare an essay prompt in GIKS, and how to view the group average network.

### **Instructor Dashboard**

Go to GIKS at <https://giks.azurewebsites.net> and login. Select “Instructor” (green tab), then refer to Figure 1 below.

1. You can prepare a new writing prompt for a lesson by clicking the large plus sign, see the section below “Creating an essay prompt”
2. You can delete (forever) an existing lesson by clicking the X in the top right corner of that lesson. The instructor’s dashboard has several more features including:
3. You can download the roster of GIKS 5-digit IDs for the lesson as an MS Excel file (.csv format). Then you must manually assign each student to one of these GIKS IDs.
4. You can edit an existing lesson. Note that this feature is sometimes unreliable, so it is best to trial the writing prompt and correcting it before making it available to students.
5. If you misplace the URL for students to use to access the lesson, you can get the lesson URL by clicking the green “Link to lesson” button. Once students have

submitted essays, you can download all of the essays as an MS Excel file (.csv format), in case you need to read any of these essays or you need these essays for your records.

6. You can immediately view the group-average network of the essays for use in class or for planning remedial approaches. See the section below “Viewing the Group-average network”.

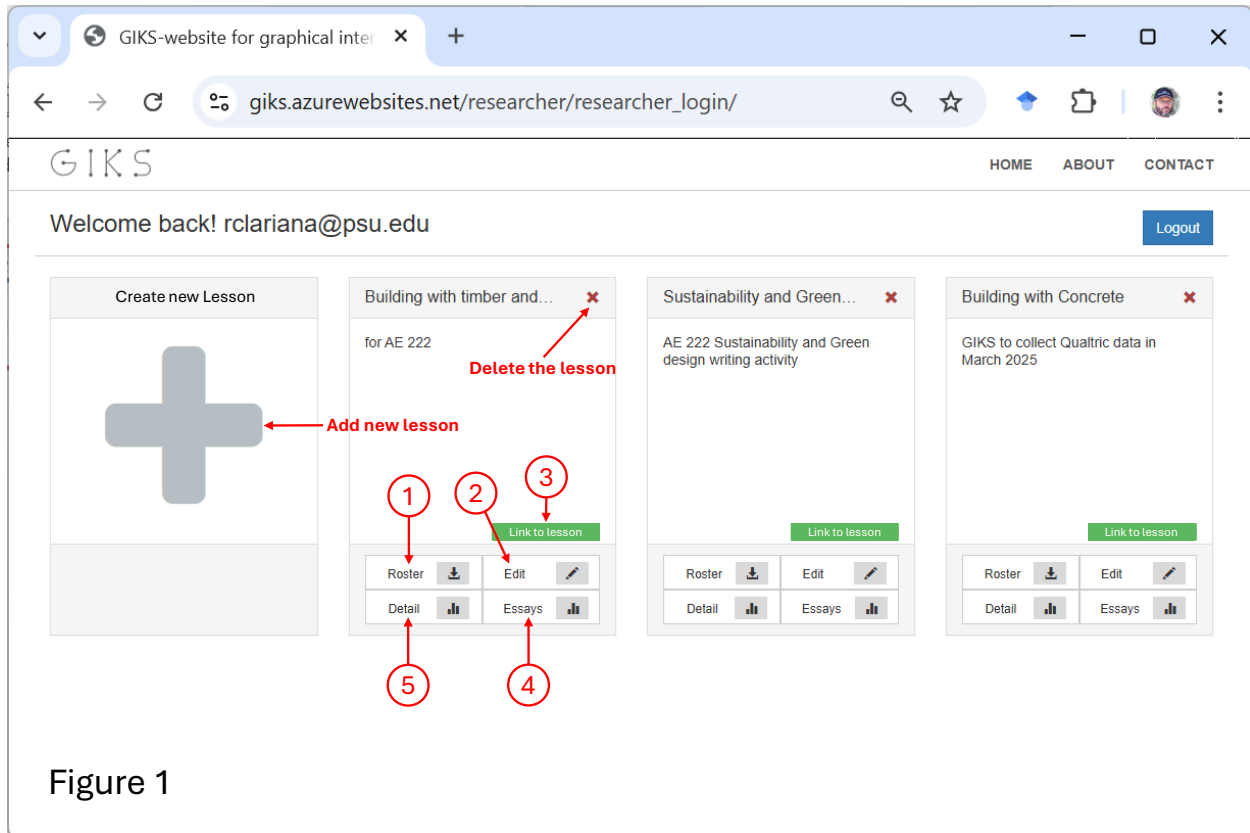
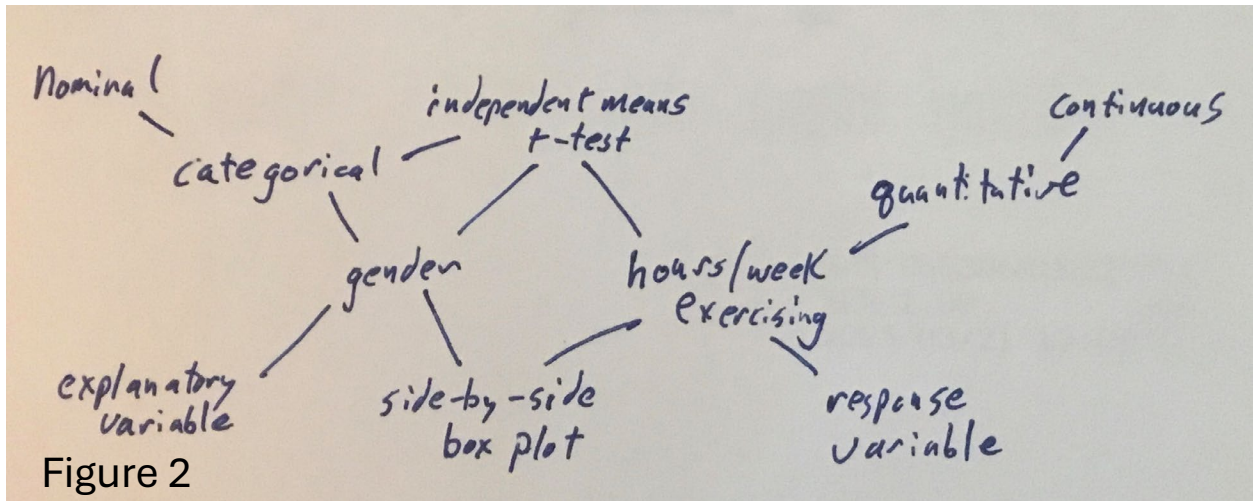


Figure 1

### **Preparing an essay prompt**

1. Determine the lesson content that you want to cover and draw a network map of it (see Figure 2 below). If your network has more than about 20 terms, then reduce the amount of content or use two prompts (etc.).
2. Manually convert your network into a text string. For example, here is the instructor's network that we used in an investigation in an undergraduate statistics class that covered one lecture/discussion session (Zimmerman et al, 2018).



And here is the term-term text string of this network, cross off each link as you add it to the text string: nominal – categorical – independent means t-test – gender – categorical – gender – explanatory variable – gender – side-by-side box plot – hour/week exercising – independent means t-test – hour/week exercising – response variable – hour/week exercising – quantitative – continuous

Notice that you will backtrack sometimes to pick up links that you missed, every term-term pair will be a link in the final instructor network. You will need this text string for step 4 below. Double check your final network text string that it correctly matches your network links, because bad or missing links in it will cause a lot of extra work later.

3. Go to GIKS at <https://giks.azurewebsites.net>, select the green tab to login as the instructor.
4. Select the large PLUS sign “Create New Lesson”
5. Enter information into the template boxes (see Figure 3 below)
  - 5.1 Add the writing prompt into the “Article content” box (e.g., “A team of researchers ...”
  - 5.2 Add the network text string from Step 2 above into the “Article Master Knowledge” box (e.g., “nominal – categorical – independent means t-test – gender ...”
  - 5.3 Add the keywords along with any synonyms for pattern matching(e.g., nominal, categorical, categor, ...). Note that the keywords are displayed in the networks, while both keywords and synonyms are used for pattern matching during essay analysis.
  - 5.4 When done, click the blue button “Preview and Setup the network”

GIKS-website for graphics x

coil-giks.rhcloud.com/researcher/ExperimentArticleContentEnter/

GIKS HOME OUR TEAM OUR RESEARCH -

### Enter Content and Meta Data for Article 1

Title

Article content

1

A team of researchers wants to compare men and women in terms of the number of hours they exercise each week. They obtain a sample of 100 individuals and ask each for their gender (man/woman) and how many hours per week they typically exercise.

(1) Describe the variables in this study

(2) Describe the graphs and statistical analyses that you would recommend to this research team.

Article Master knowledge (Optional) 2

nominal – categorical – Independent means t-test – gender – categorical – gender – explanatory variable – gender – side-by-side box plot – hour/week exercising – Independent means t-test – hour/week exercising – response variable – hour/week exercising – quantitative – continuous

Keywords 3

nominal -

categorical -

gender -

explanatory variable -

side-by-side box plot -

Independent means t-test -

hours per week exercising -

quantitative -

continuous -

response variable +

Synonym

Add a synonym +

categor +

sex +

explan +

box +

Independent t-test -

independent t test -

Add a synonym +

hours +

Add a synonym +

Add a synonym +

Reset Add one more article

Next: Preview and Setup the network

Figure 3

- After a moment, the network is displayed, drag the keywords around the screen to place them where each belongs, and check that the links are ok.

*But if the network links are not ok 😞*, you will need to go back and correct the original network text string in Step 2 above. To do this, click “Edit the article”, and then correct the term-term links in the Article Master knowledge text box and click “Preview and Setup the network”.

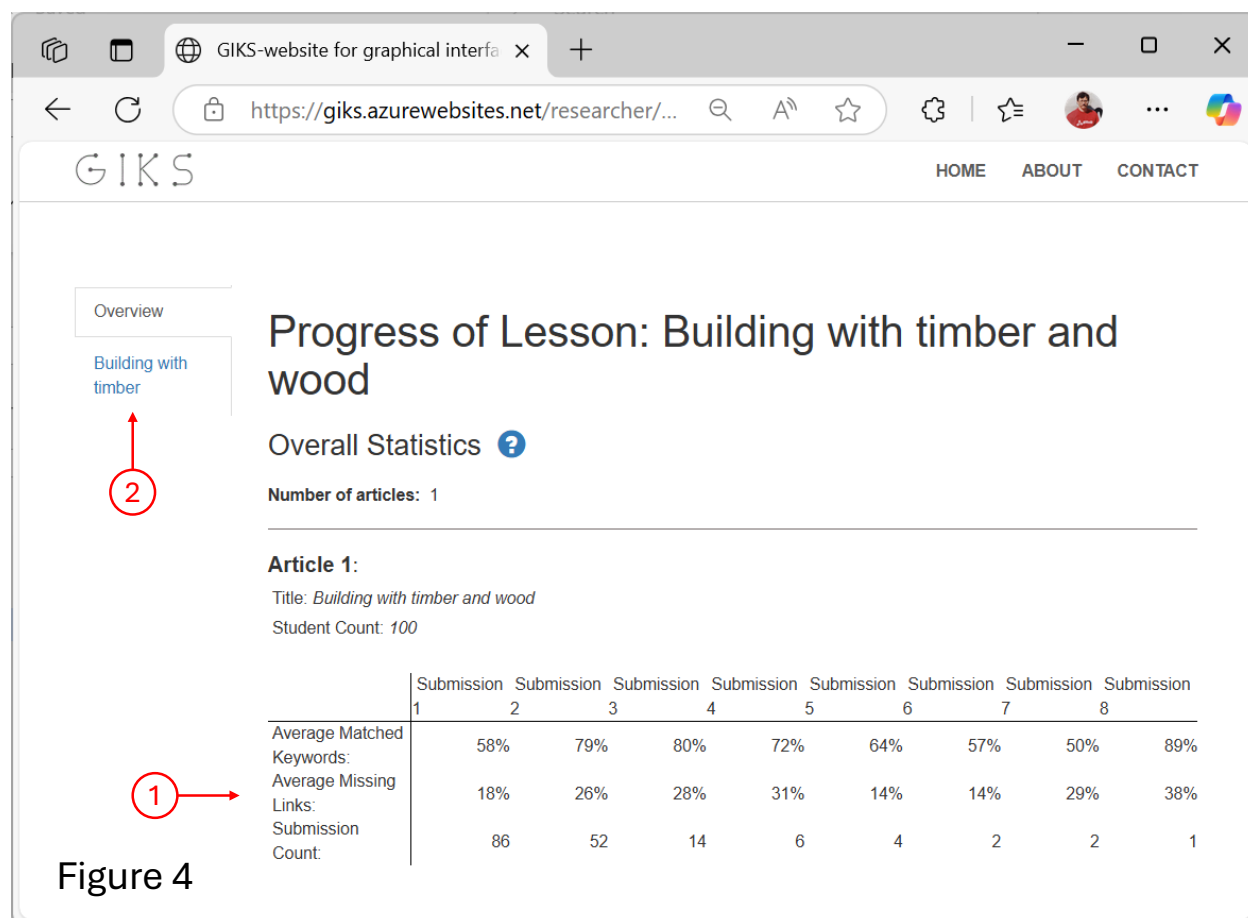
Finally, if all looks correct, click the blue button “Save all networks”.

- The final screen shows the unique ID for this prompt, a link that you can give to students so they can access the prompt, and a link to download the student roster containing the 5-digit IDs (a csv file that can be opened with MS Excel). You will need to give each student their unique ID from this roster. You will also receive a confirmation email with the same information.

## Viewing the Group-average network

The group-average network was designed to allow you to evaluate almost at-a-glance the group-level conceptual associations or your class for formative assessment such as re-teaching or assigning additional work if needed. The tool was specifically designed to be used in class like a “clicker”, for example during a lecture-discussion, pause and ask students to submit a summary essay on the content covered that day and then display the group-average network to the students and reflect together on the similarities and also the discrepancies between the expert (instructor) network and the group-average network. This real-time approach has been shown to be highly effective for changing students’ posttest essay to align with what is SAID. Outside of class summary writing with follow up instructor podcast reflection of the group-average network has been shown to be even more effective for changing students’ posttest essays to align with the expert network (Clariana, 2025)

1. To view the group-average network, go to the Instructor screen and click “Detail” (see #5 in Figure 1 above).
2. The Progress of Lesson screen will appear (see Figure 4 below).



3. The table displays how many students have submitted once (submission 1) and then revised (submission 2 on) including percent of keywords used in the essays and percent of term-term links that match the expert network. Notice that 86 students submitted at least once, as a group they attained 58% of the total key words and 18% similarity to the expert network. At submission 2, 52 of the 86 submitted a revised essay, as a group they now attained 79% of the total key words and 26% similarity to the expert network. Notice that one of these students resubmitted a revised essay 8 times.
4. To see the group-average network graph, click the heading just beneath Overview (see #2 above in Figure 4). For this lesson it is called Building with Timber. Yours will be labelled using whatever heading you used when you created the lesson prompt
5. The expert network and the group-average networks will be displayed. You will need to drag and then resize the networks to fit into the display window (see Figure 5).

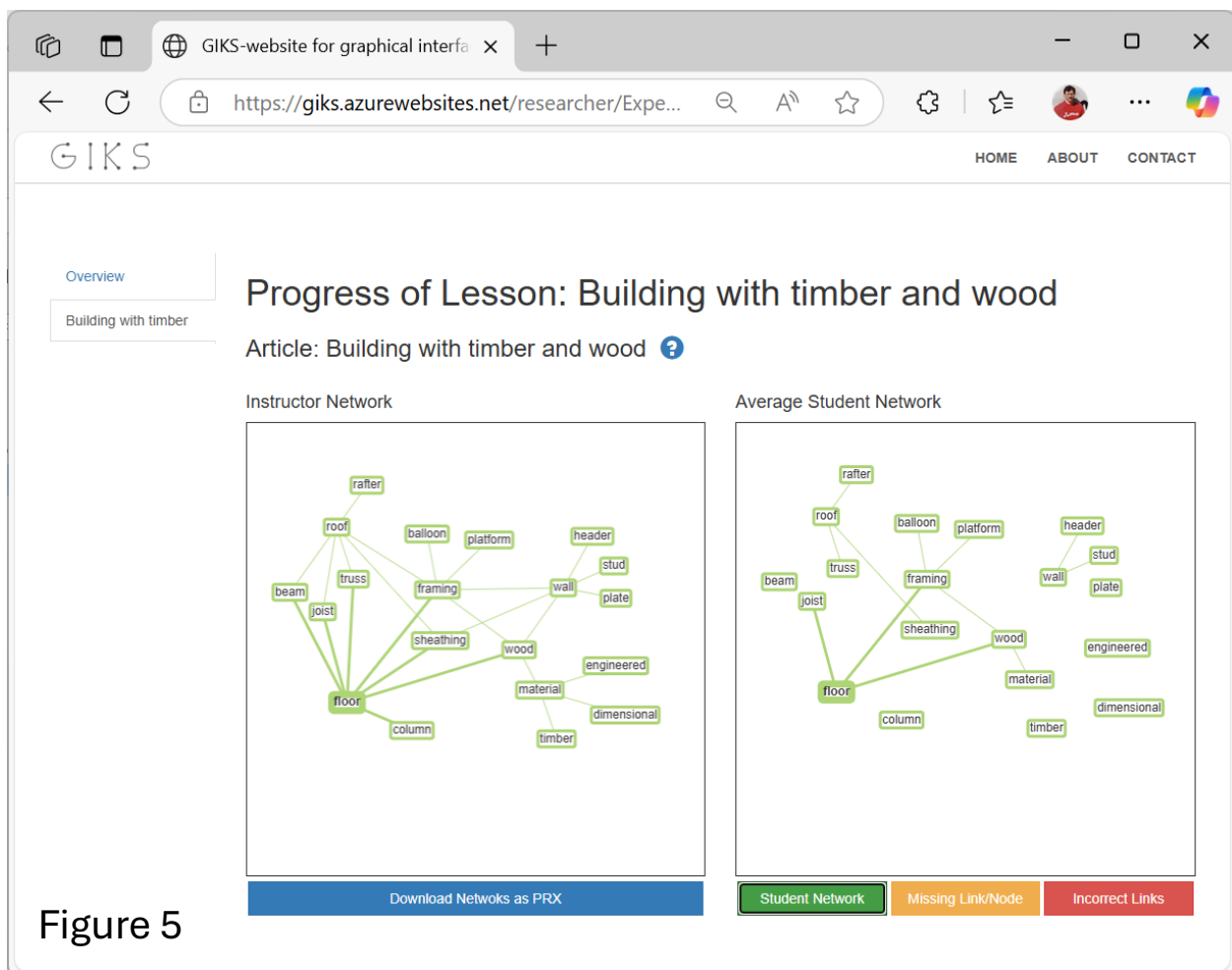


Figure 5

6. To drag the network to center it, click in white space beside the network and drag it where you want it to be.
7. Steps to resize the network depends on your device, if you have a touch pad you can resize by clicking the network once and then pinching it with two fingers. If you have a wheel on your mouse or keyboard, you can resize by clicking the network once and then turning the wheel.
8. Click the green button, Student Network, to see just the keywords and term-term links in the group-average network that matches the expert network. This view is probably the most useful for student reflection.

If you prefer video, here is a link to a 4-minutes long video summary of the Instructor dashboard <https://aera25-aera.ipostersessions.com/default.aspx?s=76-DC-E3-13-40-B6-C7-20-D5-8F-00-D0-9C-99-11-81&guestview=true>

## **References**

Clariana, R. B. (2025). Instructor-led structural knowledge reflection and conceptual structure of summary essays. An e-lightening presentation at the Annual Meeting of the American Educational Research Association (AERA) in Denver, CO. April 2025.

[aera-2025 \(iPosterSessions - an aMuze! Interactive system\)](#)

Zimmerman, W. A., Kang, H. B., Kim, K., Gao, M., Johnson, G., Clariana, R. B., & Zhang, F. (2018). Computer-automated approach for scoring short essays in an introductory statistics course. *Journal of Statistics Education*, 25, 40-47.

<https://www.tandfonline.com/doi/abs/10.1080/10691898.2018.1443047>