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Winner

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Submissions should comprise three parts: (1) A copy of the handouts or instructions that go to students. (2) An explanation of the exercise/ handout and of the principles behind it, addressed to future instructors who may use the material. (3) If possible, an example of a student response.

Submissions may range in length from one to four or five pages.

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The two winning entries will receive \$350; second place winners (if any) will receive \$125.

Submissions are due in 101 McGraw Hall by Tuesday, May 20. No exceptions can be made.

Spring 2014 Knight Award for Writing Exercises and Handouts

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Instructor's name DANIEL TAMAYO

Department ASTRO course # and title 1110 ARE WE ALONE IN THE UNIVERSE?

and/or national, about my winning the prize. I also grant the Knight Institute permission to deposit the writing exercises in a web accessible archive and make them available under a creative commons attribution, non-commercial license. I am prepared to send electronic versions of my text to Donna O'Hara (dlo1@cornell.edu) in the Knight Institute. I understand that I will receive the award for my prize-winning essay upon submission of the electronic text.

THINKING THROUGH AN ESSAY

Title of Writing Exercises

Instructor's signature

Damayo

Date

5/20/14

Abstract

In this activity, students practice isolating relevant information, and organizing this information into sound arguments that are clearly presented. It is designed to help students who uncritically try to incorporate too much course material into their essays. It is formatted as a hands-on and interactive 'jigsaw activity' to help ensure all students are actively engaged.

Keywords: Organization, paragraphs, outlining, logic, arguments, jigsaw, interactive

Thinking through an essay

When faced with writing an essay, many incoming college writers go through their class notes and indiscriminately incorporate as much of the covered material as possible. The reason for this pattern is simple. If your teacher is grading quickly, scanning for specific points, this can be a great strategy. Some students know their ultimate audience all too well!

But this strategy often flounders in college courses, where expectations are higher and essay prompts often lend themselves to a wider variety of responses. The issue is that this simple recall of points/facts, while important, represents only a first step. Professors, and later on your future colleagues and clients, want more than facts—Google will always be a better amalgamator of facts than you or I. The value that you bring lies in your ability to isolate the points that are relevant, and then to organize and synthesize them into novel ideas and strong arguments.

This will be an important theme throughout the course. As a first exercise, we will work with the prompt for essay #3, which is a fairly structured prompt:

*You are writing to a group of foreign oil investors to convince them that human emissions of carbon dioxide are causing global warming. This will require you to make at least three separate arguments: **a) the Earth is warming, b) carbon dioxide levels are rising and are the most likely cause of rising temperatures, and c) this rise in carbon dioxide is caused by humans (rather than natural).** You should assume that they will be skeptical of these claims.*

Overview:

We will start at the typical place for most college courses—a list of points taken from class notes (assume all are true). Your group of 3 (or 2) will be given 22 strips with such statements. You will then be assigned one of the three sub-arguments above (a, b, or c). In your group you must then identify the points that specifically apply to your sub-argument (and convince your teammates you are right).

You will then be rearranged into a group that all have the same sub-argument as you, where you will figure out the best order in which to present your points and organize them into paragraphs.

Finally, you will go back to your original group, write out an outline, and we'll vote on the best outline as a class.

Specific instructions: In your group of three:

- 1) Find out what residence halls you all live in. The first dorm in alphabetical order gets argument **a)** above, middle gets **b)** and last gets **c)**. Break ties by room number, and use street name if you live in a house.
- 2) Decide which points are most immediately tied to your respective sub-arguments. Discard any that are superfluous (several are!). Keep in mind that each subargument can assume the conclusion of previous ones, e.g., b)

and c) can assume that it has been established that global temperatures are rising.

- 3) When time is called, find all the people with your subargument, and divide into two groups.
- 4) In your new group, decide on the best order in which to present your points, as well as whether you think you should split some into separate paragraphs. For each paragraph, write a sentence that summarizes the paragraph's purpose (a topic sentence), e.g., 'Jeff's crucial mistake was choosing Pepsi over Coke. Supporting points, in order: 3,7,12,18'. **Make sure you're involved in this conversation as you'll be presenting it back to your original group!**
- 5) When time is called, get back into your original groups and write out an outline for the body of the paper (**excluding an introduction and conclusion**) using your developed topic sentences and sequences of points for each paragraph. When you are happy with your outline, write a copy out on the board.
- 6) Vote on your favorite (not your own)!

Take-away Points:

- This doesn't take long. If it seemed to work for you, give it a try on your next essay! The more you do it, the faster and better it will go.
- This is not the only, nor the best, way for everyone to organize their thoughts. But whatever you do, make you sure you evaluate whether your essay might be organized better. Don't be afraid to move things around and cut parts out completely. Think about what's essential, and present it in the most cogent way possible.
- Thinking on the paragraph level can be a powerful way to make sure your argument flows in a logically developed manner. This is particularly valuable for a challenging essay topic.

Strips

Cut out ~6 sets (1 set per group)

1. Carbon dioxide can raise global temperatures by efficiently trapping the heat that is emitted by Earth.
2. Over the last few decades, several species have been migrating poleward and upward.
3. As temperatures rise, evaporation from lakes and oceans increases.
4. The lower atmosphere seemed to be cooling but this turned out to be due to the fact that the spacecraft was taking temperatures at progressively later times in the day.
5. Models where 46% of the carbon dioxide emitted by humans remains in the atmosphere accurately match measurements of the rise in atmospheric carbon dioxide in the last century.
6. Ice cores show that greenhouse gas levels and the changing amount of solar energy reaching Earth adequately explain the temperature variations in Earth's past.
7. Fossil fuel companies try to sway public opinion by casting doubt on climate science. Tobacco companies used similar strategies with scientific studies investigating the health risks of smoking.
8. About half of the carbon dioxide released into the atmosphere is expected to be absorbed by the oceans.
9. Ocean probes show that the oceans' heat content is rising.
10. Measurements in corals (which ultimately build their carbonate skeletons from atmospheric carbon dioxide) show that the air's carbon dioxide has been getting lighter over the last century.
11. Glaciers (large masses of ice on land) across the globe are melting.
12. Several scientists in the 1970's used to think that increasing particulates from pollution would prevent sunlight from reaching the Earth's surface and cool the planet.
13. The amount of solar energy reaching the Earth has been effectively constant over the last few decades.

14. Earth's water gives rise to a positive feedback loop on temperature. If temperatures rise, increased evaporation leads to larger concentrations of water vapor (a greenhouse gas) in the atmosphere, which increases temperatures further, leading to more evaporation etc.

15. As the Sun ages over billions of years, and the Earth's orbit and axial tilt vary over tens of thousands of years, the amount of energy reaching Earth and heating it changes.

16. Carbon dioxide (a greenhouse gas) levels in the atmosphere are higher than they have been in at least 2 million years, and have increased sharply in the last century.

17. The world's average snow cover is decreasing.

18. While climate models invariably forecast rising temperatures, various climate feedbacks (like the water vapor feedback) make it difficult to predict exactly how much temperatures will rise.

19. Humidity (the amount of water vapor in the atmosphere) is increasing.

20. Carbon dioxide created by humans can be identified among naturally occurring carbon dioxide by its isotopic signature—man-made carbon dioxide is on average lighter than natural atmospheric carbon dioxide.

21. Average global temperatures are higher and have been increasing faster in the last few decades than they have in the last 1000 years.

22. With increasing population and industrialization in the last century, human emissions of carbon dioxide into the atmosphere have risen dramatically.

Explanation

In terms of a single improvement to student writing, I believe this was the most effective activity I created this semester. It was motivated by several early student essays that simply regurgitated all the information from class that was even remotely connected to the prompt, with little critical thinking or organization. I wanted students to learn to critically evaluate their arguments, and present them in clear, organized fashion.

This activity helped students tackle the prompt for their third essay. To isolate critical thinking and organization, the prompt is quite structured. Later prompts asked them to develop original arguments.

The exercise asks students to go through several statements (all drawn from our class discussions and readings). They first choose which ones belong to which argument (discarding irrelevant ones!), and then organize the statements into a cogent outline of the arguments they would make in their paper.

One aspect of the exercise that worked extremely well was its format as a 'jigsaw activity.' Students started in a 'home group,' where they were given strips of all the statements, and were assigned to one of three subarguments. They then had to figure out which of the strips belonged to whom, and which were superfluous. The groups then broke out into 'expert groups,' where everyone is working on the same subargument. Here they could compare what statements they each brought with them, and figure out the best order in which to place them into an outline of their argument. Finally, everyone returned to their 'home group,' where they reported what they each figured out in their expert groups, coming up with an outline for the whole essay.

This was great for several reasons. It meant that everyone had to be engaged, since each person had an independent sub-argument they had to report to their 'home group.' This way a few people couldn't do all the work. It also was a good way early in the semester to get students talking among different groups in the classroom.

Making it a hands-on activity with strips also worked well. Students' ability to move strips around, and physically see an outline led to a lot of interactivity and debate (compared to previous activities I had tried). The students really got into it, and I overheard several fantastic conversations, with students giving *each other* precisely the types of comments I would have given them on their papers.

Overall, I was extremely happy with this activity. One thing I regretted is that we ran out of time to vote at the end. The activity really requires a full hour, but I would not hesitate to devote that much time to doing it again if I re-taught the course.

The activity can also be straightforwardly adapted to different essay prompts, and I would highly recommend the 'jigsaw activity' format to other instructors. Unfortunately, the activity did not lend itself to providing a student response!