Creating Engaging Discussions

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Word Map

Using the provided link, follow the prompts to participate in our first exercise:

PollEv.com/vanessaleonardo110

You may be asked to accept cookies and to enter your name.

Enter your name or choose “skip” at the bottom of the pop-up window.

Once your reach the intended page, answer the prompt as many times as you’d like.

The Challenge

Creating Discussion prompts seems to be one of the most challenging aspects of course design for instructors. In a STEAM-based university, we typically get prompts along the lines of the following:

Prompt: What is the difference between noise and outliers? Identify the sources of noise and outliers. What makes a datapoint to be an outlier instead of a noisey datapoint?

How Do I Create Engaging Discussion Questions?

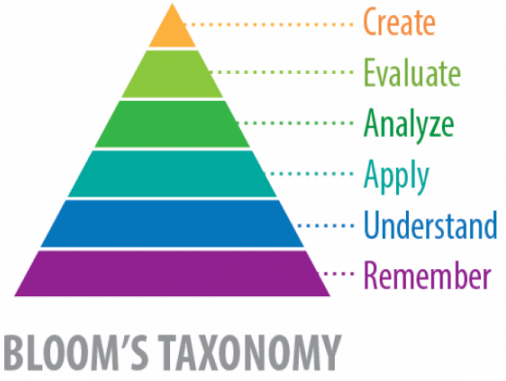
To do this, you will have to look beyond the dry writing prompts and uninspired reading-comprehension questions that so often sink a conversation before it begins. You'll have to craft questions that inspire students to actually engage and interact with each other in a lively discussion.-Eduflow

Methods to Creating Engaging Questions

Using Bloom's Taxonomy

In order to promote posts that elicit discussion among students, we want to avoid asking the students what Bloom would consider lower-order thinking questions (Applying, Understanding, Remembering).

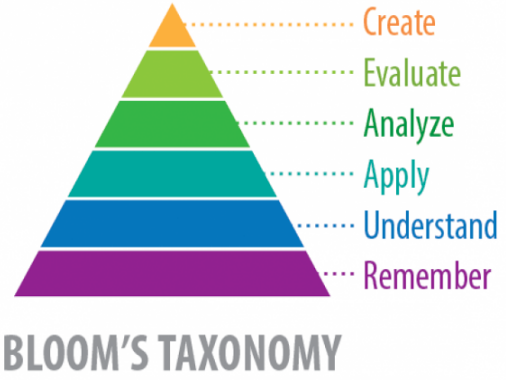
So asking the students, "What is a chemical bond? Why do atoms form bonds with each other?" will result in students having the same answer and nothing to talk about.



Using Bloom's Taxonomy Cont…

Instead we want to encourage them to Analyze, Evaluate and Create.

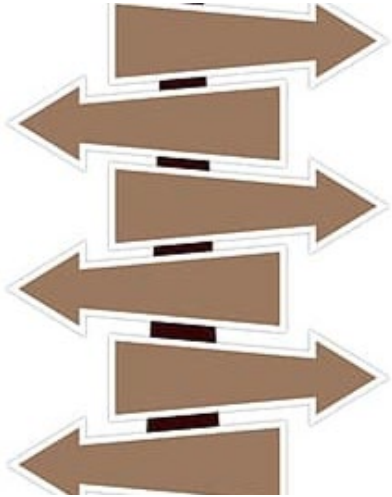
Come up with hypothetical situations for the students to analyze. Ask students to create/invent something based on what they know/learn. Provide students with information that they will have to evaluate and formulate opinions on.



Consider Divergent Thinking

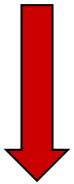
Divergent questions are usually scenario-based, prompting for alternative scenarios, or provide examples.They have no specific answer.

E.g.: Consider the tenants of data analysis as covered in our last chapter. How would you apply this to your use of Social Media? What data analysis would you use? What do you expect to see versus what do you find?



Create Open-ended Questions

Closed-ended-Define artificial intelligence.



Open-ended-What are some ethical issues that come up regarding artificial intelligence? Provide examples for each and discuss some possible solutions that can be used to prevent these issues from arising.

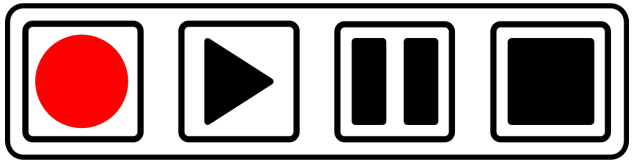
Adding Layers

Add questions to the main prompt that stimulate thought and conversation.

Example 1-“You want to describe the various means of police patrols (e.g. boat, bicycle, foot, horseback, motorized patrol) being utilized throughout different cities in the Midwest. Assume that there are a total of 4,000 police departments in this geographic area. Discuss how you would create a sample of police departments to include in this study. What sampling strategy and sampling technique would you use? What might be the strengths and weaknesses of using your approach?”

Audio/Video Interactivity

Asking the students to provide audio/video clips of their post helps to differentiate the discussions from the regular text-based ones. You can ask students to post videos in which they perform tasks like introducing themselves, presenting information, voicing their opinions on a topic or demonstrating how to do something. With a little bit of instruction on how to initially post their videos, students usually are able to do so relatively easily.



Prepare Follow-up Questions

Initial Prompt-In order to provide culturally appropriate services to diverse populations, several competency areas should be addressed. Using 200-300 words, explain why it is important that health educators to be aware of diversity. What is a health educator's role in ensuring diversity? APA Citations and references as appropriate.

Follow-up Question-Explain why health educators should first look at and understand their own personal belief systems regarding diversity. How does a health educator do this?

12 Principles to Guide Class Discussion

(Stallbaumer-Beishline, 2021)

1. Student must be prepared for discussion.
2. Students must feel safe to express themselves.
3. Students need good reasons to listen actively.
4. Students respond well to a variety of structured discussion formats.
5. Students contribute as equally as the discussion structure requires.
6. Students respond well to questions with multiple good answers.
7. Students benefit from having time to think before contributing.

(Stallbaumer-Beishline, 2021)

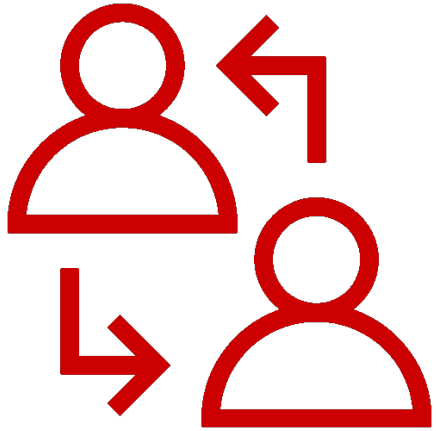
8. Students can benefit from expressing themselves in motion and space.

9. Students can benefit from expressing themselves graphically.

10. Students respond well to novel stimuli, such as outside ideas or research.

11. Students participate according to how effectively a discussion is moderated.

12. Students must see their personal value as separate from the value of their contributions.



(Stallbaumer-Beishline, 2021)

Discussion Exercises

Let’s take a look at some real examples!

For each question, determine which of the following is the strongest discussion question?

Question 1

Subject: Chemistry

a. What is a chemical bond? Why do atoms form bonds with each other?
b. Define chemical bonds. Explain how atoms form bonds with each other.
c. In your own words, define a chemical bond and explain how atoms form bonds with each other. Give an example of… How does this relate to your work?

Question 2

Subject: Statistics

a. What roles does Statistical Learning play in our life?
b. Based on your personal opinions or experience, please list at least four roles of statistical learning in our daily lives. Give detailed examples.
c. As we learned from this week's lecture, Statistical learning plays a key role in many areas of science, finance and industry. One example provided was that of the case of Andrew Pole who was hired by Target's Marketing Department to see if there was a way to use statistics and predictive analytics to determine whether a customer was pregnant. Pole and his colleagues were able to identify about 25 products that, when analyzed together, allowed him to assign each shopper a "pregnancy prediction" score. More importantly, he could also estimate when a woman's due date was so that Target could send coupons timed to very specific stages of her pregnancy.

   In your opinion, what are some other companies that you can see hiring statisticians to do this type of research? What types of consumers might they want to target? What might be some ethical implications of using statistics and predictive analytics to determine the shopping habits of customers?

Question 3

Subject: Career Prep

a. What are “killer questions”? Provide an example of a “killer question”. Why do employers sometimes use these types of questions for interviews?
b. Pretend that you are an employer and about to interview some potential candidates. Define the position title and create 3 killer questions that you might use to hire the right person for the job. What types of answers would you expect? What types of answers would be ideal to you? Are there any responses that you would find unacceptable?
c. Interviewers often ask weird questions to see if candidates would be a good fit with the other employees and the company culture. Additionally, employers ask weird interview questions to test the applicant's critical and analytical thinking. How would you respond if you were asked the following “killer questions”?
    - How do you react if others around you are demotivated or negative?
    - What would you plan to do in the first three months of this new role
    - What achievement that is not on your CV are you most proud of?
    - What is the biggest mistake you’ve ever made and what did you learn from it?
    - What would it mean to you if you didn’t get the job?

Question 4

Subject: Machine Learning

a. What are the similarities & differences between machine learning and human learning?
b. Would you rather teach a robot or develop “algorithms” so the robot can learn by watching YouTube videos of these activities? Explain your answer and provide examples.
c. Describe how you would teach a robot to do any of the activities by providing a few details of physics/math/space-time information:
    - Learning to walk
    - Learning to ride a bicycle

    Does the human brain need that level of details? Why?

Examples by Discipline

Accounting- The revenue recognition principle and the expense recognition principle require that the company recognize related revenue and expense transactions in the same accounting period. Discuss why this matching concept is important and explain how the financial information would be misleading if the accountant did not follow these rules. Provide examples in your discussion to demonstrate your point(s).

Math- There are some bizarre examples of correlation between non related variables. Find one such example (either a videos or an article) and give a brief summary. Make sure to cite the video/article or attach a link.

Chemistry- A student used a machine called a mass spectrometer to find the molecular mass of chlorine molecules. After looking at his databook he was expecting to get a reading of 71 amu (atomic mass units), but his results showed three different masses, 70 amu, 72 amu and 74 amu. Using your knowledge of chemistry, explain the results and how the student's misconception occurred.

Biology- Human impacts on the environment can be obvious and have an immediate effect, like oil spills. However, they can also be less obvious due to the time it takes for the negative consequences to become apparent, like pollution and climate change. Research a threat to biodiversity caused by humans. Discuss the threat and suggest ways we could stop it.

Cybersecurity- What is the role of government in securing cyberspace? Where should the power and responsibility of national governments begin and end in cyberspace? Is cyberspace at risk of being “militarized”? Justify with examples.

Computer Science- If you had the resources to design a computer with a brand new user interface, what would your priorities be? Make a rank-ordered list of the qualities you’d like to have in your user interface. For each quality, provide a specific example and explain why you included it on your list.

Engineering- Is it possible to develop a sustainable, environmentally-friendly construction with the concept of smart city, green building and social and housing policy (i.e. building housing available for citizens with low incomes) and at the same time, housing that would meet the principles of sustainable pro-ecological economic development? Explain your answer.

Health- Using 200-300 words, if you could design a bio surveillance system from scratch, what information would you want to collect and how? How would you relay that information to the decision makers.

Human Resources- As we learned in this week's lecture, there are clear benefits to employers using Electronic performance monitoring (EPM) of employees in the workplace. These benefits include reducing theft, improving safety and increasing productivity by decreasing the likelihood that employees will engage in non-work activities (e.g., online shopping, fantasy sports play, taking extra-long breaks). In your opinion, what might be some negative impacts on employees/organizations that use EPM? As an employee, how would you feel if you knew you were being monitored in this way?

Any questions?

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