



The Daily Question: Building Student Trust and Interest in **Your Course**



CDR Matthew Hawks, Permanent Military (Assistant) Professor of Mathematics
All images courtesy of the US Naval Academy Public Affairs Office



About the Topic

- Presented June 2017, Association of Christians in the Mathematical Sciences (ACMS) conference, Charleston Southern University
- Peer-reviewed paper appears in the conference proceedings
 - A list of questions appears in the appendix

Association of Christians in the Mathematical Sciences
PROCEEDINGS ACMS

May 2018, Volume 21

- www.acmsonline.org



Setting: USNA Academics

- Graduates serve at least five years as officers in the Navy or Marine Corps
- Small sections (17-21 students) – mandatory attendance
- No teaching assistants
- Time pressure – 6 courses and PE
- Peer competition for future positions
- Math requirements:
 - Core requirement: Four courses.
 - Three Calculus, one other
 - Several fourth course options
 - Most humanities majors take Introductory Statistics or Probability with Naval Applications



Your setting is different, but this technique should be transferable.



Daily Question: What is it?

- Instructor poses a question to the class
- Start with a student (vary rotation)
- Census of each student
- Follow-on question (or not)
- Instructor answers last

Takes less than 5 minutes





Daily Question Ground Rules

- Passing is always an option
- Answers stay in the classroom
- Instructor answers questions too
- Course policies apply:
 - The classroom is a place of mutual respect.
 - We won't belittle people for expressing opinions.
 - Debates and critical analysis are good; personal attacks are not.
 - We won't tolerate crude, sexually explicit or offensive jokes or remarks.
 - We won't use profanity.



Questions to Introduce Topics

Topic	Question
Data Classification	What is your birth order?
Summarizing Data Exploratory Data Analysis	How much sleep did you get in last 24 hours? How many times did you take ACT/SAT? What was the size of your high school class?
Unions and Intersections	Form groups of three. What's the most bizarre thing you have in common?
Binomial - Independent trials with two outcomes	What was your first job? (paper route: complaints are go/no-go)
Fundamental Counting Principle	What is your favorite home-cooked meal? Students put on board under categories (entrée, side, dessert) If this is the menu, how many entrée-side-dessert meals are available?
Measures of Relative Position	What were you known for in high school? Afterward, discuss published institution freshman profile with quartiles.
Hypothesis Testing – court analogy	Describe a run-in with law enforcement or the USNA conduct system.
Central Limit Theorem	How tall are you? In groups, collect data, compare group and individual averages.



Questions to Establish Trust

- Do you have an irrational fear or strange addiction?
- Tell us something quirky about you.
- What is the funniest thing you did as a child that people still talk about?
- What is the story behind your name?
- What is your favorite way to procrastinate?
- What is your pet peeve?



Questions Revealing Identity

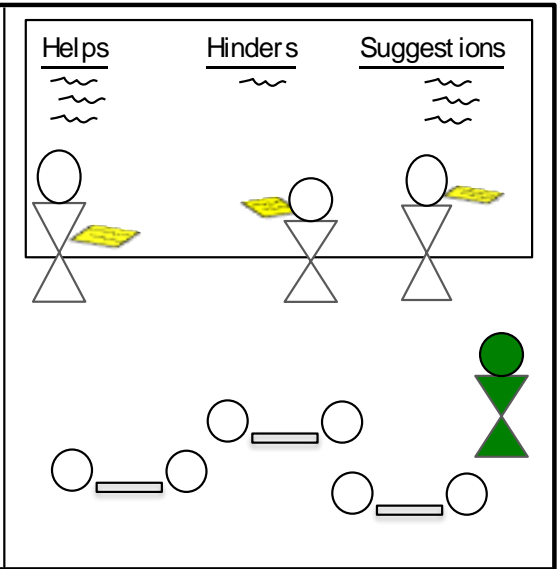
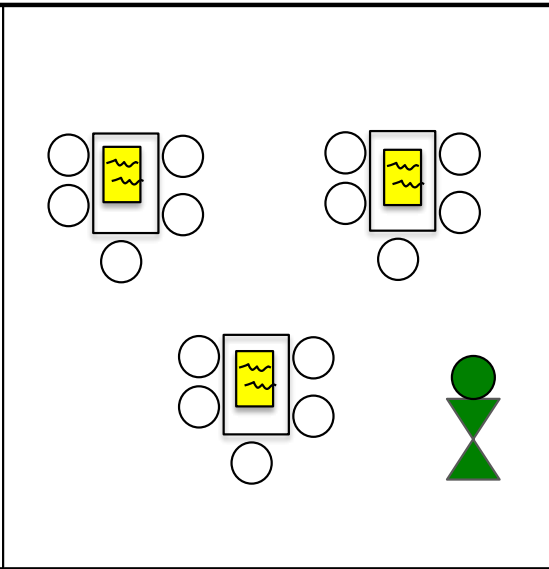
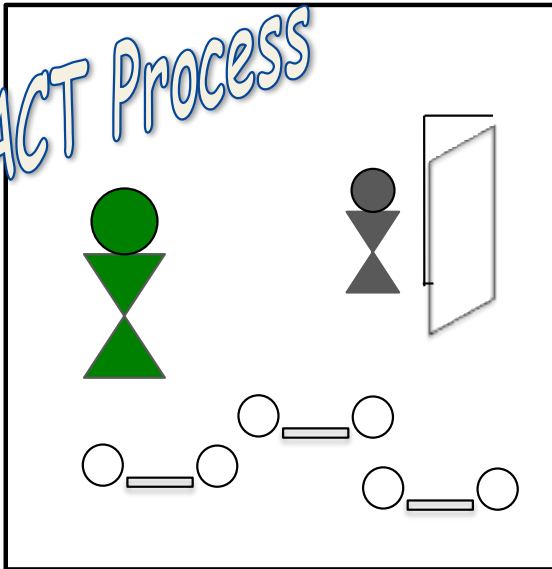
- What accomplishment are you most proud of?
- For what reason do others seek your help or advice?
- What is the kindest act you ever witnessed?
- Have you ever experienced something unexplained or supernatural?
- What is one thing that is important for other people to know about you?
- What is something you believe that most people might not believe?



Preliminary Results

- Midterm assessments
 - FACTs and anonymous midterm surveys
 - **Daily questions reported to help learning**
- End-of-semester student opinion forms
 - 81 of 247 students (33% across 12 sections) directly mentioned the daily question in their end-of-semester Student Opinion Forms, all positively.

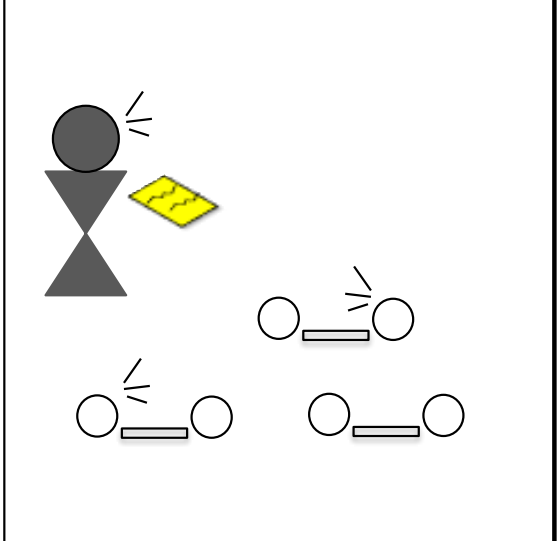
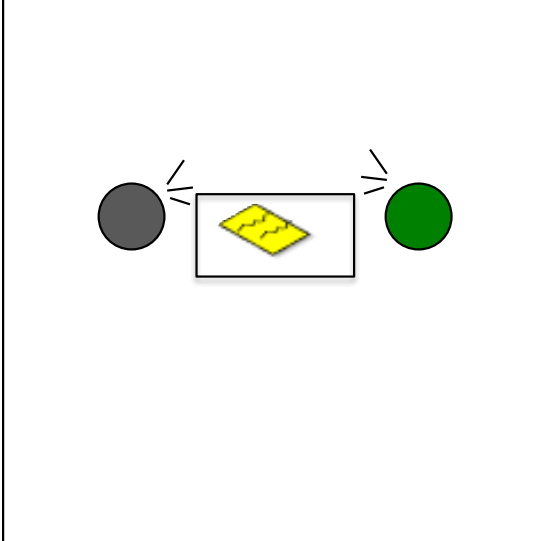
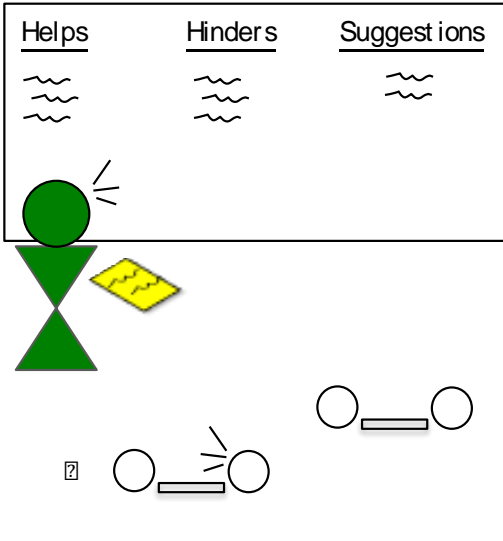
FACT Process



Prof leaves room 20 mins before the end of class.

Students discuss in groups and record "Helps, Hinders, Suggestions"

Students write on board their groups' "Helps, Hinders, Suggestions"



FACT Consultant asks for clarification

FACT Consultant gives the **only** list of "Helps, Hinders, Suggestions" to Prof

Prof discusses feedback with students



Daily Question Benefits I

- *Warning* cherry-picked quotes from each section follow.
- “Made the classroom a very comfortable environment. I like coming to this class. I learned a lot from the life questions he’d ask us.”
- “He fosters an atmosphere of community by asking daily questions. I was skeptical at first, but it doesn’t eat up our class time – we still learn all the knowledge we need to know + we now know more about each other than we would ever have known otherwise – people have come up to me outside of class to discuss my remarks in class with me.”
- “The use of personal questions of the day gave the classroom a relaxed atmosphere. Which is good in a math class – because math is stressful.”
- “[The] question of the day is great and gets the class to know each other and be involved.”
- “Best teacher I have had when it comes to atmosphere, relationship, and interest. I think the question of the day should be used in every classroom on the yard. It takes two minutes, and changes the dynamic of the entire classroom. I think every professor should adopt this.”
- “CDR Hawks was very close with the class and formed a close and professional relationship.”



Daily Question Benefits II

- *Warning* cherry-picked quotes from each section follow.
- “He had a great relationship with us. he is approachable and created a great atmosphere in the class. His daily questions were very insightful and gave proof that he cared and was interested in all of us not just as students but as future naval officers.”
- “He has us answer daily questions that give us little insights about him and each other and he balances sharing enough, but not too much, information extremely well.”
- “Question of the day was awesome. I enjoyed it and it helped make a 75-minute period more bearable. Very personable and humorous.”
- “I love that he does ice breaker question in the beginning of class, i feel that it makes the class more connected as we get to know each other better. It creates an even more open environment that sparks class discussions and enthusiasm to do the work.”
- “Knew all students by name and asked a statistic question at the beginning of class to allows students to get to know their classmates better and for him to get to know us better.”
- “Daily questions were a great way to build a relationship with students and the professor.”



Why Might the Daily Question Work?

- Provides opportunity for self-expression
- Allows students to learn about each other
- Communicates value for every individual
- Enables personal and professional sharing from the instructor

- It is a secret weapon:
 - Opens the aperture to learning



Some Caveats

- Champion civility – it will be challenged
- Enforce class policies – they will be tested
- Be focused – distractions are a killer
- Maintain awareness of time – ok to limit
- Be honest – inauthenticity is a death knell

- Be ready for your classroom to become a community



Next steps

- Continue to incorporate in future courses
- Find more ways to relate the daily question to course material
- Improve assessment of this technique
- Spread this practice!
 - ACMS May 2017
 - USNA CTL May 2018
 - JMM January 2019
 - USCOTS May 2019
 - [Your favorite SE conference]





Selected References

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- Renninger, K. A., & Hidi, S. (2002). Student interest and achievement: Developmental issues raised by a case study. In *Development of achievement motivation* (pp. 173-195). Academic Press.
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