

**Ten Tips for Teaching STEM Genres**  
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**+ The program at MIT**

- Graduates and undergraduates
- STEM-focused writing courses
- Speaking and listening

**+ Genres for Science, Technology, Engineering, & Mathematics**

- Extended Definition
- Process Description
- Problem-Solution
- Data Commentary

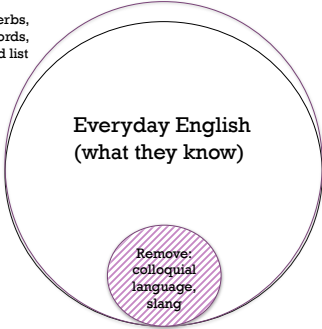
■ *Still need to adhere to academic style.*

**+ #1: Demystify “academic style”**

- STEM: Anxieties, misperceptions greater
- Is more formal, but not necessarily big words
  - *Twain: “Never use a \$20 word when a 25-cent word will do just fine.”*
- Goal: to be clear and accurate
- Write like you talk (but...)

**+ What is “academic English”?**

Add: 1-word verbs,  
 transition words,  
 academic word list



**+ Reduce to a few simple rules**


Avoid:

- informal words: *a lot of, big, really*
- contractions
- two-word verbs (went down, found out)
- etc. and “and so on”
- certain punctuation
- “I”

- Swales & Feak, *Academic Writing for Graduate Students*
- Variability across disciplines: MODEL PAPERS

**+ #2: Teach writing/speaking for a general audience**

- Difficult for STEM students
- They'll have to do it at some point
- Gets them thinking about audience
- Peer review otherwise impossible
- Leads nicely into extended definition



**+ #3: Align grammar with genre**

■ Definitions (adjective clause)

A \_\_\_\_\_ is a \_\_\_\_\_ which/that \_\_\_\_\_.

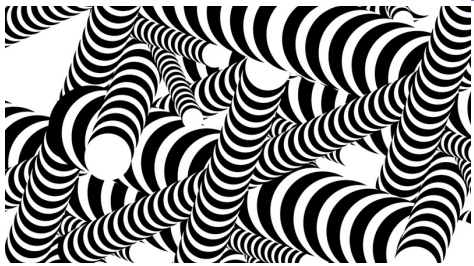
(term)            (class)            (adjective clause)

Ex. *A robot is a multi-programmable **device** that can do the work of a human.*

■ Teach/review inductively

- STEM students good with patterns
- Give verb/time examples, let them identify tense rules

**+ #4: Give concrete, concise rules**



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**+ #4: Give concrete, concise rules**

- They want black/white rules
- Be prepared with what they need/don't
  - Please wash the beakers and the pipettes.
- Reassure them

**+ #5: Quantify progress**

- $\Delta E_w$ 
  - $\Delta$  = delta = "the change in"
  - calculate change in their English over course of semester

+ Quantifying change ( $\Delta$ )

	very weak	1	2	3	4	5	6	7	8	9	10	very strong
<b>Eg (grammar)</b>		1	2	3	4	5	6	7	8	9	10	
Grammar points you feel you need to work on: _____												
<b>Ef (fluency)</b>		1	2	3	4	5	6	7	8	9	10	
<small>(“Fluency” here refers to how quickly and freely you write English, not how accurately.)</small>												
<b>EO (organization)</b>		1	2	3	4	5	6	7	8	9	10	
<b>Ec (clarity)</b>		1	2	3	4	5	6	7	8	9	10	
<b>Ev (vocabulary)</b>		1	2	3	4	5	6	7	8	9	10	
<b>Ew (overall)*</b>		1	2	3	4	5	6	7	8	9	10	
<small>*with respect to your specific field of study (i.e. for experts in your field)</small>												
<b>Ew (overall)**</b>		1	2	3	4	5	6	7	8	9	10	
<small>**with respect to writing for a general English audience (i.e. for non-experts)</small>												

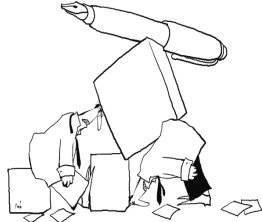
I will give you this chart again at the end of the semester, and you will rate yourself then, calculating your AE's over the semester and comparing them with my estimates, and we can average it out for a total  $\Delta$ EW.

+ #5: Quantify progress

- Error tally sheets
- Numerical grading rubrics
  - 4 categories plus global comments...
  - Ex. “Structure: 3”
  - Ex. “Mechanics: 3.5”
  - Two genre-specific

+ #6: Teach the writing process

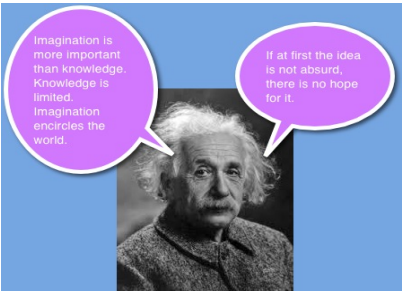
- Discrete steps
- Focus on separately
- Reduces anxiety
- Increases quality



+ from *Writer-oriented* ...

1. Generate ideas
  - Discover
  - Think
  - Imagine
- Freewriting
  - “Paragraph” form
  - Don't worry about grammar, spelling, etc.!
  - Keep hand moving
  - Don't judge ideas!

+ from *Writer-oriented* ...



Imagination is more important than knowledge. Knowledge is limited. Imagination encircles the world.

If at first the idea is not absurd, there is no hope for it.

+ from *Writer-oriented* ...

2. Plan and organize (outlining)
3. Draft
  - Reduce cognitive load!
  - “It's an unnecessary burden to try to think of words and also worry at the same time whether they're the right words” (Elbow, 1973)
  - Just get ideas down in sentence form, worry about grammar later!

+ ... to reader-oriented

4. Revise (ideas, organization)
  - peer review
  - then my response
5. Edit (grammar, spelling, punctuation)
6. Repeat

+ #7: Create safety, community

- STEM not always most communicative
  - work out problems by themselves
  - this not their milieu



+ #7: Create safety, community

- Peer reviewing
  - clear instructions/guidelines
    - why: practice analyzing
    - Golden Rule
  - give clear questions to answer
    - Have them \* or ✓ things they like
    - Best thing about the paper?
  - give time to discuss critiques

+ #7: Create safety, community

- pair/group activities
  - Have them discuss **ORALLY** before writing
- workshop student sentences on the board
  - “What is *GOOD* about this sentence?”




+ #8: Use “real-life” genres

- Resume/CV
- Emails to advisors, professors
- Voice messages, greetings, negotiation
- Low risk
- High motivation
- Need guidance, practice.
- Good practice on grammar points.



+ #9: (Re)Emphasize plagiarism

- Primarily in literature reviews
- Teach exactly what it is (even phrases!)
- ...and isn't: skeletal sentences, phrases
  - The increasing popularity of \_\_\_\_\_ can be attributed to \_\_\_\_\_.
- Give paraphrasing strategies, **PRACTICE**
- Be tough but forgiving ...



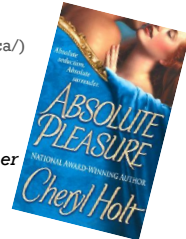
### + #10: Teach vocabulary *strategies*

- Do require vocabulary expansion
- Vocabulary/skeletal phrase journal
- On-the-fly resources
  - Corpus training ([corpus.byu.edu/coca/](http://corpus.byu.edu/coca/))
  - Dictionary: onelook.com
    - Cambridge Advanced Learners'
  - Thesaurus: visuwords.com



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- "Read, read, read."—William Faulkner
  - Pleasure Reading guidelines
  - Mikulecky, *Reading Power* series



### + Tip 11: Have fun!

- #1: Demystify "academic style"
- #2: Teach writing/speaking for a general audience
- #3: Align grammar with genre
- #4: Give concrete, concise rules
- #5: Quantify progress
- #6: Teach the writing process
- #7: Create safety, community
- #8: Use "real-life" genres
- #9: (Re)Emphasize plagiarism
- #10: Teach vocabulary *strategies*



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