How I have set up my Spring 2026 classes to be more EF Friendly
Main elements:
(a) Daily Opening Quiz to icebreak an idea and get students in the right mindframe for the day's topic.
(b) Asking that they answer each quiz question from what their intuition tells them.
(c) Regular use of organizational diagrams as road maps of the class day and of topics. I also encourage their use.
(d) I do videos for major concepts and processes, as well as for the introduction and use of notations.
(e) Frequent exams (weekly for 4 & 5 hour courses and biweekly for 3 hour courses).
(f) Create routines as possible.
(g) Keep my introductions lean and concrete; weave in detail and concepts after examples have made the main ideas clear. (varies by topic).
(h) For topics with new notation and concepts, alongside a procedure, I am careful not to unpack them all at once.
(i) I have long made suggestions for monitoring how they are understanding things, on scheduling their time, and on managing themselves. (I probably go too far in that regard)

Opening Quiz
[Activation, Focus]

I have an Opening Quiz for the first 5 minutes each day which breaks the ice on a new topic or begins the closing discussions of a previously discussed topic. In the case of a new topic, it is meant to get them to think about some aspect of a topic before you actually introduce it to them.
In the case of closing a previous topic, it can hit one of the most difficult aspects of that topic, perhaps where students were going to make the most mistakes, and makes them face it right there in class just as it is going to be discussed.

Advantages of an Opening Quiz.
- One would like for the students to have completed some reading or to watch some video before coming to class; but this is not too likely to happen. The opening quiz is intended to replace these by getting the students to think about or experience some of hair-pin curves of topic before the topic is discussed.
- It is likely to get them to class on time and it also takes attendance.
- Creates a focus leading into the first topic
- Working the quiz and noting its characteristics that lead to the day's topic
- Having a routine is good for many kinds of students and for cognitive load.

I encourage the students to always write down what their intution tells them, not what they *think* they are supposed to do because they *think* that they remember some teacher having said so. In this way
- the feedback they get hones their intuition by reinforcing or fixing what they have already internalized;
- in testing situations the suggestions from their intuition are going to come up anyway, and rather than vascilating between several alternatives and getting stressed out, by test time they'll hopefully have fixed their intuition.
- it gets them used to having an automatic starting point for any task.

In my class they do not have to get the quiz problem right to get the full 5/5; they just have to have given it thought. I think that outing their intuition is very important and many won't do so if they think some points are going to be lost because of it. Also, students who take exams and quizzes in the testing center won't have to start the class at the testing center.

While the Opening Quiz costs 5 minutes, I think that it accelerates the introductory part of the topic of the day by giving putting the students in the campaign before you begin.

Asking that they answer each quiz question from what their intuition tells them to do.
[Activation, Focus, Effort, Working Memory, Cognitive Load]

I encourage the students to always write down what their intution tells them, not what they *think* they are supposed to do because they *think* that they remember some teacher having said so. In this way

- It helps create as a habit consulting your intuition as a starting point, thus helping with activation;
- the feedback they get hones their intuition by reinforcing or fixing what they had already internalized;
- In testing situations the suggestions from their intuition are going to come up anyway, and rather than vascilating between several alternatives and getting stressed out, by test time they'll hopefully have fixed their intuition;
- It begins a natural focus looking inward upon one's understanding of a topic, with an action plan of expressing it in writing;
- Over time it likely encourages Chunking, and this will help working memory and cognitive load;
- Effort will likely be improved through the bolstering of focus and working memory;
- Isn't a pruned and strengthened intuition indicative of having been educated?

Regular use of organizational diagrams as road maps of the class day and of topics, and the encouragement of their use.
[Activation, Focus, Effort, Working Memory, Cognitive Load]

Diagrams as an agenda help organize the flow of the day, particularly if consulted as one moves through the day. This can help with focus because it provides a centering device (You Are Here) to come back from an interruption. It can also help with activation because over time it becomes routine for the student to reach for or draw a diagram. Finally, I believe that it helps with effort through having helped with focus and activation.
Diagrams can also help students understand complex material by giving an expert's organization or distillation of the topic. Diagrams also minimize the use of words to get the main idea across and this

- helps those students with slow language processing skills,
- helps with working memory and cognitive load
- helps with activation and effort, as with the earlier type of diagram.

I do videos for major concepts and processes, as well as for the introduction and use of notation.
[Effort, Cognitive Load, Working Memory]

Speech is temporal. Once you say something, it is gone forever unless they've written it down or internalized it in some way. Putting it into writing addresses this, but any written document that is any more than a short paragraph might mean that few students read it. Also, students with language processing issues are at a disadvantage. A 2-5 minute video can be replayed any number of times.

In addition, we are more likely to understand and remember something which has an aural component as well as a visual component. Mathematical procedures and notation do not have a typical language component. We surely have a way to pronounce f(x) and (f o g)(x) but once spoken it is gone. I had direct experience in this while taking translations exams in French and German for a PhD. I'd had 3 semesters of German so I could pronouce every word; after looking up an unknown word twice, I'd have its meaning remembered. I'd never taken any French and didn't pronounce the words: maison without a pronunciation is 6 letters in a specific order ... it takes most of your working memory to keep that lined up...how can you reliably remember its meaning? I couldn't. without looking it up 6 times ...until I started pronouncing them like Inspector Clouseau (of the Pink Panther movies). After that, I could remember the meaning of the word just as with German.
Perhaps with greater understanding and memory will help with effort and activation as well?

Frequent exams (weekly for 4 & 5 hour courses and biweekly for 3 hour courses)
[Activation, Focus, Effort, Emotional Regulation, Memory]

The plan for frequent exams was mostly as an early alert system. Freshmen often have little idea of how much study is necessary to succeed, and so the first exam is likely to bring an unpleasant surprise. If this surprise hits after 3 1/2 to 4 weeks, then they might be far too behind to effectively catch up in the course. This brings stress, as does the fact that 1 of 4 exams now has a low grade.
With weekly or biweekly exams, the student knows almost immediately that they have to adopt a different level of study or a different style of study. Plus, each exam is a lesser percentage of the total exam grade, making it not as stressful. Finally, with so many exams, I drop a few. The emphasis perhaps moves towards appropriate preparation and study rather than a few big lotteries.

Originally, I was concerned that such frequent exams would be too time-costly. However, I think that it is not as costly as it at first seemed. The students seem more spry:
- there is a always a test around the corner so most are keeping up and asking questions more than usual,
- since they are more up-to-date, less time is spent on old questions, or fumbling over what should already be in their grasp,
- perhaps being out from under the cloud of being behind all the time brings some dopamine?

I think that the point is made already regarding emotional regulation. The narrower coverage of each exam helps the student with activation because the range of concepts and techniques is less and that encourages them to dive in and do these few items. Likewise, the immediacy of the next exam also encourages activation. I think that this also aids in focus and working memory because perhaps more concepts are chunked, and their thoughts are not fractured over so many different concepts and procedures.

Create routines.

Having routines for the class day and for what is required outside of class can help with activation and with effort; it is like creating a temporary habit. It can also help with action (behavior) and make the class day more efficient because everyone knows what to do next. This helps reduces cognitive load and helps working memory because nobody is trying to figure out what they're supposed to be doing. Routines might also help with emotions as a standard habit might sidetrack extraneous thoughts.

Keep my introductions lean and concrete; weave in detail and concepts after examples have made the main ideas clear. (varies by topic).
[Cognitive Load, Working Memory]

This aims directly toward cognitive load. Lessening cognitive load will help with 4 of the 6 components of Executive Function:
Focus (distraction by trying to find relevance in information that is not perfectly relevant, plus focus is a limited resource so the sooner that one can get the ideas out there enough to tangle with some exercises, the better)
Effort (lesser likelihood of wearing the student out or tempting them to procrastinate)
Emotion (lesser likelihood of frustration and episodal burnout)
Working Memory (leaves more capacity to hold directly relevant ideas; also WM is a limited resource).

For topics with new notation and concepts, alongside a procedure, I am careful not to unpack them all at once.

Perhaps introduce the notation and a short example or so at the end of one day, and then expand upon that the following day with practice with examples. This is also directly aimed toward cognitive load and working memory.

I have long made suggestions for monitoring how they are understanding things, on scheduling their time, and on managing themselves.
[Action/Behavior]

Some of these are life skills and some of these are study skills. You will find some suggestions of this nature in EFHelp.pdf, a document written to accompany the Executive Skills questionnaire, in case students took the questionnaire. [In fact, 15 students handed it in, and when I saw students with Emotional Regulation scores of 8, 9, 10, I knew that I was not qualified to help them with this category directly, so I wrote EFHelp.pdf (with a mild disclaimer) as a set of generic aids.]

Once a few test results came in and I saw that students were not scoring as high as what their inclass work suggested they would, I gave them this advice.

> Keep a notebook with the following information. Once you understand how to work a particular kind of problem, write down in words to yourself:
> (a) an explanation of how you can recognize it as that kind of problem;
> (b) an explanation of how you solve this kind of problem.
> (remember, the explanation is in words, not only an example problem)
> (c) As you get better at solving that kind of problem, or learn something else about solving that kind of problem, update this explanation.

This has worked wonderfully with students in the past who had asked me what they could do when they were doing the homework but were getting Cs and Ds on the exams.

The semester is yet young, and I am still optimistic that the great majority of my students will move forward successfully. However, at some point one or more of these plans might begin to fail. There are some issues that I have not been able to address.

Being incoming courses, I still have some attendance issues:

- incoming Freshmen are still immature...much more immature than they have been in the past, and so they are likely to give in to the temptation of skipping class;
- the students are somewhat familiar with some of the topics of a mathematics class and this can bring a sense of 'I know that' and so if the students know in advance the topic for the next day, some students might decide to skip class.

Compared to the six years ago, students are much more gifted and varied about their reasons for absences and I simply do not have to time to chase them down or to check on their excuses.