

Reading memos (Optional!)

If you would like to improve the class notes before they turn into a textbook, reading memos are the best and most enjoyable way to help. Here's what reading memos are and how they benefit you and me.

[First section borrowed almost verbatim from Edwin F. Taylor, 'Guest comment: Only the student knows', *American Journal of Physics* 60(3):201–202 (March 1992).]

Students!

I have a problem with which only you can help. I have been working on these notes too intently to see what is wrong with them. Only you, coming fresh to the subject, can recognize where they fail to help you understand. In this you are a world-class expert! Will you help?

As you read the notes, note down **on the printed notes** difficulties as they appear, marking the location of the problem *as specifically as possible*. As you are reading, if you cannot figure out what is wrong, note that too! If a later passage clears up a point, note that too in your comments. **Do not erase anything or cross it off**; the original comment on the confusing spot and the later comment along the lines of 'Oh, now I see/know why . . .', are both useful – for they tell me that I have explained material in a confusing order. At the end of the reading, note general difficulties that you have and questions that you would like answered. **Do not revise or recopy your notes**; it is important that they be spontaneous, written down at the very minute you are reading and wondering about a point.

If you do not understand an equation, derivation, or passage, it is my fault. Help me pinpoint where the notes fall short. The PDF file of the notes will be on the course website, mit.edu/18.098. From there you can refer to or print a new copy. Meanwhile we will use your comments to improve the notes.

Parable of the blind carpenter. I am like a carpenter who has spent years building a house. During that time the carpenter has gradually gone blind, now cannot see the house at all, and must rely on the occupants of the house to report what is wrong: 'We need more cupboards in the kitchen', or 'Water is leaking into the bedroom.' Even though blind, the carpenter is still a competent worker and can fix most things, even some things that the occupants do not fully understand, such as exactly where the roof leaks. But the blind carpenter cannot fix things without being alerted by the occupants.

Will you help me finish this house? Thank you.

How reading memos help you

The previous section explained how reading memos help me. Here are ways that they can help you and your colleagues. First, you practice reading a technical textbook – a skill of general value. Even after you finish taking courses at MIT or other universities, the world is large and there are many lifetimes of fascinating ideas to learn. If you can learn from books, you master a lifelong skill.

Second, and related to the first point, by reading with attention and with a questioning attitude, you participate in your own learning. That skill will also be useful for your whole life.

Third, the textbook will eventually be released under a reciprocal free-software license such as the GPL, GFDL, or Creative Commons ShareAlike license. The likely publisher will allow such a license 18 months after their print publication. So, your improvements will not be monopolized by me or the publisher and instead will be shared widely.

Fourth, reading memos invert the normal teacher–student hierarchy. For a contrasting example, think about problem sets. When you cannot solve a problem, you might feel incapable or become unhappy. I felt that way when I was a student. Whereas with a reading memo, when you do not understand where an equation came from or cannot follow an argument, you have found a trouble with the notes – you are the expert! Donald Knuth was so interested in knowing of any troubles that he would write us checks for \$2.56 for each mistake that we found. I’m not offering check, so perhaps I’m not as generous as Knuth. On the other hand, Knuth was not giving away much – who would cash a check from Knuth? (I still have all of mine.) With reading memos, you are a world-class expert.

Use the reading memos as a way to to practice reading technical material, to formulate questions, and to feel like. . . no, to be an expert.