Recommendations for the use of notebooks in upper-division physics lab courses

Read the article *Recommendations for the use of notebooks in upper-division physics lab courses* by Stanley and Lewandowski. While reading, keep in mind that your goal is to come up with guidance for the PHYS-139 students that will make up your research teams.

Write up answers to the following questions:

1. List the main purposes of lab notebooks the researchers found.
2. What characteristics did all lab notebooks share?
3. The three principles that someone needs to keep in mind when writing a lab notebook are *context*, *audience*, and *timescale*.
   (a) What does the term *context* mean. Give a couple of examples.
   (b) What are the different audiences that you imagine will be reading your lab notebook entries in this class?
   (c) How will thinking about these audiences influence what you write in your lab notebook?
   (d) What are the different timescales that will be relevant to you and the PHYS-139 students in this class?
4. The article lists five types of information that can be included in a lab notebook. They are *objective information*, *analytical information*, *interpretive information*, *sythesis information*, and *brainstorming information*. Below, give an example of each type that is different from what is mentioned in the article.
   (a) Give an example of *objective information*
   (b) Give an example of *analytical information*
   (c) Give an example of *interpretive information*
   (d) Give an example of *synthesis information*
   (e) Give an example of *brainstorming information*
5. Give an example of some type of information you might include in a lab notebook that doesn't fall into one of the five categories listed above.
6. What are the main difficulties the researchers found many scientists face?
7. The article groups the recommendation into three categories; instructor framing, lab activity design, and notebook evaluation. In this context what does 'instructor framing' mean?
8. Give an example of how you would give purpose to keeping a lab notebook in this course. Imagine you are in my shoes and are teaching the PHYS-139 students.
9. Give an example of what sort of format you would require PHYS-139 students to use.
10. Give an example of how you would encourage students to incorporate context, audience, and timescale into their lab notebook entries.

11. How would you encourage students to include different types of information in their lab notebooks and how would you tie this back to context, audience, and timescale?
12. How would you go about preparing students for the common difficulties they would encounter?