

Helping Students Become Scientists – lab notes & data blogs as assessment tools

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- I. The course model is based on a bona fide research group where the instructor is the PI and the students are lab members, but with added guidance.
- II. Course Goals include some items that students find surprising, e.g., learning from mistakes, working collegially with other scientists, communicating science both formally and informally, and having fun.
- III. Before the course begins, students fill out an experience survey, which is used to place them in heterogeneous groups of 2-3 based on course background and research experiences, so that they can learn from each other as they work on a common project.
- IV. Assessment includes weekly notebook pages, lab meeting discussions, blog postings, an individual short paper, and a final group presentation.
- V. Instant and early feedback is important and notes and blogs are used for this purpose. The lab blog is set up using the Blog Tool on the course Blackboard site.
- VI. To focus students on understanding and interpreting results rather than just performing laboratory techniques, for each experiment students must post to the lab blog a figure or table, including brief text describing the experiment and analyzing the results. Likewise any new or modified protocols need to be written up formally and posted. The instructor comments and students re-post revised figures, tables, and protocols as necessary. Other students can also comment and learn from their colleagues' experiences and the instructor's feedback.
- VII. Community learning is important, so although instructor comments on notebook pages are returned to each individual student each week, common themes are discussed together during lab meeting. Students especially need help getting to 'The Why' behind their experiments.
- VIII. Because the grading is highly subjective, students complete a mid-term self-assessment, rating themselves on progress towards each course goal and suggesting an appropriate grade. The instructor then gives feedback on the progress report and what, if anything each student needs to improve.