**Overview**

During the Spring of 2006, the KSU physics department converted its first upper-division Optics course into a Studio format. During the first implementation of this course we conducted two kinds of evaluations to assess the impact of the new format on student learning and attitudes.

First, a conceptual test based on questions developed by Mazur [1] was administered as a pretest, mid-test, and posttest.

Second, an online survey containing Likert-scale and free-response questions assessed the students’ perspectives about the course.

**Conceptual-Based Test**

The data for the conceptual evaluation appears in the table below. A couple key features to notice are:

- Only topics that had been covered in lecture by the midway point were included on the mid-test.
- Only two sets of data can be considered statistically significant (highlighted in blue). However, the course has a strict limit of 20 students, so the given data represents all of the students who took all three tests.
- Regrettably, many of the average gains are negative. This would indicate that students actually answered more questions incorrectly post-instruction.

Below are some of the free-responses from the survey, chosen because of their accurate representation of the responses as a whole.

1. *The Studio activities relate closely to what we are talking about in lecture."
2. *Keeping a lab book helps me to better understand the Studio activities.*
3. *Keeping a lab book helps me understand how the activities relate to the material.*
4. *The Studio activities help me understand the principles of Optics.*
5. *The Studio activities help me relate the theory to what is really happening.*
6. *The Studio activities clearly relate to what we are discussing in lecture.*
7. *How would you describe the time allotted for completing the Studio activities?"
8. *How would you describe the time spent covering a topic BEFORE the activity?"
9. *How would you describe the time spent covering a topic AFTER the activity?"
10. *The Studio equipment is sufficient for completing the Studio activities.*
11. *The Studio equipment is being used to its full potential.*
12. *The course appropriately makes use of available technology.*
13. *I enjoy the Studio format.*
14. *I enjoy the Studio format more than the typical lab format.*
15. *If traditional format and Studio format were offered, I would choose the Studio.*

**Conclusion**

While the results of the conceptual evaluation are slightly disappointing, the results of the online survey of student perspectives are quite positive. The majority of students indicated that they responded well to the new format, despite the expected difficulties of implementing a new course design.

This course is the first in a two-year sequence, and is therefore only taught every fourth semester. The Studio format is planned for use during the next cycle, and we expect much greater success now that the Studio format and the activities themselves will be more familiar to the professor teaching the course.