ICARE
Interagency Collaborative Animal Research Education

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Working together to empower IACUCs and their institutions to improve animal welfare and increase compliance with Federal standards while minimizing regulatory burden.
Active Learning has been shown to increase factual and theoretical understanding of scientific and ethical issues by engaging the learner in activities that require the application of high-level concepts.
Active Learning
Evidence for the Efficacy of Active Learning in the Life Sciences


Armbruster, P., et al., Active Learning and Student-Centered Pedagogy Improve Student Attitudes and Performance in Introductory Biology. CBE - Life Sciences Education., 2009.


Caldwell, J.E., Clickers in the Large Classroom: Current Research and Best-Practice Tips. CBE - Life Sciences Education., 2007.


Casem, M.L., Student Perspectives on Curricular Change: Lessons from an Undergraduate Lower-Division Biology Core. CBE - Life Sciences Education., 2006.


Klappa, P., Promoting Active Learning through "Pub Quizzes"—A Case Study at the University of Kent. Bioscience Education., 2009.
Marbach-Ad, G. and P.G. Sokolove, The Use of E-Mail and In-Class Writing To Facilitate Student-Instructor Interaction in Large-Enrollment Traditional and Active Learning Classes. Journal of Science Education and Technology., 2002.
McInerney, M.J. and L.D. Fink, Team-Based learning enhances long-term retention and critical thinking in an undergraduate microbial physiology course Microbiology Education, 2003. 4: p. 3-12.
Perez, K.E., et al., Does Displaying the Class Results Affect Student Discussion during Peer Instruction? CBE - Life Sciences Education, 2010.
91% of studies indicated a positive impact of active learning
Active learning increases student performance in science, engineering, and mathematics

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To test the hypothesis that lecturing maximizes learning and course performance, we metaanalyzed 225 studies that reported data on examination scores or failure rates when comparing student performance in undergraduate science, technology, engineering, and mathematics (STEM) courses under traditional lecturing versus active learning. The effect sizes indicate that on average, student performance on examinations and concept inventories increased by 0.47 SDs under active learning (n = 158 studies), and that the odds ratio for failing was 1.95 under traditional lecturing (n = 67 studies). These results indicate that average examination scores improved by about 6% in active learning sections, and that students in classes with traditional lecturing were 1.5 times more likely to fail than were students in classes with active learning. Heterogeneity analyses indicated that both results hold across the STEM disciplines, that active learning increases scores on concept inventories more than on course examinations, and that across 225 studies in the published and unpublished literature. The active learning interventions varied widely in intensity and implementation, and included approaches as diverse as occasional group problem-solving, worksheets or tutorials completed during class, use of personal response systems with or without peer instruction, and studio or workshop course designs. We followed guidelines for best practice in quantitative reviews (\textit{SI Materials and Methods}), and evaluated student performance using two outcome variables: (i) scores on identical or formally equivalent examinations, concept inventories, or other assessments; or (ii) failure rates, usually measured as the percentage of students receiving a D or F grade or withdrawing from the course in question (DFW rate).

The analysis, then, focused on two related questions. Does active learning boost examination scores? Does it lower failure rates?

Results
So What is Active Learning?

Active learning is a process whereby students engage in activities, such as discussion or problem solving that promote analysis, synthesis, and evaluation of content.
ICARE Academies use active learning to train participants to meet their responsibilities for animal welfare oversight by empowering accountability for facts and conceptual understanding of Federal standards through the study of realistic problems encountered in animal care and use programs.
Train the Trainer Institutes teach participants to use active learning pedagogy in their training programs. Participants will engage in active learning applied to IACUC subject matter and modules that address the scientific basis of active learning pedagogy.

Working in facilitated breakout groups, participants will develop a module that can be used at their home institution. Participation in Train the Trainer Institutes is open to institutional animal care and use trainers and IACUC administrators. At least two trainers from an institution are required to attend a Train the Trainers Institute together to facilitate implementation of active learning training at the institution.
## ICARE 2017 Schedule

<table>
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<tr>
<th>2017 ICARE Training</th>
<th>Date</th>
<th>Location</th>
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<tbody>
<tr>
<td>ICARE Academy 1</td>
<td>Monday and Tuesday, February 27 &amp; 28</td>
<td>Arlington, TX</td>
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<tr>
<td>Train the Trainers Institute</td>
<td>Monday thru Thursday, May 1 - 5</td>
<td>Seattle, WA</td>
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<tr>
<td>ICARE Academy 2</td>
<td>Tuesday and Wednesday, July 25 &amp; 26</td>
<td>Philadelphia, PA</td>
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<tr>
<td>ICARE Academy 3</td>
<td>Monday and Tuesday, August 28 &amp; 29</td>
<td>Richmond, VA</td>
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Registration opens in December and will be announced on OLAW listserv.
IACUC Authority and Responsibility for Animal Welfare
Session Objectives

1. Justify the assignment of authority to the IACUC

2. Identify examples of adverse impacts on animal welfare if an IACUC fails to assume responsibility
Justify the Assignment of Authority
Justify the IACUC Assignment

• The IACUC is responsible for program review, not the IO.

• The IACUC is responsible for facility inspection, not the AV.
Ranking the importance of these reasons

1. Each person ticks off the 5 reasons they find to be the most important

2. Discussion
Identify the impacts of an IACUC failing to accept their authority and assume their responsibilities
Identify the Impacts

An IACUC fails to suspend a protocol because of fear that the investigator would cause problems for some Committee members.

An IACUC approves a protocol even though it does not contain a clear and complete description of several major survival surgery procedures.
Recap Session Objectives

1. Justify the assignment of specific authorities to the IACUC

2. Identify the adverse impacts on animal welfare if an IACUC fails to assume responsibility