



Teaching and Learning in the Animal Sciences

**A National Conference
To Challenge Old Assumptions
And Break New Ground for the 21st Century**

**June 19-22, 2012
The Lowell Conference Center
University of Wisconsin-Madison**

**Program Schedule
Invited Presentations
Short Communications
Resource Materials**

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Resource Materials

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- Taylor, R. E. and R. G. Kauffman. 1983. Teaching animal science: Changes and challenges. *J. Anim. Sci.* 57:171-196 - Diamond Jubilee (75th year) Invitational ASAS paper.
 - Buchanan, D. S. 2000. ASAS Centennial Paper: Animal Science teaching: A century of excellence. *J. Anim. Sci.* 86:3640-3646.
 - Kensinger, R. S. and L. D. Muller. 2006. Major advances in teaching dairy production. *J. Dairy Sci.* 89:1155-1162 – Centennial Issue.
 - Wattiaux, M. A., J. A. Moore, R. R. Rastani, and P. M. Crump. 2010. Excellence in teaching for promotion and tenure in animal and dairy sciences at doctoral/research universities: A faculty perspective. *J. Dairy Sci.* 93:3365-3376.
 - Wattiaux, M. A. 2009. Signature pedagogy in agriculture. Pages 207-223 in *Exploring Signature Pedagogies: Approaches to teaching Disciplinary Habits*. R. A. R. Gurung, N. L. Chick and A. Haynie, eds. Stylus Publishing, Sterling, VA.
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Conference Roster

ORGANIZING COMMITTEE:

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 Sandy Bertics, UW-Madison
 Dave Buchanan, North Dakota State University

Molly Kelley, ADSA Discover Conferences
 Hasan Khatib, UW-Madison
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Synergistic nexus between research-led teaching and inquiry-based student learning in Animal Sciences: Sharing the University of Tasmania experience

A. E. O. Malau-Aduli and P.A. Lane Animal Science & Genetics, University of Tasmania,
Private Bag 54 Hobart 7001, Australia; Aduli.MalauAduli@utas.edu.au

In order to challenge old assumptions and break new grounds in teaching and learning in the Animal Sciences, a paradigm shift from the traditional '*teacher-focus*' to a modern '*student-centered*' learning approach is necessary. Establishing a synergy (systematic working together in concert) between '*research-led*' teaching and '*inquiry-based*' learning enhances students' understanding of both science content and scientific practices (Edelson et al., 1999).

Understanding the scientific concepts of genetics by nutrition interactions in Australian pasture-based sheep, dairy and beef systems is a major dilemma faced by undergraduate students. This difficulty was reflected in the 2006 Animal Production Systems (KLA220) Unit's student evaluation of teaching and learning (SETL) at the University of Tasmania (UTAS). To address this problem, we implemented an innovative, inquiry-based learning and research-led teaching approach. The primary objective was to enhance students' critical thinking and target their learning needs through active participation in field experimental trials and hands-on activities.

Data from 104 students enrolled in the KLA220 Unit from 2006-2010 were utilized for this study. In addition to the theoretical concepts taught in class, students were exposed to hands-on genetics-nutrition experimental growth trials with sheep, laboratory experiments on intramuscular fat extraction, fat melting point, sensory evaluation of meat eating qualities, data analysis, livestock industry field visits, scientific journal article critiques and seminar presentations. Student learning experiences were evaluated through SETL surveys.

On the basis of 83% response rate and quantitative Unit Evaluation mean scores, results indicated a progressive improvement from 3.90 in 2006 to 4.40 in 2010 that exceeded the average Faculty threshold. Free-text student comments revealed that the research-led teaching approach had actively engaged and given them a rich learning experience. This finding is strongly supported by literature that "learning by doing" is an effective way for students to benefit from staff research (Gibbs 1998) and that students involved in research-based inquiries acquire a more sophisticated level of intellectual development (Blakemore and Cousin 2003) because the active learning process encourages students to adopt a deep approach to learning than the teacher-focused surface approach (Brew and Boud 1995).

In conclusion, this research-led teaching approach has undoubtedly made a significant contribution to the student learning experience in animal science through the development of students' critical thinking and scholarly values. Some student comments: "*Field trips were an excellent opportunity to meet & hear from producers and very useful in gaining a practical knowledge of animal production industries*", "*Lectures and field experiments were really inspiring, lab helped understand material*".

- Blakemore, P., Cousin, G. 2003. Linking teaching and research through research-based learning. Educational Developments, 4, 24-27.
- Brew, A., Boud, D. 1995. Teaching and research: Establishing the vital link with learning. Higher Education, 29, 261-173.
- Edelson, D.C., Gordin, D.N., Pea, R.D. 1999. Addressing the challenges of inquiry-based learning through technology and curriculum design. J. Learning Sci., 8, 391-450.
- Gibbs, G. 1998. Learning by doing: A guide to teaching and learning methods. London: Further Education Unit. Accessed 13 May 2012: www.glos.ac.uk/gdn/gibbs/index.htm.