229 The student quality team as a total quality management tool for continuous improvement in the classroom. C. M. Brady, N. O. Zarb*, and W. N. Osburn, *Michigan State University, East Lansing*.

Total Quality Management (TQM) techniques to improve classroom instruction and student learning in a senior-level animal science course taught at Michigan State University. This course, ANS 401 - "Critical Issues in Animal Agriculture" focuses on team problem solving to address current issues that impact the animal agriculture industry. TQM was used in ANS 401 to improve classroom instruction and student learning throughout the semester. Currently courses are evaluated using a standardized form at the end of the semester. A Student Quality Team (SQT) provides continuous feedback to improve student learning by evaluating the course, making and implementing suggestions for improvement and determining their effectiveness. The SQT was trained in team building, TQM tools and techniques, and team problem solving. The SQT developed a cause and effect diagram to identify six major categories of factors that might affect student learning. The SQT then conducted class surveys to aid them in identifying which factors were barriers to student learning. Based on survey data, the SQT prioritized the identified barriers, developed solutions, implemented the solutions, and identified ways to monitor the solutions to determine if they did enhance student learning. The students, members of the SQT, and instructors felt the SQT improved the quality of ANS 401. In conclusion, using a SQT to identify barriers to student learning and devise ways to remove them can be an effective tool for instructors seeking to continuously improve the quality of their course.

Key Words: Student Quality Team, Course Evaluation, Total Quality Management

230 Assessment of student learning. R. L. Harrold* and P. D. Murphy, *North Dakota State University, Fargo*.

The assessment of student learning is maturing from being a desirable option to becoming an implementation expected by regional accrediting agencies. Institutional climate has been a significant factor in how quickly assessment has been implemented and accepted on individual campuses. Assessment of student learning requires the development of expected student outcomes that are clearly defined, are central to the major, and are readily quantified. Evidence of student learning may come from a variety of sources but should represent direct measures of student learning rather than representing indirect suggestions of learning (López, 1996, Murphy, 1996).

Individual academic and non-academic units at North Dakota State University (NDSU) file annual assessment reports that are reviewed by a panel of three reviewers and scored for how well each of 10 criteria are addressed. Several documents on assessment have been given campus-wide distribution. Members of the campus Assessment Committee are available to assist individual units in developing assessment methods, assisting with various procedures and problems, and in presenting a campus-wide assessment workshop before the beginning of each academic year. Units that receive recognition for developing strong assessment reports typically involve all of the faculty in assessment, use assessment broadly in the courses offered at the undergraduate and graduate levels, use multiple assessment measures, and present clearly-written reports that address the goals and purposes of assessment at NDSU. Three critical items that are to be addressed are: 1) What did you do to assess student learning?, 2) What did you learn?, and 3) What will you do differently as a result of what you learned? Assessment is most readily embraced by faculty when it is used to provide rewards for implementation rather than penalties.

Assessment remains a moving target where expectations are continually increasing.

Key Words: Assessment, Student Learning

231 Applications of biotechnology in animal genetic improvement: A new graduate-level course. D. Pomp*, *University of Nebraska, Lincoln*.

A new graduate-level course has been developed to teach the theory and methods underlying applications of biotechnology to animal genetic improvement. The course focuses on molecular genetic diagnosis, gene mapping, localization of quantitative trait loci (QTL) and estimation of their effects, marker assisted selection, and evaluation of gene expression. Ten students meet three times a week for 6 to 8 h/d, during an 8-wk summer session (4 credit hours). In addition to intensive hands-on laboratory work which students must rigorously document in a laboratory notebook, lectures are used to teach and discuss theory, statistical methods and applications. The use of Internet resources are emphasized in targeted computer sessions. All topics are supplemented with reading assignments from current and historical literature, and guest lectures and field trips are used to relate material to non-agricultural areas such as human biomedicine, forensics, and zoo animal population genetics. Group projects include mapping a previously unlocalized gene using PCR-RFLP and linkage analysis (with the results published with all students as authors), identification of a QTL in an F2 resource population using multiple markers, and evaluation of expression of targeted genes in an animal model (e.g. expression of the uncoupling proteins and leptin in white and brown adipose tissue from high and low heat production selection lines of mice). Individual projects include posters detailing current status of gene mapping and QTL identification in a variety of livestock and model species (with faculty and peer graduate students invited to the poster session), and grant proposals to identify QTL (trait and species to be chosen by the student). Students are evaluated based on participation, laboratory notebooks, peer-appraisal of posters, and instructor appraisal of grant proposals. In the two consecutive years that the course has been offered, enrollment has been maximal, and student evaluations have been very high (3.75 on a scale of 4.0).

Key Words: Biotechnology, Genetic Improvement, Teaching