

Transforming Agricultural Education for a Changing World (2009)

National Research Council report released March 4, 2009

Overview: Many of today's major challenges including energy security, national security, human health, and climate change—are closely tied to the global food and agriculture enterprise.

Academic institutions with programs in agriculture are in a perfect position to foster the next generation of leaders and professionals needed to address these challenges. However, to keep pace with changing times, undergraduate agricultural education needs a new focus.

Transforming Agricultural Education for a Changing World proposes nine steps for academic institutions, funding agencies, employers, professional societies, and other stakeholders to implement to attract top students and prepare them for the challenges of tomorrow.

One of the recommendations is to focus reviews of undergraduate programs in agriculture. The report recommends that those responsible for conducting reviews related to undergraduate education in agriculture should incorporate the elements discussed in the report to guide their evaluations and decisions in accreditation, review of grant proposals, department and other institutional reviews, and other venues. The report offers a checklist of items that should be used by any individual or group conducting a review of a program, curriculum, department, college, or institution. The checklist includes questions about the nature of the curriculum, the ways that courses are taught, and the teaching style and knowledge of faculty about how students learn, among others.

As part of the Life Sciences Review of IANR conducted March 25-27, 2009; the College completed the checklist (Appendix E) and provided it to the review team:

APPENDIX E

March 24, 2009 - Final

Questions to Guide the Review of Undergraduate Food and Agriculture Programs

This checklist of questions is intended to be used by any individual or group conducting a review of any program, curricular, department, college, or institution. It is designed to assist a variety of organizations in developing specific review criteria, accreditation standards, etc. that incorporate the elements of undergraduate education discussed in this report.

The committee also hopes that this list of questions can guide the assessment of outcome that follow in response to the report. For example, the elements in this checklist could serve as the basis for follow-up conversations and meetings about undergraduate education in agriculture.

The committee does not suggest which might be the “correct” answers to these questions as the most appropriate responses will depend upon the unique strengths, opportunities, and missions of particular institutions, colleges, and departments.

A. Curriculum and student experiences

1. How is the curriculum developed? What is the role of faculty and students within the department? Within the college? Outside of the college? How are external stakeholders engaged? Curricular development at UNL is generally a College responsibility. While there are occasional strategic level initiatives like the Cooperative Program in Veterinary Medicine, most course and program proposals are initiated at the faculty and unit level. Course proposals are first approved by the unit Curriculum Committee and approved by the unit teaching coordinator and/or unit administrator before being submitted to the CASNR Curriculum Committee. The summary of Actions of the CASNR Curriculum Committee is sent to the entire faculty with a two-week period to appeal any recommendation. Once approved by the CASNR Curriculum Committee and the faculty, courses are sent to the UNL Curriculum Committee. Changes in graduate courses and programs are also routed to the UNL Graduate Committee. All graduate and undergraduate program changes are routed through the UNL Academic Planning Committee. Programs proposals also require approval from the system-wide Council of Academic Officers (and UNL Executive Graduate Council for graduate programs), the NU Board of Regents and also may require final approval by the Nebraska Coordinating Commission on Post-Secondary Education.

The initial development of new curriculum involves a balance of faculty and programmatic input. In some cases, the development of new courses may be in response to suggestions from stakeholders, departmental advisory committees or professional societies, in other cases it may be from a detection at the program level for a new or modified curriculum, or it can be initiated by an individual faculty member’s desire to offer a new course on a trial or permanent basis. Examples of undergraduate curricula that have been developed in coordination with industry input are the Animal Science curriculum to prepare students to participate in the Nebraska beef industry, the Agricultural Economics option in Agricultural Banking and Finance, the joint CASNR/CEHS program in Hospitality, Restaurant and Tourism Management, and the degree program in Food Technology for Companion Animals in collaboration with the Oxbow and Purina animal feed industries. Industry input was also a key factor in the development of the recently approved Doctor of Plant Health program. CASNR also conducts an annual survey of employers to insure that our undergraduates are receiving essential “real world” skills important

for the work place. Ultimately, the outcomes assessment program within the College provides a recurrent validation of the curriculum relevance.

2. How do courses in the major build a deep foundation of factual knowledge, based on clear conceptual frameworks?

Most degree programs are in disciplines in which educational outcomes are defined by professional societies or accrediting agencies. Some disciplines rely on a progression of courses during the four years of instruction to progressively increase depth of knowledge in a single discipline, whereas more interdisciplinary majors (e.g. biochemistry or forensic science) rely on foundational courses in other units to provide much of the curricular depth for students in the first two years of the program.

During the first two years, there is probably a general reliance on textbooks to define the disciplines and the content knowledge that is important for students to absorb. During the last two years of the undergraduate experience, there is an increasing introduction of related material, case studies and ethical questions by the instructors of the courses in each discipline. Students are encouraged to participate in internships, undergraduate research and shadowing to provide context to their education. This culminates with the capstone course which relies heavily on the primary literature and attempts to develop a holistic view of the content material within the discipline and relate it to society and the issues of sustainable food, sustainable resources and sustainable environment.

At the College level, to help ensure that students are not putting off foundational courses until the end of their undergraduate career, we have implemented the Bachelor of Science Candidacy Status. Two semesters before graduation, a hold is placed on enrollment until the student meets with an adviser to ensure that they have taken appropriate prerequisite courses necessary to enroll in capstone and other senior-level classes.

The College, with the College of Education and Human Sciences, developed and piloted PEARL

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(Program Excellence through Assessment, Research, and Learning), a systematic process for continuously improving academic programs through assessment of student learning outcomes. This has become the model university-wide. Each degree program uses a combination of three assessments to determine whether students are meeting the specific educational objectives of the program. The nature of the assessments varies between programs, but may include national standardized examinations or analysis of student understanding of foundational concepts. This is now used by all colleges at UNL.

3. *How does the curriculum incorporate courses and/or experiences which focus on teamwork and working in diverse communities, working across disciplines, communication, critical thinking and analysis, ethical decision-making, and leadership and management?*

These elements are incorporated into the curriculum to different extents in the different disciplines within CASNR. In general, the first two years of the curriculum are focused on acquisition of disciplinary knowledge. The exception is the AGRI/NRES 103 course that is required of all CASNR students. This course attempts to lay the interdisciplinary foundation for all CASNR degree programs and provides an interdisciplinary perspective that will enable students to appreciate how different disciplines may all contribute to sustainable food, sustainable resources, and sustainable environments. Once students are in the upper-division courses, there is increasing emphasis on communication and critical thinking which culminates in the capstone course.

4. *How are food and agriculture integrated with general education and courses outside of the college of agriculture? How many courses are cross-listed with departments outside of agriculture, especially at the introductory level?*

The CASNR core curriculum specifies a number of areas in which all students must take courses and this exposure is enhanced by the UNL Achievement Centered Education (ACE) system for general education that requires all students to have basic training in ten different student learning outcomes. Sixty-two courses in the School of Biological Chemistry and the Department of Chemistry are cross-listed with IANR units. To date, 37 CASNR courses have been approved as meeting at least one of the Student Learning Objectives in the new ACE General Education requirements and may be taken by any UNL student.

5. *How are real-world examples, case studies, and opportunities for community engagement and service learning integrated into the curriculum?*

The purpose of the Dean's Scholars in Experiential Leadership (DSEL) Program is to introduce and explore different types of leadership that a student can develop while on campus. Students also learn about volunteerism, internships, mentoring, service learning and undergraduate research opportunities. We want to prepare our students to become confident and capable leaders in a diverse world. All incoming CASNR students with an interest in leadership are encouraged to apply. One of the goals is to empower students early in their college experience to maintain a passion for leadership and carry it on throughout their college careers. Another opportunity for growth in this area is ALE 102 (Interpersonal Skills for Leadership). This course provides underclass students with an experiential approach, field projects and supervised service learning projects. Community engagement and leadership is also fostered through service projects carried out the College departmental clubs and honorary societies such as the Justin Morrill Scholars, Alpha Zeta and Sigma Alpha.

6. *How do the curriculum and other learning experience reflect contemporary issues and emerging trends in food and agriculture? How are newly-arising issues integrated into the curriculum?*

These issues are integrated into the curriculum in four ways. First, they are introduced to students in the AGRI/NRES 103 course that is required of all students. Second, they are incorporated into the curriculum by faculty teaching the courses in the degree programs. Third, they are included in the internship and study-abroad courses and experiences that many of our students complete during their education. And fourth, they are an integral part of the capstone courses for our degree programs.

7. *In what ways do required courses help students acquire habits of disciplined learning, intellectual curiosity, independence of mind and critical thinking, follow trains of reasoning, detect fallacies in arguments and discern unstated assumptions?*

To teach or model critical thinking for students, it is necessary not only to include such opportunities into classes, but it is essential for instructors to play leading roles in modeling and orchestrating students' activities. To facilitate this process, the College offered a one-day workshop on critical thinking in January 2009 that defined it in the following typology:

The ability to distinguish between fact and opinion.

The ability to identify and formulate problems, as well as the ability to solve them.

The ability to recognize and use inductive reasoning, as well as the ability to solve them.

The ability to draw reasonable conclusions from information found in various sources, whether written, spoken, tabular, or graphic, and to defend one's conclusions rationally.

The ability to comprehend, develop and use concepts and generalizations (R.Rudd, 2009).

The development of enhanced critical thinking across the CASNR curriculum is a topic for further discussions and seminars during the current year.

8. *What levels of international experience associated with global food and agriculture does the curriculum provide/require of students? Which learning abroad opportunities are available and how many students participate? How are international perspectives included in the curriculum?*

Global food and agriculture is a required component of the College and included in the curriculum in the AGRI/NRES 103 course that all students take. We also include aspects of international agriculture and trade in courses in most of the degree programs and there are courses (e.g. AGRI 282 Introduction to Global Agriculture and Natural Resource Issues, and AGRI 310 Study Tours in International Agriculture) to provide students with an international exposure. Individual degree programs have some specific international courses (e.g. AECN 346

World Food Economics, or AECN 367 Agricultural Development in Developing Countries) to provide students with an international perspective. International Affairs offers a wide variety of overseas study opportunities to UNL students and CASNR has a strong Study Abroad program. In 2008 there were 74 CASNR students who visited 24 countries on study abroad. Nebraska Foundation funds allowed CASNR to provide over \$80,000 for study abroad scholarships. We are currently working on future study abroad programs for Germany, Spain, Croatia, Brazil and Morocco. Additionally, all students are required to enroll in one ACE Student Learning Outcome area 9 certified course that focuses on a global perspective.[www.unl.edu/ous/ace/]. The College maintains the Kleis Kiosk for international travel interests and has just established a new student organization (Students Involved in Global Agriculture and Natural Resources Connecting Beyond Borders).

9. What opportunities are available for students to participate in internships, cooperative education experiences, service learning or mentorships? Are any such experiences required?

Most opportunities for students seeking exposure in service learning or cooperative extension environments are through the Department of Agricultural Leadership, Education and Communication, but often involve other disciplines. Students interested in career opportunities as agricultural educators or extension educators may also seek additional training in a masters-level program. CASNR offers two courses (AGRI 388 Employment Seminar and AGRI 400 Job Survival) to help prepare students for the work environment. CASNR also hosts a Career Fair in the Fall semester. The CASNR 2008 Career Fair had representatives from 67 organizations available to talk with approximately 517 students about internships and full-time positions. The evening before the CASNR Career Fair, the College hosted their fourth “CASNR Dean’s Employer Appreciation Banquet” with 62 employers and department representatives in attendance. The annual Faculty/Employer Brunch held the morning of the Career Fair was enjoyed by 102 employers and faculty. This year was the second for a Natural Resources Career Fair as well as a Professional Golf Management Career Fair; 17 organizations attended the Natural Resources Career Fair and 75 students and faculty participated. Employers conducted 186 interviews the day after the CASNR Career Fair. CASNR is the only college that has a satellite office of Career Services which is housed on East Campus. In addition, each degree program offers a course that permits students to enroll for academic credit for participating in employer internships. These courses require feedback from the employee mentor and a written and oral report from the student following the internship. For students engaged in research opportunities, this would involve interactions with a faculty mentor.

10. In what ways are undergraduate students engaged in outreach and extension activities?

As explained in a document from 1990 (**Error! Hyperlink reference not valid.**), training for extension activities has evolved from a separate bachelor’s program to an integrated element

within the program in Agricultural Leadership, Education and Communication. At the same time, the expectation for extension work increased from a B.S. to an M.S. degree, so much of the training specific for extension careers shifted to graduate programs. However, there are opportunities for students interested in extension careers to participate in internships while still undergraduates. Also, a minor program in cooperative extension is available through the Department of Agricultural Leadership, Education and Communication. In addition to enhancing and developing leadership and educational presentation skills, the minor is designed to gain a working knowledge of the interactions that can and do exist by using the resources, structure and services available through the land grant institution and extension.

11. What opportunities are there for students to be involved in learning communities or other extracurricular activities that support learning? Are any such experiences required?

Learning Communities are designed to build community among entering first year students. Participating students will take a few classes together, live together on the same floor of the residence hall and have interactions with faculty and staff through planned activities outside of class. Each Learning Community program is sponsored by an academic unit, either a college or department. Similar to the Learning Communities are the Scholar Communities which are interdisciplinary communities, often involving faculty and coursework from more than one college. The first UNL Learning Community was ACE (Achievement, Commitment and Excellence) sponsored by CASNR, which has since been restructured into the Justin Smith Morrill Scholars. There are currently 15 residential learning communities, including one sponsored by the School of Natural Resources. Since their inception in 1998, over 3,600 entering first year students have participated in the UNL Learning Communities. Participating in learning communities is not required.

12. What are the opportunities for students to engage in undergraduate research? What percentage of students do so?

Involvement of undergraduates in research involves several different paths. At the freshman level, CASNR offers the Discovery Corps. This is a faculty-driven, teaching and learning activity for second semester Honors Program freshmen. Research experiences are variable and individual. Some students are curious about the nature of research and volunteer to participate in laboratory or field research for one or two semesters. Other students are more serious about research and possibly interested in careers in research; many of these students start working for pay in laboratories their first or second year. It is not unusual for students working three or four years in the same laboratory to have authorship on one or two publications at the time of graduation. The third track involves students in the Honors Program. CASNR provides an Assistant Director for the Honors Program. These students take a special honors course as sophomores that outlines research and the preparation of an undergraduate thesis. These

students are then required to work with a faculty member on a project that will result in the preparation and defense of a thesis prior to graduation. For students in the latter two categories, many will apply for funding by UCARE (Undergraduate Creative Activity and Research Experience) grants or ARD Undergraduate Research Fellowships that provide \$2000 for the first year and \$2500 for the second year for hourly wage and some supplies. Each department has a faculty member that serves as the undergraduate research coordinator and helps students find faculty with openings in their research teams who can serve as a mentor. The university sponsors an undergraduate research fair each spring. In addition, under the leadership of Dr. Azzeddine Azzam, a peer-reviewed on-line journal (Reviews of Undergraduate Research in Agriculture and Life Sciences; <http://digitalcommons.unl.edu/rurals/>) has been developed for the publication of undergraduate research. There have been no studies of the college-wide participation in undergraduate research, but one study of biochemistry students found that approximately 45% of students had some participation in research activities.

B. Institutional commitment to teaching and learning

1. What faculty development resources and opportunities are available at your institution? What training is made available to new faculty and others offering instruction? What institutional resources are available for developing or refining new courses?

After six years, faculty are eligible for Faculty Development Fellowships that permit six to twelve months at another institution in order to engage in scholarly research, artistic activity, or study of teaching or professional innovations which will improve the faculty member's ability to contribute to the academic programs of the University of Nebraska. The campus has also sponsored the Initiative in Teaching and Learning Excellence, a grant program, for 5 years.

The Peer Review of Teaching Project has been a very successful initiative for encouraging faculty to analyze teaching effectiveness, student learning, and their classroom practices, and the UNL program has become a national leader in the development of materials related to the scholarship of teaching. Moreover, the Peer Review Project connects faculty with a small cohort of peers who provide ongoing consultation and support that contributes to the development of more effective teaching. Typically, these collegial networks extend long after the conclusion of their work together.

In CASNR there is a Teaching and Learning Improvement Committee that hosts science education and technology seminars in the Spring semester and a Winter Interim Workshop (42nd in 2009) in January that usually attracts between 125 and 175 faculty from UNL and surrounding colleges.

In collaboration with Extended Education & Outreach, CASNR jointly funds a full-time instructional designer to work with faculty in developing course materials and managing them on the Blackboard course management system. To assist faculty in preparing instructional materials there is the Digital Learning Lab on the City Campus and the Distributed Environment for Active Learning Lab on the East Campus. These labs assist faculty in development of instructional materials and multimedia. The Instructional Technology Group hosts regular seminars on new technology and optimal use of technology. The Office of EEO also provides course development grants.

2. How are faculty encouraged to participate in educationally-focused seminars and workshops within your institution? Outside your institution?

CASNR faculty are encouraged to participate in the Winter Interim Workshop on teaching that is held every January. This one-day workshop is open to all UNL faculty and is also attended by faculty from surrounding colleges and community colleges. The topic in 2008 was Team Building in the Classroom and the topic for 2009 was Developing Critical Thinking. In addition, the CASNR Teaching and Learning Improvement Committee offers a series of seminars each Spring semester that are related to teaching and teaching technology. These seminars are advertised across the college.

Faculty with a teaching FTE report teaching and professional development activities annually into the eARFA system. Participation in professional development is a normal part of the faculty appointment calculation (casnr.unl.edu/c/document_library/get_file?folderId=3531&name=DLFE-2101.pdf) and faculty evaluation. For example, faculty receive credit for efforts at course improvement, attending national or regional teaching symposia, science education grants and publications, and chairing teaching-related committees. The College sponsors faculty presentations at professional meetings and provides all new faculty with a NACTA membership.

3. How often do seminar and colloquium speakers at your institution discuss issues of teaching and learning?

In CASNR, in addition to the January Winter Interim Workshop on teaching, the Teaching and Learning Improvement Committee hosts a series of seminars within usual departmental seminar programs in the Spring semester to focus on science education pedagogy and instructional technology.

4. What is the common method of instruction used in courses? Where on Bloom's Taxonomy of Learning (Bloom et al. 1956) is most instructional effect directed? How are active and cooperative learning integrated into courses?

It is expected that the level of instruction with regards to Bloom's taxonomy will increase as students move through the curriculum. This increase is anticipated to parallel student increases in the level of cognitive development as defined by Perry, from dualism to multiplicity and relativism. Many of our faculty are incorporating problem-based learning and team activities into courses, as well as the integration of interactive technology including 3-D.

5. What forms of instructional technology are used in courses? What institutional resources are available to assist faculty in the use of technology?

All courses utilize the BlackBoard system for course delivery. The use of sophisticated technology such as 3-D projectors or personal response systems has begun and we expect that they will be more widely utilized in the future. Support for faculty using technology comes from either Departmental support personnel, more available in large departments, or from support personnel in the CASNR Communications and Information Technology (CIT) or the UNL Instructional Technology support services. The UNL BlackBoard support personnel have been particularly effective and very helpful in organizing workshops and seminars for faculty users. CASNR faculty and administrators participate in the Instructional Technology Advisory Committee and the General Purpose Classroom Committee - both groups advise administration on investments in instructional technology and classroom learning environments.

6. How are graduate students and postdoctoral researchers engaged in undergraduate education reform efforts at your institution?

Graduate students participate as Teaching Assistants and get first hand experience in undergraduate instruction. The University offers a TA Institute to train new TAs in elements of pedagogy and prepare them for their roles in the classroom. They may supplement these assignments by taking a course such as AGRI 888 (Teaching Undergraduate Science) or participating in the Science Education Research Journal Club that is attended largely by graduate students and postdocs. Postdoctoral researcher are funded by research grants, but some are given the opportunity to give guest lectures in courses and most participate in mentoring undergraduate and graduate students in the research environment. The campus also sponsors the 'Preparing Future Faculty Initiative' for doctoral students.

7. What is the role of teaching evaluations? What elements are included? How are the evaluations used by administrators and others?

There are two levels of teaching evaluations within CASNR. The first is the Course/Instructor Evaluation Questionnaire (CIEQ) (L. Aleamoni, Univ. Arizona) that has been used in all classes for the past 21 years. This instrument produces a snap-shot of the student affective response to the course and the instructor. Data are returned to the instructor and the unit every semester.

The data are used by the unit and college administration to determine if there are particular faculty for whom an intervention may be warranted. The second level is a CASNR-wide system of Instructional Improvement that involves peer-review of instruction as part of a process of feed-back and mentoring. This system is in its beginning stages and currently focused on new faculty, but we expect that once it is more established it will be broadened to include all faculty and courses.

8. *What resources are available for bring instructional technology into the classroom?*

Instructional technology in classrooms is updated on a regular basis using a schedule developed by the UNL General Purpose Classroom Advisory Committee and implemented by the Information Services group. This same group also oversees regular replacement of ceilings, floors, wall coverings and seating in these classrooms. Units with special needs, e.g. Architecture, are often accommodated by the GPCAC with specialized equipment. Revenue to support the technology is generated from a student technology fee (\$7.35 per cr hr). The college also provides some support through its discretionary budget and annual equipment fund.

9. *How many faculty members conduct research on teaching and learning within the discipline?*

Between fifteen and twenty CASNR faculty are engaged in educational research. This ranges from developing new instructional media like 3-D anatomy, to new distance courses that are peer reviewed, to devising new laboratory exercises, to measuring the extent of student engagement with different blends of traditional and distance education. Some of this research results in new courses and course modules, whereas other research results in peer-reviewed publications. For example, three faculty in the Department of Biochemistry have published a total of thirteen peer-reviewed science education articles in the past decade. Most of the faculty in the Department of Agricultural Leadership, Education and Communication are engaged in education research.

10. *How are teaching and learning incorporated into considering for hiring, promotion and tenure?*

Position descriptions define the responsibilities for faculty hires. Most position descriptions for faculty with academic appointments (CASNR) do identify the specific courses or content of courses to be developed. However, many omit the additional expectations associated with an academic appointment. The following general text is to be included on all position descriptions, as appropriate and consistent with the position:

Additional Responsibilities of the Academic Appointment: Advise/mentor undergraduate and graduate students; advise undergraduate and graduate student organizations; present guest lectures, participate in college- and university-wide courses; participate in recruitment, retention and placement activities and teaching

outcomes assessment; instructional improvement; and teaching scholarship (eg. peer - reviewed publications, textbooks, software, extended education lesson plans and modules). Expectations for this position also include communication of scholarly outputs at conferences and meetings, efforts to obtain external grants to support teaching programs, and development of innovative teaching methods. Contributions to the unit and college's distance education are encouraged as appropriate.

Service in the Academic Appointment: *Consultation with public programs (extension education and outreach) in the department and public relations (eg. giving public lectures and writing popular articles) Opportunities exists for cooperative teaching activities in K-12 education. Contribute to University, Institute, College and Department programs through service on committees.*

All candidates for a faculty position that entails a teaching component must submit a statement of teaching philosophy with the application. Generally, if the position entails 50% or greater FTE in teaching, the candidate will provide a teaching seminar as well as a seminar related to the remainder of the position. The candidates also meet with the CASNR Dean for a 30-60 minute discussion of teaching opportunities and expectations. Each candidate receives 'The CASNR Academic Appointment - Philosophy and Guidelines' and CASNR Faculty with Academic Appointments - expectations and Evaluation'. It is an important consideration that the faculty and administration feel that the candidate would be a credible instructor and be able to contribute to the CASNR teaching mission.

C. Outreach and organizational structure

1. How are business, industry, government, non-governmental organizations, farmers, and community and consumer groups engaged in the development of the curriculum?

The College has several mechanisms to engage all groups in the development of curriculum from the employer assessment tools to advisory boards. We strive to ensure that our curriculum is relevant and appropriate for the careers that our students select. Consequently, our outreach efforts are key to maintaining vibrant and futuristic curricula.

2. What is the composition of any advisory boards with responsibility for food and agricultural education?

A number of advisory boards collaborate with IANR and CASNR to impact agricultural and natural resource education. Two key constituent groups advise and provide support for IANR.

One is Ag Builders of Nebraska (ABN), whose principal focus is to support IANR through improving agriculturally related research, teaching, Extension and outreach. ABN is dedicated to shaping, advancing and sustaining prominent teaching, research and outreach programs in all appropriate areas of agriculture and food systems for the benefit of the state of Nebraska. It also supports Family, Youth and Community Partners whose mission is to advocate for families, youth and communities in Nebraska by developing strategies that will lead to significant understanding of the programs of IARN, Extension, CASNR and CEHS by decision makers. Another strong advocacy group for IARN is Ag-40, whose mission and purpose is to provide the Institute with broad-based support, to increase its visibility, to create an environment allowing it to continue its leadership role and to promote policies that support IANR and those programs at the university that enhance the university's partnership with Nebraska's agriculture and natural resource interests. Nebraskans for Nebraska is a consortium of CASNR stakeholder groups who support the College and the Extension Division in marketing career opportunities and academic programs at the local level. The CASNR Alumni Association's objective is given in the bylaws as follows: "...to foster cooperation and communication among all alumni of the College of Agriculture, IANR, UNL; and to develop communication between the alumni and the IANR." The Alumni Board is composed of members state-wide (<http://casnr.unl.edu/AlumniFriendsDonorsExtension/CASNRAlumniAssociation/AlumniBoard>) who are particularly active in providing feedback and grassroots assistance in promoting the educational mission of the College.

3. *How often do faculty members collaborate with researchers and practitioners from outside of academe?* External collaborations are encouraged. However, this is a parameter that has not been summarized for the College. The annual reporting system for the faculty can provide this type of information in the future and CASNR will be able to quantify the extent of external collaborations.

4. *How often do faculty members spend sabbaticals outside of academe? How often do professionals from the food and agriculture industry and other sectors teach courses at your institution?*

The administration encourages sabbaticals, but these have become less frequent. It would be rare for a UNL faculty member to spend a sabbatical outside of a University. We do employ industry scientists and professionals on an occasional basis as adjunct faculty. The new classification of 'Professor of practice' was developed to encourage more practitioners in teaching. As an example, Dr. Tom Hogemeyer, Senior Researcher at Hogemeyer Seeds, serves as a Associate Professor of Practice in the Department of Agronomy and Horticulture. Dr. Bart Holmquist, formerly of BioNebraska, served as an adjunct faculty member in the Department of Biochemistry until about 2003.

5. What types of connections and interactions does your institution have with other area academic institutions? Are there joint programs, shared resources, or other types of partnerships in food and agriculture?

CASNR has A to B transfer agreements with seventeen other institutions that encompass sixty-two degree programs. The Cooperative Doctor of Veterinary Medicine program is a joint venture with Iowa State University. We have developed graduate programs in Community Development, Food Safety and Defense and Grassland Management in collaboration with the Great Plains IDEA and the AG*IDEA consortia. We are one of fourteen States offering coursework in Poultry Science through the Midwest Poultry Consortium.

6. What types of articulation agreements does your institution have with community colleges and other institutions within the region?

The college currently has seventeen transfer agreements with community colleges and colleges in Nebraska, Iowa and Missouri that cover sixty-two programs. We have also initiated a Bachelor of Science in Applied Science on-line degree completion program for students with an associate degree or two years of college.

7. What types of programs directed at K–12 students does your institution offer?

CASNR faculty are the major participants in the Nebraska Academy and Advanced Scholars programs. These programs provide authentic college-level courses taught by college teachers for high school students. These programs offer Nebraska students state-wide the opportunity to obtain relevant college credit while in high school, even though not located near one of the University of Nebraska campuses. CASNR also offers Husker Horizons, a program in which 4-H students can collaborate with a faculty mentor on a research project and receive college credit. CASNR faculty in Statistics are participants in the Math in the Middle initiative to work with middle school students and teachers to generate more interest in students of that age in mathematics. Every February, CASNR faculty and undergraduates participate in the Women in Science conference and banquet; this brings in high school women from across the State to explore opportunities and careers in science and to network with UNL students and faculty in the sciences.

8. What types of connections and interactions does your institution have with K–12 students and teachers? With area youth-focused programs such as 4-H, National FFA, and scouting?

In addition to the interactions with K-12 students outlined in B7 above, there are a number of additional activities, some also related to K-12 teachers. The Nebraska Math and Science Institutes offer courses for high school teachers every Summer in statistics, earth science and science pedagogy. A Toyota Foundation USA Grant to CASNR and the College of Education

and Human Sciences supports the development of a series of courses for middle and high school teachers that combine science content and pedagogy, including the Spaceship Earth series in the School of Natural Resources. These courses can be taken by teachers as distance courses and if taken through the Master of Applied Science program, can lead to a Masters degree. CASNR participates in the NU-Teach Institute for Math and Science Teachers that allows teachers recommended by their home districts and their local Educational Service Units to take an intensive NU-Teach summer course at a 20 percent tuition discount. CASNR hosts the Nebraska Science Olympiad on the East Campus every April that brings hundreds of high school science students and teachers to UNL for information on science careers and an opportunity to network with college faculty. CASNR faculty and graduate students are also heavily involved in the State Science Fair finals held each April at Nebraska Wesleyan Universities. April is also the annual meeting of the Nebraska FFA, an event that brings many students to the East Campus for activities and presentations related to Nebraska's agricultural economy and careers. IANR, primarily through Extension is heavily engaged with the state 4-H program (<http://4h.unl.edu/>).