Future of Academic Programs Task Force

Final Report – June 22, 2010

A task force titled "Future of Academic Programs" was formed in April, 2009 to identify and examine trends and issues affecting academic programs in the College of Agriculture and Life Sciences. The idea for the Task Force grew out of the findings and recommendations of the National Academies' Report, *Transforming Agricultural Education for a Changing World* (2009). The Task Force was asked to formulate recommendations based on the trends and issues identified to be important for the College of Agriculture & Life Sciences at Iowa State University.

Membership: W. Wade Miller (Chair), Jeffrey Seago, Mary Wiedenhoeft, James Holtz, Philip Spike, Brad Skaar, Nancy Boury, Thomas Brumm, Janette Thompson, Cheryl Reitmeier, Tom Polito, and Lee Burras. David Acker served as the Administrative Liaison.

The first item of business for the Task Force was to identify trends and issues affecting the academic programs in the College of Agriculture and Life Sciences. The following issues/trends were identified and were adopted by the committee as focus points for recommendations:

1. Student Outcomes: over the next 5 years and 5-15 years out.
2. Incentives: possible creation of Teaching Chairs and the idea of a Teaching Incubator.
3. New Majors: What new programs need to be created and what old majors need to be discontinued?
4. Science with practice: What does that mean to the College?
5. Rigor: What does that mean and how is it achieved?
6. The new university: Programming for a smaller, more nimble university
7. Large vs. Small (immersion) classes: How to address problem solving and critical thinking in various types/sizes of classes

RECOMMENDATIONS:

Student Outcomes (includes what students have learned and what they know how to do):

1. Faculty members in CALS have gone through an extensive process to identify desired student outcomes. This represents a change in the approach to curriculum. The focus changed from the courses taken to what the student has learned or achieved. These outcomes have been listed in the ISU General Catalog. Each Department or Curriculum is charged with modifying their academic program to address the student outcomes. The Task Force reviewed the student outcomes once again. Their conclusion is that they do not need to be revised at this point. The task is to implement them and then to assess the result. This is a large and complex task. Interpretation of each outcome also varies across the College. There is a concern that if we do not give more attention to the student outcomes, progress will be slow. To start the process, it is recommended that the Outcomes Committee lead an effort to focus on the assessment of one college learning

outcome each year. This effort would give attention to all the student outcomes over time.

2. The student outcomes have been identified, but little has been done in the way of preparing faculty members to address the outcomes. Professional development programs may be needed to illustrate various strategies to implement the outcomes and to measure the results. It is recommended that outcomes be examined from the standpoint of both the strategies used to teach the outcome and an assessment of the students' attainment of the outcome. The Outcomes Committee should lead this effort as well. It is anticipated that new outcomes will emerge as we go through the process over the next few years.

Incentives to improve (includes how to recognize and promote quality teaching and student learning):

1. Teaching is both an art and a science. Many faculty members have little or no formal education in the areas of teaching and learning. It is sometimes assumed that if a person is an "expert" in a particular area, then this person can also teach this same area. In some cases this is true. There are excellent communicators who intuitively know good ways to teach and good ways to promote student learning. However, there are numerous other individuals who could and would benefit from education in teaching and learning. Learning theory and its relationship to practice is constantly being updated and improved. Technology in all areas, including communications and education changes rapidly. It is recommended that the College explore the creation of a teaching incubator to provide access to new resources, be a teaching advocate, explore teaching and learning initiatives such as service learning, and to study disincentives to teaching and how to eliminate them.

2. Since it is unlikely that faculty members will enroll in classes to study theory and teaching practices it is recommended that a college-wide Professional Development Program be reinstituted improve teaching and learning (similar to the grant writing workshops). We need a systematic professional development program that focuses on teaching and learning and implementing the identified student outcomes. Faculty members need practical methods they can use in various educational settings.

3. We need to find a way to focus on teaching/learning and to reward this behavior. At ISU, teaching needs to be as respected as research because both are valuable. It is recommended that the College investigate the idea of a Teaching "chair" for departments and/or curricula. This position could be identified for a specific amount of time (i.e. 3 years) and could be rotated within the department. If the departmental level is not appropriate, then perhaps chairs could be identified to address specific student outcomes across the college.

4. The new budget model being employed at the University does have an effect on academic programs. In some cases behavior or practices seem to be promoted by the budget model that is contrary to good educational practice. The budget model seems to treat all forms of instruction the same across all disciplines. Costs and resources vary across disciplines and across the various forms of instruction. For example, labs cost more to equip and teach than some lecture sections. If the budget model is employed on an efficiency basis, then large lecture sections may be promoted at the expense of smaller classes and labs. The budget model needs to be flexible, and be improved as needed. It is recommended that the College study the structure of course offerings in light of the new budget model which may discriminate against Labs and smaller classes. It does not make sense to "count" a lab at about half the value of a lecture class. We need to consider changing Labs to Classes to reflect equality between the two.

5. The budget model tends to favor large numbers of students enrolled in a course. Sometimes faculty evaluation includes the number of student credit hours an instructor has credited to them. However, many courses have started off relatively small in terms of enrollment and then have grown into large courses with multiple sections. It is recommended that policies be put into place that encourage faculty to try new ideas and offer experimental courses, while being protected from budget concerns under the new budget model. For example: no minimum number of students for the first time a course is offered.

6. There is a considerable amount of confusion regarding the new budget model and how it affects teaching. Most of the faculty understands that some of the tuition dollars follow the student to the college offering the class in which the student is enrolled. What is not understood is how the tuition dollars are used in teaching. Also, faculty and students do not know if all of these tuition dollars sent to the college are used in teaching or if some are used elsewhere (i.e. research or outreach). It is recommended that the new budget model be made transparent to the faculty and to the students.

New Majors (includes reforming existing majors):

1. It is recognized that not all majors (curricula) will have large student enrollments. There are many factors that affect student enrollment. Diversity is a good thing. There needs to be room for various sized academic programs. If departments all need to be "large" then smaller programs could be organized inside of divisions or departments. Over time, some curricula will be growing while others may be shrinking. CALS needs to be known for a comprehensive curriculum in agriculture and life sciences. Increased sharing between states may be more prevalent in the future, but it may be more prudent to have a strong college in Iowa that attracts out-of-state students. It is recommended that the

College continue to maintain a comprehensive breadth of curricula in the college for the future.

2. Science and technology continue to change at a rapid pace. Some areas in agriculture and life sciences may be emerging as possible candidates for new majors. Many of today's problems and challenges involve several disciplines. It is recommended that CALS consider the following possible new majors:

   Biorenewable resources
   Sustainable Agriculture
   Sustainable Food Systems
   Resource Economics
   Climate Change
   Water Quality
   Environmental Policy and Management

Science with Practice (includes student experiences and internships)

Iowa State is known for its slogan "Science with Practice". The slogan is more than words; it indicates a philosophy. It suggests "learning by doing" and "practical experience". The student outcomes focus on what the graduate does after college, including careers and other life responsibilities. Examples of student experiences include:
   1. Working on campus
   2. Working off campus
   3. Internships (paid and unpaid)
   4. Practicum
   5. Labs
   6. Service learning
   7. The Science with Practice Program in CALS

Task Force members discussed the idea of requiring some form of supervised practice as a part of the undergraduate program. The consensus seemed to be that supervised practice is a good idea, but the decision on what it should be and if it should be required should be handled in individual departments. We concluded that the majority of students are already completing some form of practical experience related to their major. It is recommended that Departments and Curricula encourage all students have practical experience related to their major as a part of their undergraduate program.

Rigor (includes challenging students to do their best and to perform well)

1. The Task Force Members discussed the meaning of rigor. Rigor involves both expectations and challenge. Courses and academic programs need to set high expectations in regard to student performance and then challenge the students to meet or exceed these expectations. Also, we need to help students find strategies to address these challenges. Individual faculty members need to address rigor in their classes. It is recommended that professional development programs focus on how to address rigor in courses.
2. Academic rigor is a factor not only in individual courses, but also in the entire curriculum. It is recommended that faculty members in departments examine their academic programs, including courses and student experiences, with the goal of ensuring a high level of academic rigor.

The new University (includes programming for a smaller, more nimble university):

Given population trends, economics, and other factors, it is likely that Iowa State University will be smaller, in terms of on-campus students, in the future. How do we respond, adjust, and adapt to this expectation?

1. The procedures for approving and discontinuing programs and majors needs to be streamlined to reduce the steps involved and the time it takes to accomplish these tasks. We are slow to adapt to changing conditions.
2. The procedure for approving and discontinuing courses also needs to be streamlined for the same reasons as above.
3. We should re-examine the structure of a B.S. degree. Increasing numbers of students are bringing college credit with them to ISU that they have earned elsewhere. Should we have a 2-year residency requirement? Should the degree be changed to 3 years?
4. We should re-examine the structure of a master's degree. Should we have additional "professional" master' degrees that do not have research components.
5. Students of the future will want to take courses from a number of sources at the same time as they are earning their degree. Do we have a structure that accommodates this type of education?
6. The 16-week semester needs to be examined and perhaps changed.
7. We should implement a number of "half-semester" courses to better meet the needs of students and industry as well.
8. Standardized course meeting times and face-to-face time needs to be examined. More alternative scheduling of courses needs to be available.
9. The use of technology in offering courses needs to be promoted; including on-line courses. Additional "mixed delivery" or "blended" courses should be developed.
10. We should emphasize "outcomes" and "competencies attained" over course grades.

11. We should consider the use a standardized test, such as the GRE, to assess/evaluate the quality of the B.S. degree graduate.
12. We should evaluate a student's critical thinking and problem-solving abilities in a formal way.
13. Course sections designed and offered to specific majors should be reduced in number. The College needs to function more as a cohesive unit.
14. We need to be proactive in finding out "what's next", what new technologies are emerging, and what employers are going to need. Examples include: GPS/GIS technologies, project management, and networking.

Large versus Small immersion classes (includes how to promote problem-solving and critical thinking):

1. The budget model promotes large class sections. Does the use of large class sections reduce the amount of interaction that takes place? Does it reduce the opportunities for student learning activities, problem-solving, and decision-making? If large sections are undertaken with the goal of efficiency, then student learning (student outcomes) will be affected in a negative way. If large sections are to be promoted, then the necessary strategies need to be employed to ensure that student learning is not diminished. It is recommended that new models for offering courses be developed that are congruent with the present budget model, but are not detrimental to student learning and academic rigor. This will include the increased use of instructional technology as well as teaching assistants.

Summary of the Recommendations and Proposed Actions Arising from the
CALS Task Force on the Future of Academic Programs
September 22, 2010

Recommendation	Proposed Action	Resources Needed	Action Begins	Progress
Student outcomes 1) Develop assessment criteria and procedures for college level outcomes. 2) Conduct professional development programs for faculty on use and assessment of learning outcomes.	1) Outcome Assessment Committee develops criteria for 1 college level outcome annually. 2) Professional Development Committee holds seminars for faculty to teach them about learning outcomes assessment.	None Negligible	FY 11 FY 11: 1 fall and 1 spring seminar	
Improving teaching quality 1) Faculty need training in teaching and learning processes and instructional technology 2) Establish a teaching incubator to provide access to new resources for teaching 3) Establish "teaching chairs" in departments or, alternatively, at the college level with responsibility for one outcome. 4) Evaluate the number of credits assigned to labs in light of the current discounting of the value of labs (relative to lectures) 5) Protect new and innovative courses from the restrictions of minimum class size while they are tested and established 6) Improve transparency of RMM for faculty and students	1) Initiate Project LEA/RN 2) ?? 3) Add to post campaign fund raising priorities 4) Curriculum Committee to address this problem 5) Chairs and Dean's office approves sub-minimum class size until course offered twice 6) Web site established in CALS with key metrics related to RMM	Funding for facilitators, faculty stipends: $20K ?? Endowed profs and chairs focused on teaching $30K/yr for sub-optimal returns from small classes. Staff time	FY 11 Begin January 2011 ?? FY 12 FY 11 -12 FY 11 – 14 FY 11 -12	

New majors
 1) Maintain comprehensive curriculum in agriculture and life sciences
 2) Consider the following new majors:
   a. Biorenewable Resources
   b. Sustainable Agriculture
	1) Add new majors, selectively weed out others
	
	 2) Discussion among chairs on how to develop a model for interdisciplinary under graduate majors
		Faculty time
		
		 Chairs time and support for task force on 2 – 3 new
			FY 11 – 12
			
			 FY 11 - 12	

c. Sustainable Food Systems d. Resource Economics e. Climate Change f. Water Quality g. Environ. Policy & Management		majors		
Science with practice 1) Science with practice is a core philosophy of CALS. Experiential learning is essential to student development. Departments and Curricula should encourage all students to gain practical experience related to their major.	1) Ask chairs to hold a discussion in their departments about opportunities to strengthen this area and to identify resources needed.	TBD	FY 11 - 12	
Rigor 1) CALS needs to offer a rigorous academic program. Faculty development is needed to understand how to address rigor 2) Departments should examine their courses and student experiences with the goal of ensuring a high level of academic rigor.	1) Faculty development workshops 2) Action by chairs and departmental curriculum committees	TBD	FY 11 – 12 FY 11 - 12	
The new university 1) Simplify procedures for approving and discontinuing programs, majors, courses to adapt to changing conditions 2) 2 year residency requirement? 3) Professional masters? 4) 16 week semester? 5) Flexibility in course scheduling 6) Half semester courses? 7) Blended delivery: DE and F2F? 8) Major only course sections? 9) Emerging technologies?	1) Discussion with Undergraduate Program Council 2) Action: College Curriculum Committee 3) Action: Departments, CALS mini-grants 4) Action: College Curriculum Committee 5) ? 6) Action: College/Dept. Curriculum Committees 7) Action: Department Curriculum Committee 8) Action: Task force to investigate obstacles 9) Action: Departmental curriculum committees	TBD TBD TBD TBD TBD TBD TBD TBD TBD	FY 11 – 15 FY 11 – 15 FY 11 – 15 FY 11 – 15 FY 11 – 15 FY 11 – 15 FY 11 – 15 FY 11 – 15 FY 11 – 15	
Large vs. small classes 1) The emphasis on increasing class sizes runs contrary to what we have learned from pedagogical research. How can we respond to maintain quality?	1) ?	TBD	FY 11 -12	