

**College of Science**  
**Tipping Point Plan**  
15 February, 2007

The College of Science presents the following plan to promote a learning-centered approach in our programs and practices. This builds on existing programs, activities and practices in the College. The goals were developed with input from faculty (including members of the University Task Force) and Department Chairs. Implementation details will be developed by departments, programs and cross-department working groups during the remainder of the 2006-07 academic year.

We recognized three natural groupings of the eight points identified by the University Task Force for continued work towards a learning-centered campus. Several points relate directly to a focus on learning in the classroom and the environment to support students as learners. Another cluster of points relate to moving the College to be a learning organization. Finally, two points link the previous areas to budgeting, planning and recognition. The College has structured its goals under these three main headings. We present plans in each area for new initiatives to enhance our learning-centered environment.

**I. Focus on Learning in Classes**

Learning outcomes assessment is central to the College's efforts to focus on learning in the classroom. Departments have learning outcomes in place for their programs and have developed assessment programs to evaluate how well we achieve those outcomes. The College will build on these to create a classroom setting where student learning is of prime importance and a curriculum focused on helping students achieve the outcomes we expect.

1. Make learning outcomes assessment visible to students

While departments have learning outcomes and assessment procedures posted on web sites, much of our communication about assessment activities focuses on University and accreditation needs. We will now make students one of our main audiences for this information. Specifically, departments will:

- Inform students which learning objectives are met by each course;
- Describe to students how we assess how well we meet those objectives;
- Post annual summaries of learning outcomes assessment results on departmental websites and identify curricular changes made

Outcomes we expect include the following:

- Students will know how a course advances their learning in the major;
- Students will understand how course artifacts are used to assess how learning outcomes are met in courses;
- Students and others will know what a department has learned from its assessment activities and the steps they have taken to enhance learning.

2. Use the required Freshman course sequence in the College to prepare students to make decisions about their learning and to prepare them with learning skills

The College continues to develop programs to help beginning students make a transition to the University. The two-quarter required sequence we are developing will allow us to give students more resources for taking control of their learning and making the decisions needed to prepare for their chosen careers. We expect to give new students a good foundation for their learning. Specifically, we will:

- Provide freshmen an overview of the curriculum in their major and the choices they have in courses;
- Involve department advisors in creating resources for freshmen to know how to create a plan of study for their degree;
- Use guest alumni or visiting practitioner speakers to demonstrate to freshmen how course choices can influence their preparation for particular careers;
- Help freshmen identify their learning styles and develop key learning skills.

Outcomes we expect include:

- Working with their advisors, freshman will be able to construct personalized roadmap for their degree;
- Students will discover and develop their personal learning styles and will develop key learning skills;
- Students will learn about career options in their majors and the choices they would make to enter those careers.

3. Prepare a Learning Support Plan for each service course offered by the College

The College has recently hired a Director of Learning Support, who will oversee the tutoring programs in the College and provide supplemental instruction to enhance students' skills for learning. This builds on the current success of the Mathematics Student Help Center (MaSH), generalizing the services we provide to cover all service courses offered by the College. As the new Director begins, she will work with instructors to prepare a Learning Support Plan for each of the service courses. In developing this plan we will:

- Use the experience of instructors, current tutoring and support efforts, and student focus groups to identify the key topics students find most challenging in the service courses;
- Work with instructors to identify learning outcomes for specific, targeted support opportunities designed to assist students in learning the key challenging material in each service course;

Prepare peer tutors to support student learning in service courses in general, and to assist in delivering workshops or other opportunities focused on specific topics;

Identify appropriate indicators of the impact of the Learning Support Plans on student success in each service course;

Solicit annual feedback from other departments on how well service courses meet the needs of their majors;

Students and others will know what a department has learned from its assessment activities and the steps they have taken to enhance student learning.

Because the College offers a broad range of service courses, we have established a priority order for developing Learning Support Plans. We will begin with a focus on Math and Statistics courses (remedial through calculus), building on the experience with MaSH and the Preparatory Math Program supplemental programs. We will then develop learning support Plans for first-year Physics, Chemistry, and Biological Sciences sequences.

Outcomes we expect include the following:

- Students will know what topics in a service course have specially-designed, supportive learning opportunities and they will know how to access them;
- Instructors will know what supplemental opportunities exist for students in their classes and how to refer the students to those services;
- Students and instructors will know how the elements of each learning Support Plan are assessed and what the results are of that assessment;
- Student performance, measured by the average grades in service courses, will show demonstrable improvement.

4. Expand opportunities for faculty to explore issues of student learning in science and math

Faculty in the College of Science currently have opportunities to learn about student learning in their fields. Department seminars, workshops offered by the Faculty Center for Professional Development and off-campus workshops or conferences are some of the ways faculty in the College currently discover new information about student learning. The College and its departments will augment current programs as follows:

Increase the number of Departmental seminars and workshops on learning centered topics;

Partner with the Faculty Center for Professional Development and with Organizational Development and Training to sponsor workshops related to learning centered topics;

Establish a College colloquium with a nationally prominent speaker on student learning in math and science

Outcomes we expect include the following:

- Faculty will know more about student learning and how to foster student learning in the classroom;
- Faculty will know where to find resources about learning centered strategies in their discipline.

## **II. Focus on Organizational Learning in the College**

The College plans to apply the principles of assessment to our non-instructional work. Articulating expected outcomes, assessing how well we achieve those outcomes, and adjusting our procedures as a result are the basic steps we use to assess instructional programs. We will use this basic process to assess other services we provide, from advising to office support. In this way, we expect to become more effective as a learning organization.

### **1. Assess our delivery of key services offered by departments and the College**

Adapting our assessment practices to non-instructional services will involve all constituencies in the departments and College—faculty, staff, students and administrators. We will cluster the service activities in the College into the following areas (paralleling the Support Program P&R categorization): administrative support, advising, technology support, instructional support. We will take the following steps:

- Partner with Organizational Development and Training to offer a set of workshops to help students, staff and faculty understand how the principles of assessment can be applied to service activities;
- Develop broad service outcomes we expect for each cluster;
- Develop ways to assess our delivery of service and how well we meet the expected service outcomes in each cluster;
- Publicize the results of these assessments and the adjustments we make as a result.

Outcomes we expect include the following:

- Staff, faculty and students will know the expected levels of service for each cluster of service offered within the College;
- Staff, faculty and students will know how service is assessed and how they can have input into the process;
- Staff, faculty and students will know the results of our assessment of service and the adjustments we make in response.
- Levels of service and stakeholder satisfaction will increase with time.

2. Sponsor workshops for staff, faculty and students on learning organizations and the use of assessment in providing service.

To date, we have not offered sufficient learning opportunities for staff to understand the principles of a learning organization or how we can use the principles of assessment to assess how well we meet expected levels of service. Staff showed great interest in the activities of the Task Force and we will transform that interest into understanding with the following steps:

Partner with Organizational Development and Training to offer quarterly workshops for staff and faculty on topics related to maintaining a learning organization;

Recommend during annual staff evaluation conferences ways individual staff members can develop skills related to enhancing the College and department as learning organizations.

Outcomes we expect include:

- Staff and faculty will know more about learning organizations and the ways that knowledge can be applied to their work in the College and departments;
- Staff and their supervisors will have an annual discussion about ways each staff member might develop skills related to enhancing their unit as a learning organization.

3. College and department web pages describing learning centered activities.

The College and departments have been designing a new set of web pages we can use to highlight our learning centered activities. Working with Department chairs, we identified the following thematic topics for these pages: Examples of student learning success, Hands-on learning in the College, Classroom strategies for student learning, Learning objectives for programs, Assessing learning outcomes Preparing students for careers, Student learning support programs, and Improving our programs. Our plans are to:

Debut the department and College learning centered web pages during Spring quarter 07;

Develop a partnership between departments, the Director of Learning Support and College IT staff for updating and expanding these pages on a regular basis;

Using the learning centered web pages to support outreach activities to other institutions (universities, schools, etc.), informing them about the strategies and success our programs have.

Outcomes we expect include:

- Awareness of learning centered activities will increase among the various College and departmental constituencies;

- Peers on campus and at other campuses will be better informed about learning centered activities in the College and departments;
- New partnerships will form to advance the quality of our programs and the success of student learning.

### **III. Budgeting, Planning and Recognition**

To sustain the College efforts to enhance our learning centered programs, we have specific budgetary, planning and recognition strategies in our plan. These strategies will help reinforce our collective commitment to supporting student learning, using assessment as a strategy for keeping a learning centered focus, and establishing the College and departments as learning organizations. We plan the following:

1. Establish a Quality Learning Fund in the College and issue an annual RFP for initiatives that advance learning centered goals

Most of the programs in the College support and sustain student learning. We will, however, continue to explore new approaches and strategies for focusing on learning in the classroom. We will also initiate new practices and programs related to maintaining the College and departments as learning organizations. The Quality Learning Fun is designed to encourage departments and program to take these new initiatives. Specifically, we will:

Allocate up to \$100,000 (recurring) from the College General Fund budget each year to the Quality Learning Fund to support proposals for new initiatives to enhance the learning centered mission of the College;

Develop criteria for funding proposals from this fund;

Invite departments, programs, and individual faculty to submit in April proposals to fund specific new initiatives from the Quality Learning Fund for the next fiscal year;

Establish an expectation that departments and programs will complete their annual assessment activities and meet expectations for service in key areas to qualify for funding from the Quality Learning Fund.

Outcomes we expect include:

- We will increase the use of assessment and the focus on learning within the College;
- New programs or practices will emerge to advance learning centered goals;
- We will achieve our learning centered goals more quickly than expected.

2. Establish an annual award to recognize leadership and excellence in advancing College learning centered goals

The College and its departments have several awards for faculty that recognize teaching or research excellence and several awards that recognize excellent work by staff. These awards include Distinguished Teaching Award, Ames Faculty

Research Award, College Distinguished Advisor Award, and College Staff Award. We will augment the criteria for these awards to include learning centered factors. We plan to:

Add criteria related to support for student learning to all College awards.

The task of creating the new criteria will be delegated to this year's selection committees for each award. Outcomes we expect include:

- Increased awareness of the importance of supporting student learning and of the ways individuals can contribute to our learning organization.