

The Learning MarketSpace, October 2011

A quarterly electronic newsletter of the National Center for Academic Transformation highlighting ongoing examples of redesigned learning environments using technology and examining issues related to their development and implementation.

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SUBSCRIPTIONS, SUBMISSIONS, ARCHIVES, REPOSTING

THE CAT VIEWPOINT

Offering perspectives on issues and developments at the nexus of higher education and information technology.

LESSONS LEARNED FROM THE PILOT IMPLEMENTATIONS OF CHANGING THE EQUATION

Changing the Equation is a major program to engage the nation's community colleges in a successful redesign of their remedial/developmental math sequences. Institutions participating in the program will improve student learning outcomes while reducing costs for both students and institutions using NCAT's proven redesign methodology. Each participating institution has redesigned its entire developmental math sequence—all sections of all developmental courses offered—using NCAT's Emporium Model and commercially available instructional software. Each redesign has also modularized the curriculum, allowing students to progress through the developmental course sequence at a faster pace if possible or at a slower pace if necessary, spending the amount of time needed to master the course content.

During spring 2011, all projects conducted a pilot implementation of their redesign plans with a significant subset of their total developmental math student population and reported the results at a workshop in June. NCAT spent the summer working with the projects to do as much as possible to ensure that each would have a positive outcome during full implementation in fall 2011. We and they learned a lot. Since all of these lessons are applicable to any institution seeking to improve its developmental math program, we thought we'd share our collective advice on the issues that proved to be most important.

Attendance points, while crucial, are not a magic bullet.

NCAT has learned that student participation in the math lab must be required. As NCAT's Redesign Scholars have repeatedly said, "Don't even bother to redesign if you are not going to require lab hours."

Several projects quickly learned that if they did not have an attendance/participation policy as well as a reward for meeting that policy (points), most students did not go to the lab or to class. All projects discovered that when students went to the lab/class and did the work, they were able to master the concepts and succeed.

Several projects made comments such as this: "We did have an attendance policy, but we didn't have points attached to it. Based on what we learned at the *Changing the Equation* workshop in June, we are planning to re-do our attendance policy and add points. Right now, we are discussing a 10% attendance/participation grade."

Having an attendance/participation policy with points is a must for participating in *Changing the Equation*, but it is *just the first step*. Two additional steps need to occur. (Remember that NCAT's [Fifth Principle of Successful Course Redesign](#) is, "Ensure sufficient time on task and monitor student progress.")

First, someone (typically the instructor in a [fixed Emporium model](#) but sometimes another person in a [flexible Emporium model](#)) must monitor all students to see who is and who is not meeting the attendance policy. Which students are lagging behind? Which students are not making satisfactory progress through the course (not coming to lab and not doing the work)?

Second, once these students have been identified, follow-up is key. Someone must consistently contact the students, either by email, by telephone or in person. Someone must indicate clearly and strongly that they expect to meet with the students individually to identify where they are getting stuck and to help them make progress.

Having an attendance/participation policy, monitoring compliance and having a strategy for intervention when compliance lags—all are critical to success.

In Progress vs. F grading policies

Several of the projects reported that they did not have an In Progress (IP) grade or the equivalent and simply gave an F grade (failure) or the equivalent to students who did not complete all modules required in the course. We encouraged them to think through this issue in preparation for the fall term.

We believe that students are more encouraged and more likely to return and complete the developmental math sequence when they have the opportunity to earn an IP grade rather than be faced with an F. If they have completed a substantial amount of work, why should they receive a "failing" grade? Even though they will have the opportunity to resume work where they left off in the next semester, an F sends a negative message.

Some have argued that when a student receives an F grade, it gets their attention and that failure can be a motivator. While this may be true for some students, we are not convinced that it is true for most students. Many have already failed developmental math and are already quite discouraged about their chances for success.

This is not an either-or issue. One can give both Fs and IPs. It is important for students to know the conditions under which the IP will be awarded and what the policy is for completion. A clear policy states, for example, that a student who completes two of four required modules will receive an IP with a specific length of time to complete the remaining modules. A student who completes fewer than two required modules will earn an F. However, when those students re-enroll, they will start where they left off; they will not need to start over from the beginning of the course.

Why give pre-tests?

In believing that many students would be able to test out of a given module and accelerate their progress through the developmental math sequence, many projects required module pre-tests as the first task that confronted the student. As most projects discovered, very few students were able to test out. Frequently, projects reported that only one or two students were able to do so.

Given this situation, we urged the projects to consider whether giving pre-tests for every module is sending a negative message to students—I failed the first test. Rather than allowing students to move quickly, the pre-

tests become yet another hurdle and reinforce their view that they can't do math, math is hard, they will have difficulty—i.e., it represents failure before they have even begun to learn.

We strongly suggested that the projects think about whether pre-tests are adding anything to the developmental math program or whether they are actually adding to math anxiety and de-motivating students. One can always retain the option of taking a pre-test for those students who believe they already know the material, but we think that pre-tests should be an option rather than the rule.

Assessing student learning outcomes

Changing the Equation requires that all projects compare baseline student learning data (common final exam, common exam items or pre/post-tests) from the traditional format of the course sequence with data from the fully implemented redesign to document the impact of the redesign on student learning. We also strive to compare both learning outcomes and completion rates in like semesters (spring to spring and fall to fall.) Success rates in spring terms are typically lower than in fall terms since spring includes those who failed to pass in fall, math avoiders, etc. This separation avoids a false picture of greater success (by comparing fall redesign to traditional spring) or a false sense of less success (by comparing spring redesign to fall traditional.)

Before moving to full implementation, each redesign project conducted a “pilot” of their redesign. NCAT collected pilot learning outcome, completion and retention data for all students who were officially enrolled in the pilot redesigned courses during spring 2011 and for a significant sub-set of students enrolled in the traditional format of the courses prior to that term. We do not plan to report pilot learning outcome, completion and retention data for a variety of reasons. Just as the pilot provides redesign teams with a “dress rehearsal” of the redesigned course and an opportunity to resolve any issues that may arise, so too does it provide teams with a “dress rehearsal” of collecting assessment data and an opportunity to resolve any issues before collecting data during the full implementation period.

In general, the majority of the projects showed improvements in student learning outcomes. Unfortunately, a similar majority did not have sample sizes that met NCAT's required minimum sample size of 100 students in each condition for a variety of reasons. Each project submitted assessment plans as part of their proposal that included sufficient sample sizes. The projects learned that many things can happen between the best laid plan and the actual implementation. Hence, the importance of the dress rehearsal.

We wanted to be sure that each project has a sufficient baseline of fall traditional data with which to compare the learning results from their redesign full implementation. We asked them to send us that data by August 1, 2011. We are happy to report that all projects have sufficient samples to enable us and them to have confidence in their final assessment reports.

The importance of reaching full section size during full implementation

Most projects' cost reduction strategies are dependent upon increasing section size. When we talk about actual section size, we do not mean the section “cap” but rather how many students are actually enrolled in the section. A number of projects reported that actual redesign section sizes during the pilot were much smaller than their plans called for and fell far below the section size needed to successfully implement their cost-reduction strategy. In many cases, the reason was that the “cap” was set at the right number, the sections filled, but then students dropped out for one reason or another during the first or second week.

We encouraged the projects to set the caps sufficiently high during full implementation, taking into account the drop rate, so that the actual section enrollment meets the planned size. If the planned section size is 25 students, for example, the cap should be set higher to compensate for the fact that some students will drop.

We reminded them that it is equally important not to over-schedule sections. To arrive at the correct number of sections, the anticipated enrollment (and we understand that one can never be exactly sure what that will be) should be divided by the planned redesign section size and only offer that number of sections.

Are comparisons between the traditional and the redesigned formats “fair”?

Some projects expressed concern that comparisons between the traditional and the redesigned formats are not “fair” or that the comparisons are apples and oranges.

- Example: Traditional students only get one attempt (on a test or an exam); redesign students get multiple attempts. This isn't a “fair” comparison.
- Example: In the redesign, only students who have mastered each module can take the final exam; in the traditional, any student can take it. This isn't a “fair” comparison.

Some suggested that in the interest of “fair” assessment, they would go so far as to change their redesign pedagogical strategies.

Giving students multiple attempts on homework, quizzes, tests and exams increases their learning. Requiring mastery increases their learning. What the assessment comparisons demonstrate is the effect of making changes such as requiring mastery and allowing multiple attempts.

To put it another way, we all know that students who spend three hours per week working on math will out-perform students who spend one hour per week (again, a change in the pedagogical strategy.) It is perfectly “fair” to compare the final exams in both conditions in order to demonstrate that the redesigned condition (i.e., more time on task) will produce better learning outcomes.

Conclusion

In conducting redesign programs, NCAT's approach has been first to establish a set of broad parameters (e.g., redesign the whole course, use instructional technology, reduce cost, modularize the curriculum) and then let experimentation bloom within them. From this iterative process, a number of redesign solutions have emerged—some anticipated, some not. NCAT has extracted lessons learned (models, principles, techniques) from these experiences and refined the parameters over the past 11 years. We continue to do so in *Changing the Equation*.

Some of the lessons cited above are specific to redesigning the developmental math sequence (IP grades, to give or not to give pre-tests), but most are applicable to the redesign of all introductory courses in any discipline. We hope we have given you some new things to think about.

--Carol A. Twigg

WHAT'S NEW

Featuring updates and announcements from the Center.

Course Redesign in Australia Is Underway

In partnership with NCAT, the LH Martin Institute for Higher Education Leadership and Management and the Australian Learning and Teaching Council have established a pilot program in course redesign. Two institutions, the **Australian Catholic University (ACU)** and **James Cook University (JCU)**, will participate in the pilot. An orientation to course redesign was held via webinar on Thursday, August 25, 2011 (US time) with more than 120 faculty and staff participating. This was the first time that NCAT has used a webinar to conduct a workshop. The participants learned more about the goals of the program as well as the process that will be used to achieve the two objectives of course redesign: improving student learning and reducing instructional costs. Following the orientation webinar, interested teams responded to NCAT's readiness criteria. Eight teams submitted responses, and seven were selected to move forward in the selection process. The institutions and the courses proposed to redesign are: (from ACU) Creating Inclusive, Safe and Supportive Schools; Transition to Professional Nursing; and, Research Design and Statistics; (from JSU) Education for Cultural Diversity; Effective Writing; Financial Management; and, Health and Health Care in Australia. We note the predominance of professional courses proposed in this program in contrast to most U.S. programs, which have focused on introductory subjects in the arts and sciences. On October 19, 2011 (US time), these seven teams participated in a planning workshop, also held via webinar. Final proposals are due February 1, 2012, and final selection of the participating projects will be completed by February 15, 2012. To learn more about this project, contact Peter Bentley at peter.bentley@unimelb.edu.au.

Interest in Course Redesign Spreads to Thailand

The Knowledge Network Institute of Thailand (KNIT), a not-for-profit agency created in 2003 by the Thai Ministry of Education to promote reform in the Thai higher education sector, has invited Carol Twigg and Carolyn Jarmon to visit Thailand. KNIT is a research arm of the Commission of Higher Education (CHE), which is charged with the oversight of the 166 universities in Thailand. On November 30, 2011, Carol and Carolyn will lead a seminar for Thai university vice-presidents, deans, professors, and policy makers to learn about new developments in course redesign. Then on December 1 and 2, 2011, Carol and Carolyn will conduct a workshop for university practitioners who would be directly engaged in a course redesign project. This two-day session will focus on the specifics of conducting a course redesign with the goal of providing participants with the tools to launch a redesign on their home campuses. To learn more about KNIT, see <http://www.knit.or.th/eng/>.

Governing Boards Consider the Implications of Course Redesign

On October 30, 2011, Carol Twigg spoke to the Council of Board Chairs of the Association of Governing Boards (AGB) in Washington, DC. She elaborated on the ideas included in her article, "Lessons Learned in Academic Transformation," published in the September/October issue of *Trusteeship*, the AGB's bimonthly magazine. *Trusteeship* magazine reports trends, issues and practices in higher education to help board members and chief executives better understand their distinctive and complementary roles and to strengthen board performance. The article describes NCAT's 11 years of experience in conducting course redesign programs and focuses on the implications of those successes for board members and chief executives. To read Carol's article, see <http://www.thencat.org/Articles/AGB-Transforming-Learning.pdf>. To learn more about AGB, see <http://agb.org/>.

CHANGING THE EQUATION

Engaging community colleges in a successful redesign of their developmental math sequences.

CTE Institutions Fully Implement Developmental Math Redesigns

The *Changing the Equation* projects are currently in the midst of fully implementing their course redesigns, which means that all students enrolled in a developmental math course are taking it in the new format. Each participating institution has redesigned its entire developmental math sequence--all sections of all

developmental courses offered--using NCAT's Emporium Model and commercially available instructional software. Each redesign has also modularized the curriculum, allowing students to progress through the developmental course sequence at a faster pace if possible or at a slower pace if necessary, spending the amount of time needed to master the course content. The teams spent the summer preparing for full implementation in fall 2011, refining their original plans based on what they learned during the spring pilot semester to increase their overall success. Summaries of all *Changing the Equation* projects along with contact information can be found at <http://www.theNCAT.org/Mathematics/CTE/CTE.htm>.

CENTER CHRONICLES

Featuring initiatives to scale course redesign through state- and system-wide redesign programs.

Missouri Institutions and Courses Selected and Development Underway

Final proposals for the Missouri Course Redesign Initiative (a statewide initiative supported by the Governor of Missouri and Missouri's public four-year institutions in partnership with NCAT) were submitted on July 15, 2011. On July 31, 2011, 13 redesign projects from 11 institutions were selected to participate in the program, which focuses on redesigning large-enrollment, multi-section undergraduate courses using technology-supported active learning strategies. The goal is to achieve improvements in learning outcomes as well as reductions in instructional costs. The 13 projects will reduce costs on average by 38% and produce an annual cost savings of \$591,027. The selected project teams are currently preparing their redesigns to pilot them in spring 2012 and fully implement them in fall 2012. Below are brief descriptions of the selected project plans.

Lincoln University will redesign Basic English, a four-credit developmental course with an average annual enrollment of 430 students. Using the Replacement Model, the redesign will address the following problems: 1) course drift, 2) lack of student engagement, 3) outmoded pedagogy, and 4) labor intensive, paper grading. In the redesign, a common curriculum will be developed based on a textbook/technology package, which will include course assistants and computer lab assistants to provide additional support to students. Students will be required to meet with a tutor twice monthly, and student-teacher conferences will occur four times during the term to provide individual assistance. Common rubrics will be used to grade written assignments. Savings will accrue from increasing class size, producing a decline in the cost-per-student from \$443 to \$345, a 20% reduction. The increased class size will be made possible by using computer-grading software, adding course assistants to share grading and other course management duties, and having computer lab assistants help answer student questions and troubleshoot problems. To learn more, contact Roseann Grotjan at GrotjanR@lincolnu.edu.

The redesign of Oral Communication at **Missouri Southern State University** will use the Replacement Model. Demand for the course has increased, and the course has grown significantly, currently accommodating 1,104 students annually in 24 sections of 23 students each. In the current format, individual instructors create their own versions of the course, leading to course drift. In fall 2010, 23 percent of the 580 students received a grade of D or F or withdrew from the course. The redesign will increase the number of students taught by the full-time faculty member and replace more expensive personnel with less expensive undergraduate learning assistants (ULAs). Students will meet once a week for 75 minutes with the full-time faculty member assisted by ULAs and spend an additional 75 minutes in the Communication Assessment and Learning Lab (CALL) working with software supported by ULAs. Students will record their speeches, watch them online, complete other preparation activities and receive feedback on their performances. Offering only two sections per semester will increase course consistency. The use of active-learning materials, including those available through *Speech Class* and *Poll Everywhere*, will increase student engagement in learning. The redesign effort will be monitored and assessed through common assignments, assessments and objectives. Performance on a common final examination will be compared in both the traditional and redesigned formats. The redesign of Oral Communication will decrease the number of sections offered annually from 44 to four and increase section size from ~23 to 230 students. The cost-per-student will decrease from \$174 in the traditional format to \$39 in the redesign, a 78% reduction. To learn more, contact Shanna Slavings at Slavings-S@MSSU.EDU.

Using the Replacement Model, the redesign of Introductory Psychology at **Missouri State University** (MSU) will address the academic problems of course drift and grade inflation. Each academic year, MSU offers at least 18 face-to-face sections of 153 students, with a total enrollment of 2,500 – 2,700 students. The course is taught by 65% full-time faculty and 35% adjunct instructors who make individual choices on content and delivery within general objectives. The DFW rate is ~25%. The redesign will replace about 50 percent of lecture time with online activities. The time spent lecturing will focus on difficult concepts and specific student needs, identified via online quizzes administered prior to class. Section size will increase to 300 students and a senior learning assistant will be added to each section. Undergraduate learning assistants (ULAs) will facilitate smaller groups within each large lecture. These small groups will complete four online activities, focused on experiential learning of important psychology concepts. To assess the impact of the redesign on learning, scores on pre/post exams from the redesigned sections will be compared with those from traditional sections. The redesigned course will produce cost savings through a combination of larger class size (from 153 to 300 students) and the restructuring of personnel. There will also be a small enrollment increase of 72 students annually. This approach will reduce the number of adjunct faculty needed. The cost-per-student will decline from \$73 to \$60, a savings of 17.8%. To learn more, contact Danae Hudson at DanaeHudson@MissouriState.edu.

The **Missouri University of Science and Technology's** team is redesigning Chemistry I, the first in a two-course sequence, taken by over 1,000 students annually. Chem I is taught in six lecture and 44 recitation sections annually; the lab component is handled separately. The redesign will address the following Chem I

academic and resource issues: 1) differing backgrounds among incoming students, 2) students' lack of successful learning strategies needed to transition from high-school to university, 3) rote memorization by students rather than the development of conceptual thinking and problem-solving skills, 4) inconsistent and often inefficient student engagement in recitation classes, 5) considerable duplication of effort by multiple instructors, and 6) declining departmental personnel due to budget cuts. Using the Buffet Model, the redesign will give students the opportunity to select from a wide pool of instructional materials and strategies to match their own learning characteristics and needs. This flexibility will encourage active learning over memorization and help individualize study plans in a large-enrollment basic science course. A common final exam will be the core assessment method, with four common intermediate exams used to track student performance throughout the semester. The course redesign will provide noticeable cost savings by reducing the number of instructors needed to teach the course. This reduction is achieved mainly by increasing the section size from 200 to 400 students, reducing the number of sections offered annually from six to three, and transferring some student learning experiences online. These actions will reduce the cost-per-student by 19%, from \$150 to \$122. To learn more, contact Klaus Woelk at woelk@mst.edu.

Missouri Western State University (MSWU) will redesign Introduction to Business, which has an average annual enrollment of about 200 students. The traditional course is taught by a combination of full- and part-time faculty in eight to nine sections of ~25 students. The academic issues that will be addressed by the redesign include course drift, inconsistent grading and disappointing DFW rates. Using the Replacement Model, MSWU will collapse multiple sections into one large section each term. Students will meet 50 minutes weekly in a lecture format where learning modules will be presented. For the other two 50-minute meetings, students will be divided into smaller groups of ~25 to participate in interactive learning activities focused on course content, including an electronic stock simulation. The redesign will ensure consistency of material, decrease course drift and engage students in interactive learning activities. Adjunct instructors will lead the content-driven, interactive activities and undergraduate learning assistants (ULAs) will lead students in the stock market simulation. To assess the effects of the redesign, a common final exam will be used in both formats. Cost savings will result from using fewer full-time faculty: in the redesign, nine traditional sections will be combined into one each term, and one full-time faculty member will teach the large section with help from adjuncts and ULAs. The cost-per-student will decline by 60%, from \$325 to \$130. To learn more, contact Cindy Heider at heider@missouriwestern.edu.

Principles of Management at **Northwest Missouri State University (NMSU)** has an annual enrollment between 400 and 500 students. Traditionally, two or more faculty members have split the duties, teaching a total of four to five sections of up to 50 students each semester. The traditional mode of instruction suffers from significant course drift in the teaching style, rigor and overall learning outcomes of students. The preparedness of students for upper-level courses also differs among sections, leading to inconsistency in knowledge and performance in upper-level classes. Using the Replacement Model, NMSU will reduce in-class meetings from three, 50-minute classes to two, 50-minute sessions weekly. Students will prepare for lectures using web-based resources to complete low-stakes assignments and quizzes. Discussion of management topics and cases will be conducted online through small-team, threaded discussions and case studies of managerial concepts, monitored by the instructor and graduate assistants. In-class time will be used to reinforce material with lecture and real-life examples of concepts and current events. The threaded discussions and online assessments will enable faculty to detect areas in which students are not grasping key concepts, which will be revisited in lecture. Results of a common, comprehensive, final examination that tests students' knowledge of key management concepts will be compared in each format. The redesign will reduce costs by increasing section size from ~40 to 100 students, reducing the number of sections offered each year from eight to four and reducing the number of different instructors teaching the course from three to one. The cost per student will decline 49%, from \$221 to \$113, while simultaneously reducing course drift and improving course consistency. To learn more, contact Jeff Nickerson at jnick@nwmissouri.edu.

Southeast Missouri State University plans to redesign College Algebra, a three-credit course with an enrollment of about 1,300 students and a DFW rate of ~45%. The academic problems that will be addressed include a lack of common student preparation, a less than desirable pass rate and lack of consistency among instructors. During the past year, 14 different full-time faculty members taught a total of 40 sections, and four part-time faculty taught a total of five sections, leading to inconsistencies in rigor and content. An important goal of the redesign is to reduce course drift. The redesign model chosen is a variation on the Emporium Model. Held in a computer lab, class meetings will be devoted to 1) instructors introducing new material and relevant examples and reviewing past difficult problems, and 2) students completing *MyMathLab* exercises and quizzes and occasionally working on simulations and collaborative projects. Graduate assistants and undergraduate peer tutors will provide individualized, one-on-one help. Just-in-time work will be available for each in-class topic that will require students to practice needed pre-requisite skills before class along with completing a quiz to ensure mastery of the material. The impact of the redesign on student learning will be assessed by comparing performance on a common final exam, which has been used and collaboratively graded for the last five years, in both the formats. Once the redesign is completed, section size will increase from approximately 34 students to 80 students, and the number of sections will decline from 28 to 12 annually. Graduate and undergraduate students will assist students in the lab, and faculty will spend their office hours in the lab working with students, thus reducing the need for additional tutors. The cost-per-student will decrease from \$216 in the traditional format to \$110 in the redesigned format, a reduction of 49%. To learn more, contact David Starrett at dstarrett@semo.edu.

Southeast Missouri State University will redesign Spanish I, the first course in the Spanish foreign language sequence. Spanish I is taught each year in nine on-campus and two off-campus sections; section size is limited to 35 students, which produces a maximum enrollment of 390 annually. The primary academic problem in the traditional course is the lack of time for oral communication in the classroom and the lack of oral communication skills that the students possess at the end of the semester. Instructors must focus on the grammar in class and check written work by hand in the classroom as a group or at-home. Using the Replacement Model, the

redesigned course will focus on conversation and pronunciation practice. Two class meetings per week will be conversation practice; the third will be completed out of class using exercises from Pearson's *MySpanishLab*. These exercises will incorporate a study of grammar, both in English and Spanish, and will expose the students to the reading and listening aspects of language acquisition. Numerous assessments will be used to compare performance in the traditional and redesign sections, including oral assessment interviews, written exams, time-on-task comparisons and student satisfaction and perceived proficiency surveys. Southeast's planned cost reduction strategies are to increase class size and use less expensive personnel. Increasing the section size from 35 to 50 students will reduce the number of sections needed annually from nine to seven, while at the same time allowing enrollment growth. Tutors and undergraduate learning assistants (ULAs) will be available in the lab to assist students. The ULAs will earn credit for their participation in a teaching practicum with no additional cost to the university for their engagement in the redesigned course. The cost-per-student will decline from \$222 to \$147, a 34% reduction. To learn more, contact David Starrett at dstarrett@semo.edu.

Lifetime Health and Fitness at **Truman State University** is currently taught by seven different instructors in approximately 15 separate sections annually. Each of the sections enrolls about 80 students, and the course serves about 1,300 students annually. Truman plans to redesign this course for three primary reasons: reduce course drift, decrease the resources needed to teach the course and improve student attitudes toward the course. Using the Fully Online Model, the team will create one large section per semester with highly specific outcome objectives and a significantly smaller number of faculty members overseeing its offering. By increasing active-learning experiences, integrating online resources and assessments and utilizing undergraduate learning assistants (ULAs) to serve as "peer health mentors," the team intends to make the course more responsive to fast-changing personal health knowledge. In addition, the course outcomes will become standardized for all students, and student enthusiasm for the course will increase. The redesigned course will be evaluated by Truman's Center for Applied Statistics and Evaluation (CASE) who will provide an item-by-item analysis of the common final and will conduct focus groups and attitude surveys of both redesigned and traditional sections of the course. By reducing the number of sections from 15 annually to two, decreasing faculty involvement from seven to two people team-teaching each section, integrating online resources and assessments, and utilizing ULAs, the course will become more cost efficient. The cost-per-student will decrease from \$32 in the traditional course to \$21 in the redesigned format, a reduction of 34%. To learn more, contact Chris Lantz at clantz@truman.edu.

At the **University of Central Missouri**, the average DFW rate for Human Anatomy and Physiology (A&P I and II) has been slightly over 30% in both courses, while both courses have been experiencing significant enrollment increases. A&P I has experienced a 40% increase in enrollment and A&P II has experienced a 35% increase in enrollment; growth is expected to continue. A&P I and II are offered as three-credit, large enrollment lecture sections with multiple one-credit, 24-student lab sections. The current approach aligns the teaching of the physiological systems with the relevant anatomical structures, splitting the body's systems between the two consecutive courses. Currently, growth is impeded by integrated labs focused on both anatomy and physiology and by staffing issues, as both an instructor and a graduate teaching assistant (GTA) must be assigned to each lab section due to complex protocols and safety requirements in the physiology lab. Thus 54% of total departmental GTAs is dedicated to these two courses (increased from 25% two years ago.) The planned redesign will restructure the two courses into a first-semester Human Anatomy course and a second-semester Human Physiology course. The current redesign will focus on Human Anatomy using the Replacement Model. Students will be supported in mastering a large volume of human anatomical structures by incorporating electronic learning modules, group active-learning strategies, and recitation sessions for the students in danger of failing. The addition of one large lecture weekly will increase the consistency of information provided and course expectations, leading to greater coordination of the total course. Supervised laboratory sessions will complement the knowledge introduced in lectures by engaging students in a team-learning approach at custom-designed learning stations with core model sets, microscopes and electronic learning resources. The effectiveness of the redesign effort will be assessed by utilizing the following assessment tools: comparison of pre- and post-tests, opinion surveys, demographic data, learning styles, follow-on course outcomes, and future outcomes (DFW). These tools will be used to compare past semesters of the old design to the redesigned course. The redesign of Human Anatomy will increase the course enrollment from 336 to 480, increase the lab section size from 25 to 40 and reduce the number of lab sections from 14 to 12 annually. In addition, non-tenure track faculty will replace tenure-track faculty; GTAs assisted by undergraduate learning assistants (ULAs) will manage the labs. These changes will reduce the cost-per-student by 68%, from \$345 in the traditional format to \$111 in the redesigned course. To learn more, contact Scott Lankford at lankford@ucmo.edu.

The **University of Central Missouri** (UCM) offers 10 sections (35 students each) of Intermediate Algebra each semester taught in a traditional lecture format by graduate teaching assistants (GTAs) and, when needed, adjunct faculty. DFW rates from 2005 to 2009 for Intermediate Algebra were 38.31%, 29.66%, 45.04%, 33.58% and 33.58%, respectively. Intermediate Algebra also suffers from course drift due to inconsistent coverage among sections. Using the Emporium Model, the team will replace lecture time with online, interactive learning activities provided by commercial software and supported by individualized personal assistance in a computer laboratory. Students will be required to attend the lab and will be actively engaged in their learning. For the past eight years, the department has given common final exams in Intermediate Algebra and will use the same common exam to compare performance of students in the redesigned course. Intermediate Algebra was a relatively inexpensive course at the university prior to the redesign, yet the new format will produce a 12% savings. Section size will be increased from 35 to 70 students, reducing the number of sections offered annually from 20 to 10. The number of GTAs needed in the course will decline from five to 2.5, and undergraduate learning assistants will be added to help staff the lab. Overall, the redesign will reduce the cost-per-student from \$118 to \$104. To learn more, contact Shing So at so@ucmo.edu.

Using the Emporium Model, the **University of Missouri-Kansas City** (UMKC) plans to redesign College Algebra, a three-credit course, delivered in a standard lecture format. Three 50-minute sessions per week in sections of 35-40 students are taught by a single instructor, usually a graduate teaching assistant (GTA) or an

adjunct instructor. Total enrollment during AY 2010-2011 was 453, and enrollment is increasing. The redesign will address two main problems: 1) the high and upward trending DFW rate of about 30%, and 2) fewer resources available to support the course due to budget cuts. The redesign will replace the three 50-minute lectures with two mandatory 75-minute lab sessions in an Interactive Math Learning Center and one 50-minute class meeting. Each lab section will consist of approximately 50 students who will work under the guidance of GTAs or adjuncts and undergraduate teaching assistants (UTAs). Students will work on interactive tutorials and activities that promote active learning and provide immediate feedback. The class meetings will be larger (100–150 students) and conducted by one faculty member who will review key concepts and preview upcoming material and tasks. Student learning will be assessed by comparing performance on the same common final exam in the traditional and redesign formats. The redesign will increase the number of College Algebra students taught by each instructor. GTAs and adjunct instructors will no longer prepare lectures and grading will be reduced. GTAs and adjuncts will more than double their student load, from one section of 35-40 students to two sections of 50, without changing the number of total hours they dedicate to the course. By consolidating lecture sections, one primary instructor/coordinator will serve all College Algebra students each term with only two or three class meetings per week. These changes will reduce the cost-per-student by 35%, from \$103 to \$67. To learn more, contact Ian Besse at bessei@umkc.edu.

Computers and Information Systems enrolls 550 students per year at the **University of Missouri-St. Louis** (UMSL). The traditional course format is three hours of lecture taught in a computer classroom by a variety of full- and part-time faculty, with the support of four graduate teaching assistants (GTAs) serving as tutors. The need to constantly adapt to upgrades in operating systems and software applications has led to course drift among sections depending upon the speed of updating by the various faculty involved. Analysis of the DFW rates demonstrates that students are not as successful as expected; in evening sections, a very non-traditional student population has the highest failure rate (ranging from 33–51%). The redesign, using the Replacement Model, will require students to attend an initial class meeting each semester to learn about course expectations and prepare for an active-learning environment. The balance of the scheduled class meetings will occur in smaller technology classrooms staffed by the instructor and undergraduate peer tutors. Collapsing all sections into one with one instructor of record, increasing the number of active-learning opportunities, embedding tutors more deeply into the course, and utilizing more intimate learning opportunities in smaller venues will help ensure that students spend more time on task with more opportunities to apply course theories and principles. To assess the impact of the redesign on learning, a common final exam will be used to compare performance in the traditional and redesigned formats. Common rubrics will also be used to analyze students' work throughout the semester. The redesign of Computers and Information Systems will result in a decrease in the cost-per-student from \$113 to \$95, a 16% reduction. This cost savings is a result of consolidating all sections under one instructor assisted by a team of undergraduate and graduate students. The number of sections will decrease from 11 to two annually and section size will increase from 50 to ~150-200 students. To learn more, contact Mimi Duncan at duncan@umsl.edu.

To learn more about the Missouri initiative, contact Chris Weisbrook at chris@umsystem.edu or see <http://www.theNCAT.org/States/MO.html>.

REDESIGN SCHOLARS PROGRAM

Providing assistance to the higher education community as they engage in course redesign.

Scholars Continue to Provide Assistance to Higher Education

Over 50 Redesign Scholars are listed on the NCAT website. These talented campus leaders have successfully completed and sustained a redesign and are available to assist other higher education institutions that seek to undertake a course redesign. They can offer many services. For example, Eileen O'Brien from **University of Maryland Baltimore County** has recently begun college-wide responsibilities in the Offices of the Vice President for Faculty Affairs and the Vice Provost for Undergraduate Education on her campus. Her responsibilities will be to identify courses needing redesign and provide support to faculty involved in each course. Three courses are currently in the beginning stages of their redesigns: targeting desired student outcomes, setting evaluation criteria and developing a data collection plan to track progress in all redesigned courses. Eileen is also one of five Course Redesign Fellows at the **University System of Maryland**. During spring 2011, she worked with the department of psychology at **Salisbury University** to help resolve issues related to online labs. During this same semester, she worked with the **University of Maryland Eastern Shore's** department of psychology to review their redesign model and their planned online interactivities. In summer 2011, Eileen worked with the **University of Baltimore** to rewrite their redesign plan for their Ethical Issues in Business and Society course.

Redesign Scholar Karen Wyrick is chair of the mathematics department at **Cleveland State Community College**. Because she has received so many requests for campus visits from those wanting to replicate the successes achieved in both developmental and college-level math, the college has decided to hold an open house and redesign workshop (Do The Math) on November 4, 2011 in Cleveland, TN. The workshop is open to anyone in higher education seeking to learn more about how this institution achieved its success as well as many specific good ideas about changing how students can learn math. To register, visit www.clevelandstateecc.edu or contact Karen Wyrick at kwyrick@clevelandstateecc.edu.

Michelle Miller from **Northern Arizona University** has provided additional consultation on project plans for **California State University, Fresno's** redesign initiative, which is headed by the Center for the Scholarly Advancement of Learning and Teaching. John Squires from **Chattanooga State Community College** spoke to faculty at **Purdue University** on principles of course redesign and participated in a panel discussion on

implementing innovation in higher education classrooms. John is also project director for a Next Generation Learning Challenges Wave 1 project, Do the Math, which seeks to redesign developmental math programs at **Chattanooga State Community College** (TN), **University of Hawaii Maui College** (HI) and **Jefferson Community and Technical College** (KY) in partnership with the Education Trust in Washington D.C. Many of the Redesign Scholars routinely answer questions via telephone and accept visits from faculty and administrators from other campuses. Dennis Pearl at **Ohio State University** and Phoebe Rouse at **Louisiana State University** cited both in a recent email.

In future issues, we will continue to provide examples of ways that Redesign Scholars are contributing to helping other institutions learn about course redesign. NCAT's Redesign Scholars program provides a way for faculty and administrators who have completed and sustained a redesign to share their expertise with those who seek to replicate their success. To learn more about NCAT's Redesign Scholars program, see <http://www.theNCAT.org/RedesignAlliance/ScholarsProgram.htm>.

THE REDESIGN ALLIANCE

Featuring updates from the Alliance, a member organization of institutions, organizations and companies committed to and experienced with large-scale course redesign.

Events

In October 2010, NCAT announced its intention to replace the Redesign Alliance Annual Conference for at least two years with a series of smaller seminars and workshops that are less expensive for all participants. That decision was reached in view of the dismal budget situations that are projected in higher education for the near future. In essence, we decided to apply the principles of redesign to the conference—i.e., to serve more people at a reduced cost. Our strategy seems to be working. In the first year, we held five events with a total registration of close to 600 participants, which far exceeded our projected conference registrations. Year two promises even greater participation.

Getting Started Seminar Draws A Crowd

On October 21, 2011, an NCAT seminar, Getting Started on Course Redesign, attracted 130 faculty and administrators. A clear signal that more and more institutions are becoming interested in course redesign: registration for the seminar quickly reached capacity and had to be closed. Co-sponsored by the Redesign Alliance and **Northern Virginia Community College** (NOVA), the seminar featured NCAT's Carolyn Jarmon, NCAT Redesign Scholar Megan Bradley from **Frostburg State University** and Joyce Samuels, NOVA's project leader in the *Changing the Equation* program. Carolyn provided an overview of course redesign, and Megan and Joyce offered case studies of course redesign implementations in general psychology and developmental math respectively. Participants also discussed how to overcome potential obstacles and challenges that campuses face in launching a course redesign. Presenters' slides from the October seminar are available at http://www.theNCAT.org/RedesignAlliance/NOVA%20Getting%20Started%20Agenda_Oct2011.pdf linked to the presenter's name on the agenda.

Getting Started Seminar Scheduled for February 3, 2012 in Baltimore

Due to popular demand, NCAT is offering another Getting Started on Course Redesign seminar for those who are thinking about beginning a redesign project. On February 3, 2012, the Redesign Alliance and the **University System of Maryland** will co-sponsor a seminar to be held at the Tech Center of University of Maryland Baltimore County. The seminar will provide participants the opportunity to learn about how redesign efforts have begun at both two- and four-year institutions and how these initial redesigns have spread to other departments on campus and/or throughout a university system. The program will include an overview of course redesign by NCAT's vice president, Carolyn Jarmon, as well as case studies of completed course redesigns that have been sustained over time. Participants will interact with those who have successfully launched a redesign and learn about the issues they faced and how they resolved problems that arose. This event is open to the higher education community, but registration is limited to 80 participants. To register, see <http://www.thencat.org/RedesignAlliance/USMWorkshopFeb2012.html>.

Members Only Colloquium on December 9, 2011 in Tampa, FL

On December 9, 2011, members of the Redesign Alliance will gather at the **University of South Florida** in Tampa, FL for a Members' Colloquium. Open only to members of the Redesign Alliance, this event will move beyond discussions of how to get started on course redesign and will instead concentrate on what comes next. Through presentations and small group exchanges, the colloquium will focus on three core course redesign topics identified by a survey of members: 1) Sustainability, 2) Scalability and 3) Leadership and Change. The colloquium will be particularly valuable for institutional teams. We have found that having a team participate in our events encourages ongoing discussion about sustaining and expanding redesigns on campus. Conversations at the colloquium can also help those who are not totally certain that course redesign can "work" think through their particular concerns and receive assistance from others who have succeeded. To learn more about the colloquium and register, see <http://www.theNCAT.org/RedesignAlliance/MemOnlyCollDec2011.html>. To join the Redesign Alliance so that you can participate in this event, see <http://www.theNCAT.org/RA.htm>

Hold the Date: Three Math Redesign Workshops To Be Held in Spring 2012

NCAT will offer three workshops on Increasing Student Success in Developmental and College-Level Math during spring 2012. The dates and locations will be:

- February 24, 2012 in Orlando, FL at the University of Central Florida
- March 29, 2012 in Dallas, TX at the Marriott Las Colinas
- April 20, 2012 in St. Louis, MO at the University of Missouri–St. Louis

From working with large numbers of students, faculty and institutions over the past 11 years, NCAT has learned what works and what does not work in improving student achievement in both developmental and college-level mathematics. The pedagogical techniques leading to greater student success are equally applicable to both developmental and college-level mathematics. The underlying principle is simple: Students learn math by doing math, not by listening to someone talk about doing math. Interactive computer software combined with personalized, on-demand assistance and mandatory student participation are the key elements of success. NCAT calls this model for success, the Emporium Model, named after what the model's originator, Virginia Tech, called its initial course redesign. These workshops are designed for those who want to learn more about the Emporium Model and its successful implementation across the U.S. in both developmental and college-level math.

NCAT's Carolyn Jarmon will begin each workshop with an overview of what NCAT has learned about what works best in redesigning mathematics. Two Redesign Scholars representing two- and four-year institutions will then share specifics about their particular redesigns including the problem they were trying to solve, the changes they made in the content and structure of the traditional course and the results they have achieved. The workshop will include opportunities to interact with the speakers as well as to share your ideas and experiences about redesigning math. Each event will also feature exhibits by corporate members of the Redesign Alliance who offer products and services that can be used in redesigning college-level and developmental math.

The registration fees, which cover lunch and breaks, are \$100 for Redesign Alliance members and \$150 for attendees whose institutions and companies are not members of the Alliance. Registration for these events will begin on November 15, 2012 on the NCAT website and will be linked to the NCAT home page. We guarantee that you will be able to improve student success in developmental math if you follow the advice of these pioneering institutions!

Members

\$10,000 Redesign Alliance Members Host NCAT's Carolyn Jarmon

Those institutions seeking personalized consulting and campus visits from NCAT may join the Redesign Alliance at a \$10,000 membership level. During fall 2011, Carolyn Jarmon has visited three institutions that have chosen this option: on September 12-13, the **University of Texas–Arlington**; on October 24-25, **Montana State University–Billings**; and on October 31-November 1, the **University of Missouri–Kansas City**. The schedule for each visit was crafted specifically to address the interests and goals of the particular campus. During each visit, Carolyn made a campus-wide presentation for all faculty and administrators to inspire them to become involved in course redesign. She also met with groups of faculty and administrators who had already tried some aspects of course redesign or were considering launching a redesign. On each campus, the goal was to provide an overview for the entire campus as well as specific information that will be useful as the campus moves forward to develop a campus plan for redesign.

University of Southern Maine Launches Campuswide Course Redesign Initiative

As part of their membership in the Redesign Alliance at the \$25,000 level, the **University of Southern Maine (USM)** invited Carolyn Jarmon, NCAT's Vice President, to visit the campus on October 4, 2011 to kick off their new redesign initiative. USM has received a substantial grant from the University of Maine System entitled "Improving Student Learning in Gateway Courses," which will support the redesign of six courses over the next three years. Subsequently, USM will provide internal support for the redesign of an additional four courses. Home to one of NCAT's early redesign projects in Psychology and NCAT Scholar John Broida, USM seeks to improve graduation rates as well as increase the effectiveness and efficiency of the learning environment. USM is currently developing an in-house RFP process to identify the first pair of courses to redesign. To learn more about this initiative, contact Sally Meredith at smeredith@usm.maine.edu.

Pearson Course Redesign Workshop Attracts More Than 200 Participants

Building on highly successful prior events, Pearson Education held its Eighth Annual Course Redesign Workshop on September 23 - 24, 2011 at the Hilton Bonnet Creek in Orlando, FL. Over 200 participants learned about how to get started on course redesign from NCAT's Carolyn Jarmon and from large- and small-group interaction with experienced educators in accounting, biology, chemistry, developmental reading and writing, math, psychology and world languages. The workshop highlighted successful course redesigns that take advantage of technology to improve student learning and efficiency in large-enrollment, introductory courses. Participants learned how to implement course redesign principles in both quantitative and qualitative disciplines. Faculty also had the opportunity to learn more about Pearson's leading technology products. Slides from the presentations as well as the opportunity to exchange ideas with others will be available at <http://www.pearsonhighered.com/course redesign/pastevents.html>. To learn more, contact Karen Mullane at Karen.Mullane@pearson.com.

COMMON GROUND

Reporting on initiatives that share the Center's goals and objectives.

Don't Lecture Me: A New Documentary from American RadioWorks

A new American RadioWorks documentary series, "Don't Lecture Me," focuses on the ineffectiveness of the lecture method, which dominates higher education today. "College students spend a lot of time listening to lectures. But research shows there are better ways to learn. And experts say students need to learn better because the 21st century economy demands more well-educated workers." Created by Emily Hanford, this series has three segments, each dealing with an aspect of how higher education might change its core pedagogy. The first segment, entitled [Rethinking the Way College Students Are Taught](#), advances the primary message: "Lecturing was invented as a way to share information in a time before books were widely available. Now, there are better approaches." [The Problem with Lecturing](#), the second segment, focuses on the key problems associated with lecturing and provides examples of how several physics professors figured out the lecture wasn't working and developed alternate pedagogies. In segment three, [Inventing a New Kind of College](#), a new approach to higher education and learning is described with a focus on the **University of Minnesota Rochester**, a brand new college that has eliminated lectures. NCAT concurs with the basic message of the series: there are more effective ways of teaching students that engage them with course content and with each other produce better learning outcomes than lecturing. To access the series, see <http://americanradioworks.publicradio.org/features/tomorrows-college/lectures/>. American RadioWorks (ARW) is the national documentary unit of [American Public Media](#). ARW creates documentaries, series projects, podcasts and online content for the public radio system and the Internet. To learn more about ARW, see <http://americanradioworks.publicradio.org/about.html>.

LSU Expands Redesign to High Schools

In addition to sustaining its own redesigned math program, **Louisiana State University (LSU)** has begun working with high schools across the state of Louisiana.* The high school program called the College Readiness and Dual Credit Program is reporting excellent results. Students enroll in the Louisiana Board of Regents Early Start Program and may then dual enroll in high-school level Advanced Math and LSU's College Algebra and Trigonometry. Students earn dual high school and college credit with a grade of 70 or better. LSU holds eight-day workshops for partnering high school teachers to prepare them to use the software and manage an emporium-style learning environment. Thus far, the average end-of-course exam pass rate has increased by 29 percentage points, an extraordinary improvement. To learn more, contact Redesign Scholar Phoebe Rouse at prouse@lsu.edu.

*Since the redesign of College Algebra and computer-based testing was fully implemented in 2006, LSU has had more A's and B's than ever in its history, and redesign students are doing as well or better in subsequent courses than students were doing for five years prior to the redesign. To learn more about LSU's success, see www.math.lsu.edu/courses/1021/Redesign.

New York Times asks, Is Online Education A Cost Effective Alternative?

On August 23, 2011, the *New York Times* ran an article by Tammy Lewin titled "Online Enterprises Gain Foothold as Path to a College Degree." The article addresses the widening options available as well as some of the issues which accompany this approach to education including a variety of kinds of business options, including Straighterline, Western Governors' University and Learning Counts. What's significant about this article is not so much its description of often reported alternatives to traditional higher education but the fact that it was accompanied by eight different perspectives on the topic, Do We Spend Too Much on Education? The *Times* asks, "Given that a high school diploma, a bachelor's degree and even graduate school are no longer a ticket to middle-class life, and all these years of education delay the start of a career, does our society devote too much time and money to education?" These two articles are indicative of the growing public understanding, particularly by those outside of higher education, of the need to rethink what we do and how we do it so that student success increases at much lower costs. To read the first article, see http://www.nytimes.com/2011/08/25/education/25future.html?_r=1&scp=1&sq=Online%20Enterprises%20Gain%20Foothold&st=cse. To read the eight perspectives on college spending, see <http://www.nytimes.com/roomfordebate/2011/08/23/spending-too-much-time-and-money-on-education/is-it-a-priority-to-teach-the-poor>.

"The Flipped Classroom" Goes to High School

A recent *EducationNext.org* article, "The Flipped Classroom," written by Bill Tucker, discusses the value of shifting how students spend their study time inside and outside of class. The concept of the flipped classroom involves moving the one-way content delivery (i.e., lectures) that usually dominates high school and college class time to the online environment and using class time to actively engage students in the content. "Class becomes the place to work through problems, advance concepts, and engage in collaborative learning." The article focuses on work in high schools but acknowledges NCAT's contribution: "But the ideas behind flipping are not brand new. For over a decade, led by the National Center for Academic Transformation (NCAT), dozens of colleges have successfully experimented with similar ideas across math, science, English, and many other disciplines. NCAT's increasingly impressive body of practice shows that thoughtful course redesigns lead to improved learning." The concept of a "flipped classroom" has been part of many of the redesigns we have worked with. **Auburn University** called it "turning the course around" when they redesigned Engineering Physics. As the team observed, "Typically, faculty provide the first exposure of the material to passive, unengaged students. The redesigned course made students responsible for the first exposure of the material, and the faculty monitored their progress. This was accomplished with a low-risk pre-test. As a result, class time was used to deal with misconceptions, subtleties, connections, applications and summarizing content." Similarly, **Mississippi State University** didn't use the term but definitely employed the concept. In the redesign of Statics, an introductory engineering course, students watched online videos discussing the core concepts prior to coming to class. In class students worked on small-group projects or solved problems which employed

the theory discussed in the videos. What's important is that now students get help applying the concepts (the tough part) rather than doing homework on their own. It is great that high schools are using the concepts and practices we know work at the college level—no matter what we call the model! To read the entire article, see <http://educationnext.org/the-flipped-classroom/>.

More Learning for Less Cost: Texas Creates Western Governors University Texas

In the past, many states have seen the creation of new campuses or the expansion of existing ones as the only options to meet increased demand for higher education. In today's economic climate, neither approach appears to be feasible. While many businesses have routinely outsourced various components of their operations, higher education has not embraced this approach to expand options for students. As the outcry for greater college completion and workforce preparation increases, the states of Indiana and Washington—and now Texas—are thinking that outsourcing may contribute to greater higher education access at a relatively low cost.

The state of Texas recently announced a partnership with Western Governors University (WGU), a recognized expert in the field of online learning for working adults, to provide educational opportunities for Texas citizens. In announcing the new institution, Governor Rick Perry said, "Earning a college degree is one of the most effective ways for individuals to improve the quality of life for themselves and their families. By offering online, competency-based courses in key workforce areas, WGU Texas provides another flexible, affordable way for Texans to fulfill their potential and contribute their talents for years and decades to come, without any need for state funding. Our strengthened collaboration with WGU plays an important role in the effort to ensure Texas has an equipped workforce to meet the needs of job creators." To learn more, see <http://texas.wgu.edu/>.

We ask, which state will be next?

UNCOMMON GROUND

Helping the higher education community understand change strategies.

Student Loan Debt Surpasses Credit Card Debt

An August 9, 2011 article in the *Wall Street Journal* shocked the public with its lead sentence: Consumers now owe more on their student loans than their credit cards. "Americans owe some \$826.5 billion in revolving credit, according to June 2010 figures from the Federal Reserve. (Most of revolving credit is credit-card debt.) Student loans outstanding today—both federal and private—total some \$829.785 billion, according to Mark Kantrowitz, publisher of FinAid.org and FastWeb.com. By his math, there is \$605.6 billion in federal student loans outstanding and \$167.8 billion in private student loans outstanding. He estimates that \$300 billion in federal student loan debts have been incurred in the last four years." This steep rise in student debt is yet another indicator of the negative impact of rising higher education costs across the United States. We at NCAT are devoted to reversing this unsustainable trend. Unfortunately, as we look around the country, we don't see many in higher education making an attempt to do the same. Please ask yourself, what am I doing to lower the cost of higher education? What am I doing to have an impact on one of the most serious public policy issues the nation faces?

SUBSCRIPTIONS, SUBMISSIONS, ARCHIVES, REPOSTING

The National Center for Academic Transformation serves as a source of expertise and support for those in higher education who wish to take advantage of the capabilities of information technology to transform their academic practices.

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