



Experts in improving learning and  
reducing cost in higher education.



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## Who We Are

The National Center for Academic Transformation (NCAT) is an independent, not-for-profit organization that provides leadership in using information technology to redesign learning environments to produce better learning outcomes for students at a reduced cost to the institution. NCAT is headed by Dr. [Carol A. Twigg](#), an internationally recognized expert in the field. The [NCAT staff](#) has extensive experience in higher education as faculty members, administrators and researchers in both traditional and non-traditional higher education environments.

### Initial Proof-of-Concept

Building on her experience as vice president of Educom (now Educause) and founder of the National Learning Infrastructure Initiative (NLII), Dr. Twigg created the [Program in Course Redesign \(PCR\)](#) with the support of an \$8.8 million grant from the Pew Charitable Trusts. From 1999 to 2004, NCAT worked with 30 diverse two- and four-year colleges (50,000 students annually) to prove that it is possible to improve quality and reduce cost in higher education. Course redesign using information technology is key to achieving both outcomes.

The results of the PCR were exceptional. Twenty-five of thirty course redesign projects showed significant increases in student learning; the other five showed learning equivalent to traditional formats. Of the twenty-four projects that measured retention, eighteen reported a noticeable decrease in drop-failure-withdrawal rates, ranging from 10 to 20%, as well as higher course-completion rates. Most dramatically, all thirty institutions reduced their costs by 37% on average, ranging from 20% to 77%, and produced a collective annual savings of about \$3 million. Other positive outcomes included better student attitudes toward the subject matter and increased student and faculty satisfaction with the new mode of instruction.

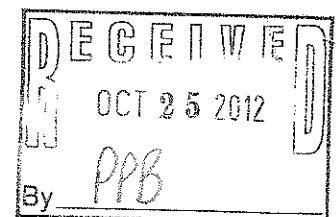
### Advancing the Mission

Today, many organizations and companies offer technology-based solutions for streamlining academic and administrative systems, as well as products that enhance the educational experience. However, NCAT is the only resource recognized for translating its vision for achieving improved learning outcomes at a reduced cost into a proven track record of success. NCAT furthers its mission of creating lasting change in higher education through a number of initiatives designed to provide research-based solutions, expertise and support to educational systems interested in improving quality, increasing access, and using resources more effectively.

[Read more about how NCAT helps higher education improve quality and reduce costs.](#)

[New to Course Redesign? A list of recommended reading to get you started.](#)

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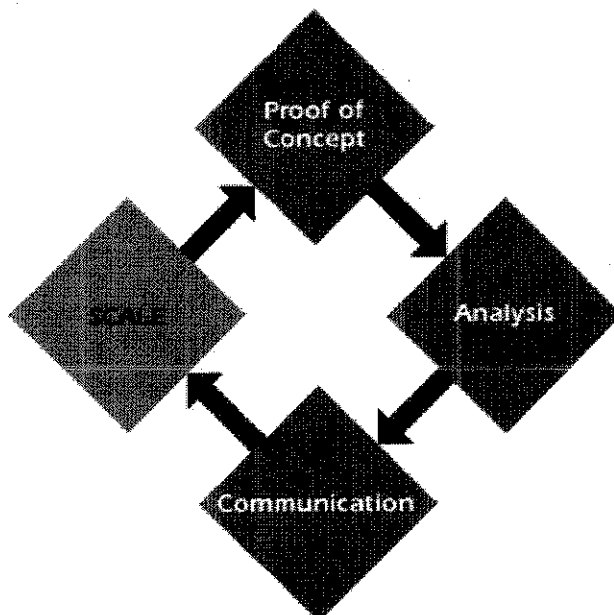
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## What We Do

The National Center for Academic Transformation (NCAT) works through a four-stage iterative process to advance the use of information technology in improving student learning and reducing instructional costs.

For further information, please contact [Patricia Barischerer](#), Program Manager.



### 1. Proof of Concept:

NCAT creates and conducts innovative programs that use technology to improve learning and reduce costs in partnership with colleges and universities. The outcome of each effort is a proof of concept.

- [Program in Course Redesign \(PCR\)](#), funded by the Pew Charitable Trusts, 1999 – 2003
- [Roadmap to Redesign \(R2R\)](#), funded by FIPSE, 2003 – 2006
- [Colleagues Committed to Redesign \(C<sup>2</sup>R\)](#), funded by FIPSE, 2006 – 2009
- [Changing the Equation](#) funded by the Gates Foundation, 2010 - 2013

### 2. Analysis:

NCAT analyzes the results of these programs to identify and document specific techniques and practices that lead to success, to develop models for future practice and to learn what next steps are needed to scale the proof of concept.

- [PCR Outcomes Analyses](#)
- [Increasing Success for Underserved Students](#)
- [R2R Outcomes Analyses](#)
- [C<sup>2</sup>R Outcomes Analyses](#)

### 3. Communication:

NCAT communicates these lessons learned by writing and speaking for professional and general audiences about successful patterns and practices that lead to improved student learning and reduced instructional costs.

- [The Learning MarketSpace](#)
- [Articles and Monographs](#)

- [The Redesign Alliance](#)
- [What Others Are Saying about NCAT](#)

**4. Scale:**

NCAT works with institutions, systems, districts and states to scale the proof of concept to impact greater numbers of students, faculty members and institutions and achieve significant educational change. For example:

- [Arizona Board of Regents \(2006 – 2009\)](#)
- [The Mississippi Institutions of Higher Learning \(2007 - 2010\)](#)
- [Missouri Public Four-Year Universities \(2010 - 2013\)](#)
- [State University of New York \(2007 - 2010\)](#)
- [Tennessee Board of Regents \(2006 – 2009\)](#)
- [University System of Maryland \(2006 – 2009\)](#)

**Feedback and Continuous Improvement:**

NCAT then uses the feedback and experience gained in each stage of the process to create and conduct additional programs in partnership with colleges and universities that demonstrate new ways to achieve improved student learning and reduced instructional cost.



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## Missouri Course Redesign Initiative

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### Projected Savings Summary

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The calculations shown in the charts below reflect differences in operating costs between traditional and redesigned formats. The cost savings primarily reflect decreased time spent by instructional personnel (full-time faculty, adjunct faculty, graduate teaching assistants) and/or substitution of less expensive personnel. Other kinds of cost savings are not included in the charts such as those accrued from increased space capacity and from greater retention. In addition, the savings shown are for one year. The charts do not amortize the savings over the life of the course. Doing so would increase the savings by a factor of five, for example, if the course remained substantially the same for five years.

There are four ways that the cost-per-student figures translate to actual practice: 1) newly available faculty time, which can be reassigned to other courses or responsibilities; 2) actual dollar savings (e.g., the elimination of adjuncts or other personnel); 3) the capacity to serve more students, thus reducing the cost-per-student; 4) a decline in faculty workload for the course.

MISSOURI CRI Projected Savings Summary						
Institution	Course	Cost per Student		Savings per Student	% Savings	
		Traditional	Redesign			
MO Southern State U	Oral Communication	\$174	\$39	\$135	78%	
U of Central MO	Human Anatomy	\$345	\$111	\$234	68%	
MO Western State U	Intro to Business	\$325	\$130	\$195	60%	
MO Northwest State U	Principles of Mgmt	\$221	\$113	\$108	49%	
Southeast MO State U	College Algebra	\$216	\$110	\$106	49%	
UMKC	College Algebra	\$103	\$67	\$36	35%	
Southeast MO State U	Spanish	\$222	\$147	\$75	34%	
Truman State U	Health & Fitness	\$32	\$21	\$11	34%	
Lincoln U	Basic English	\$433	\$345	\$88	20%	
MO U of Science & Tech	Chemistry	\$150	\$122	\$28	19%	
MO State U	Psychology	\$73	\$60	\$13	18%	
UMSL	Information Systems	\$113	\$95	\$18	16%	
U of Central MO	Intermediate Algebra	\$118	\$104	\$14	12%	
<b>AVERAGE</b>					<b>38%</b>	
Institution	Course	Annual Enrollment	Annual Cost		Annual Savings	
			Traditional	Redesign		
MO Southern State U	Oral Communication	920	\$160,080	\$35,880	\$124,200	
U of Central MO	<sup>^</sup> Human Anatomy	480	\$165,600	\$53,280	\$112,320	
Southeast MO State U	College Algebra	967	\$208,872	\$106,370	\$102,502	
MO Northwest State U	Principles of Mgmt	400	\$88,400	\$45,200	\$43,200	
MO Western State U	Intro to Business	200	\$65,000	\$26,000	\$39,000	
MO State U	<sup>^</sup> Psychology	2,700	\$197,100	\$162,000	\$35,100	
MO U of Science & Tech	Chemistry	1,050	\$157,500	\$128,100	\$29,400	
Lincoln U	<sup>&gt;</sup> Basic English	300	\$129,900	\$103,500	\$26,400	
Southeast MO State U	<sup>^</sup> Spanish	350	\$77,700	\$51,450	\$26,250	
UMKC	<sup>^</sup> College Algebra	546	\$56,238	\$36,582	\$19,656	
Truman State U	Health & Fitness	1,209	\$38,688	\$25,389	\$13,299	
UMSL	Information Systems	550	\$62,150	\$52,250	\$9,900	
U of Central MO	Intermediate Algebra	700	\$82,600	\$72,800	\$9,800	
<b>TOTAL</b>		<b>10,372</b>			<b>\$591,027</b>	
<sup>^</sup> Adds students						
<sup>&gt;</sup> Decreases students						



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## Missouri Course Redesign Initiative

### Missouri Southern State University

**Course Title:** Oral Communication  
**Contact:** [Shanna Slavings](#)

#### Project Abstract

At Missouri Southern State University (MSSU), undergraduate students are required to take three credits of oral communication within the core undergraduate general education curriculum in most degree programs. As a result of a continuing increase in the number of freshman and sophomore students, the demand for the course has grown significantly, currently accommodating 1,104 students (24 sections of 23 students each) annually. Due to economic conditions in the state of Missouri, MSSU is not in a position to hire additional full-time faculty. In addition, human resource rules restrict the number of course sections taught by adjunct instructors to two annually. As a result, the communications department has had to depend on varying levels of qualified instructors.

All instructors have been free to design, develop and teach the oral communication course according to their own instructional styles. In spring 2010, 20 percent of the 453 students enrolled received a grade of D or F or withdrew from the course. In fall 2010, 23 percent of the 580 students enrolled received a grade of D or F or withdrew from the course. The team attributes these rates to inconsistency and invalid alignment of objectives, assessment and content.

The MSSU team will use the Replacement Model to create a redesign that fits their need to enhance quality and reduce cost. 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.

The quality of the course will be enhanced in various ways. First, offering only two sections per semester will increase course consistency. Second, faculty will be able to spend more time improving and monitoring the course versus spending time on repetitive tasks such as grading quizzes and recording participation points. Third, collecting and monitoring assessment data will improve the measurement and alignment of learning objectives to course activities. Finally, the use of active-learning materials, including those available through *Speech Class* and *Poll Everywhere*, will improve student engagement in learning.

The redesign effort will be monitored and assessed through common assignments, assessments and objectives. Students are expected to 1) prepare a speech outline, assisted by *Speech Class*; 2) make ethical decisions, observed through student discussions in response to ethical questions and examples; 3) deliver an extemporaneous speech, assessed by the speech assignments using standardized criteria; and, 4) choose appropriate and credible evidence, also assessed within the speeches. Each semester, data will be collected and compared to ensure that time spent on learning materials coincides with the course objectives. Finally, student performance on a common final examination will be compared in both the traditional and redesigned formats.

The redesign of Oral Communication at MSSU will decrease the number of sections offered annually from 44 to four, increasing section size from ~23 to 230 students. Undergraduate students will work with small groups of students both in the lecture and in the Communications Assessment and Learning Lab. The cost-per-student will decrease from \$174 in the traditional format to \$39 in the redesigned format. The savings will allow faculty to teach other communication courses and reduce the need for adjuncts in tight budget times.

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## Missouri Course Redesign Initiative

### Truman State University

**Course Title:** Lifetime Health and Fitness  
**Contact:** [Roberta Donahue](#)

### Project Abstract

Lifetime Health and Fitness is a course offered in Truman State University's core liberal studies program. It is currently taught by seven different instructors in approximately 15 separate sections annually. Each of the sections enrolls about 80 students; the course serves about 1,300 students annually.

Truman plans to redesign this course for three primary reasons. The first concerns course drift. With multiple sections running concurrently, the faculty members recognize their tendency to emphasize personal points of interest in health-related behaviors and outcomes resulting in inconsistent experiences for students across sections. Course redesign will address this issue by creating one large section per semester with highly specific outcome objectives and a significantly smaller number of faculty members overseeing its offering. The second concern is with the resources required to offer multiple sections. With continuing budget restrictions, it becomes increasingly important to deploy personnel resources in a more efficient manner. The redesign will take advantage of available and emerging technology coupled with the use of student support to provide a more cost efficient means of instructing the course. The third area of concern relates to student attitudes toward the course. The course has maintained a somewhat negative reputation among students over time. Relatively minor changes to outcomes and format have done little to improve student attitudes. The hope for the redesign is that the extensive use of technology will reflect the changing ways in which students are learning and interacting with the world around them, and thus by extension, their feelings toward the course will improve.

Truman has selected the Online Model of redesign and will significantly reduce in-class instructor time. The redesign will shift the learning dynamic from instructor driven (passive) to student driven (active) by featuring on-ground and online, self-guided and instructor-guided learning experiences that complement foundational personal health course content. These experiences will take the form of stress management activities (e.g., yoga, progressive relaxation, guided meditation), behavior change activities (e.g., identify and implement a program designed to change a targeted health behavior), diet analysis, body composition analysis, cardiovascular endurance test (e.g., timed one-mile walk or 1.5-mile run) among others. Students will be required to access the self-guided supplemental experiences through the university's Blackboard course management system or McGraw Hill Connect On-line Resource, which supports the course text, *Fit and Well: Core Concepts and Labs in Physical Fitness and Wellness*. Instructor-guided experiences will be completed in structured laboratory or field settings at scheduled times. By increasing active learning experiences, integrating online resources and assessments, and utilizing undergraduate learning assistants (ULAs) to serve as "peer health mentors," the course will become 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) by conducting learning outcome and attitudinal evaluation. CASE 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.

The redesigned course will reduce course sections from 15 (annually) to two and reduce faculty involvement in course instruction from seven to two people team-teaching the one large section offered each term. By reducing the number of sections, integrating on-line 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%. Cost savings will enable faculty members to teach additional sections of other courses much needed to support the increasing number of majors, support Truman's liberal studies program and spend greater time developing community/student partnerships.

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