THE ARCHITECTURE OF
INNOVATION

System-Level Course Redesign in Tennessee

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ACE ® American
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Leadership and Advocacy

The Architecture of Innovation:
System-Level Course Redesign in Tennessee

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Center for Policy Research and Strategy

ACE's Center for Policy Research and Strategy (CPRS) provides thought leadership at the intersection of public policy and institutional strategy. The center produces papers, briefs, infographics, and convenings that shed light on diverse student populations and explore emergent practices in higher education with an emphasis on long-term and systemic solutions for an evolving higher education landscape and changing American demographic. Three themes guide the center's work:

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FOREWORD

Renowned management theorist Peter Drucker studied innovation, which he defined as a change that creates a new dimension of performance across many sectors of the economy. Among his key observations was that successful innovation is a purposeful and systematic exploration of opportunities that lead to novel and focused solutions.

Higher education in the United States is at a pivotal juncture in its history. Multiple forces, including demand for knowledge and skills, constrained public funding, public concerns regarding affordability, student demographic change, and technological innovation are driving a need for change at the system, institution, course, faculty, and student levels. Innovation leading to improved performance certainly seems to be in order.

The primary purpose of this paper is to explore curricular innovation intended to improve student outcomes in developmental education and gateway courses in colleges and universities in Tennessee. In the process of doing so, the paper describes the complexity that innovation can entail in multi-stakeholder environments such as higher education. While the starting point for change was course level redesign, it became evident that stakeholders at different levels of higher education (state legislature, board of regents, and institution) evolved an innovation ethos based on their own realities and pressures. This created a complex web of overlapping innovations. While not necessarily a negative outcome from a policy and evaluation perspective, it does suggest a need to understand the novelty and focus of specific solutions and how they might interact.

Curricular innovation driven by the Tennessee Board of Regents (TBR) is at the center of this paper. Historically, TBR had been a compliance and accountability body. In the last decade, due to an emerging need for Tennessee to educate a growing percentage of its population, TBR evolved as an innovation agent leveraging its statutory authority to promote curricular innovation. First, TBR encouraged course redesign of developmental education modeled on the well-studied work of the National Center for Academic Transformation (NCAT). TBR followed this work with the redesign of gateway courses. This redesign incorporated co-requisite enrollment, a much newer curricular innovation blended with elements of more traditional course redesign. During this multi-year process, the notion of a "curricular pipeline" that transcended individual courses, programs, and even institutions evolved as a working premise for TBR, which became the building block for its transition from a compliance body to a promoter of innovation. This activism caused some tension among institutions because while course redesign is fundamentally a faculty and course driven innovation, TBR was beginning to experiment with performance enhancing innovation at the system level.

At the course and faculty levels, individual instructors and departments did in fact adapt the NCAT model to create focused innovations that made sense in their contexts. Even while TBR was introducing the co-requisite enrollment innovation through a request for proposal, individual institutions were creating their own innovations based on learning from course redesign. Austin Peay University (TN) created its own curricular innovation process called Revitalize Academic Success Initiative or RASI. While Chattanooga State Community College (TN) created a math bridge program to better prepare high school students for college math through partnerships with the K–12 system. The original curricular innovations had raised questions and built skills in both institutions, which triggered the effort to continue to develop solutions that enhance their performance.

Finally, over the duration of these initiatives, the Tennessee state legislature passed two innovative pieces of legislation: the Complete College Tennessee Act and the Free Community College Act. The Complete College Tennessee Act shifted state funding of higher education to be based on almost entirely performance in graduating students. More recently, the legislature passed the Free Community College Act, which aims to make the first two years of college free—a financing innovation that could change incentives across the entire system of colleges and universities.

Drucker would find these multi-stakeholder innovations a challenge to manage in a systematic way. The key to his analysis would be to understand how the focused impact of each innovation interacted to improve the performance of the system. This type of analysis remains in its infancy in American higher education. This study hopes to help advance the understanding of key elements in a robust analysis of the process of innovation in higher education.

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GLOSSARY

Complete College Tennessee Act...CCTA

Course Revitalization Redesign...CRR

Developmental Studies Program... DSP

Developmental Studies Redesign..DSR

Revitalize Academic Success Initiative.. RASI

Seamless Alignment and Integrated Learning Support..SAILS

Structured Learning Assistance.. SLA

Tennessee Board of Regents.. TBR

EXECUTIVE SUMMARY

As higher education grapples with restrained state resources, increased demands for accountability, advances in information technology, and changing student demographics, it continues to examine innovation as a mechanism for addressing its evolving landscape. Course redesign is one such innovation that institutions, systems, and states are turning to in an effort to improve undergraduate education for today's college students. The efforts of the Tennessee Board of Regents (TBR) to innovate beyond traditional academic models offer valuable insight into the dynamic and complex nature of sustainable change in higher education.

Course redesign is rethinking the way we deliver instruction to achieve better learning outcomes. Institutions that redesign their courses typically aim to achieve more effective use of instructor time, increase student time on task and engagement in course material, and potentially reduce institutional costs and frequently student costs.

For sustainable innovation in higher education, collective action is needed across stakeholder groups, and the college or university system—i.e., a governing body that acts on behalf of its board and oversees a constellation of institutions under its purview—can be an effective mechanism for achieving that. The role systems play requires a deep understanding of contextual influences and other conditions that systems confront and generate in their attempt to engage institutions in curricular change.

This case study explores TBR's two curricular redesigns—its 2006–09 Developmental Studies Redesign (DSR) and its 2014–present Course Revitalization Redesign. Using John P. Kotter's (2012) leading change framework to explore the complexity of system-led curricular change in higher education, a total of 16 key players at one of TBR's two-year institutions and one of its four-year institutions were interviewed. What makes Tennessee compelling in its commitment to increase student attainment through course redesign is twofold: 1) its transition from a system-wide developmental education redesign to a system-wide gateway-course redesign and 2) simultaneous legislative support through the Complete College Tennessee Act of 2010. These activities led the TBR to a co-requisite model that coordinates developmental education courses with credit-bearing classes.

The Tennessee "experiment" is a comprehensive, consensus-building approach to student attainment that offers insights for others who want to innovate beyond traditional higher education models. Transformative curricular change involves a synergy of context, meaningful analytics, effective structures and systems, strong leadership, and collective action that take root over time in the behavior and shared values across state-, system-, and institutional-level stakeholders. Key takeaways from this case study are as follows:

Recognize That Context and Governance Structure Matter
Discussions regarding developmental education reform were under way prior to the DSR as Tennessee braced for budget constraints amid projected population and higher education enrollment growth. With authority to enact guidelines and polices that coordinate the work of its institutions, TBR managed a developmental education redesign effort as a pilot program devised, in part, to address demographic and financial concerns specific to the state context. The nexus of system- and state-level policies in Tennessee provided TBR not only a broad vision on which to hang its redesign work, but also the teeth needed to implement it across institutions and sustain the work over time.

Use Data Analytics to Guide Innovation

TBR has been using data on the front end and back end of its course redesigns as a tool to increase student attainment. Initially, educational attainment statistics created urgency for change in Tennessee's traditional academic models. Outcomes data from redesign pilots measured the effectiveness of new academic models, contributed to faculty buy-in, and informed policy change. Notably, those guiding data analytics must pay attention to faculty sensitivities, particularly involving terminology that might be misinterpreted or misunderstood. Furthermore, if systems have data requirements, system- and institution-level structures must align with monitoring or data collection policies to promote effective and efficient data collection.

Create Space for Innovation

As faculty and staff work through established assumptions about teaching and learning, systems and institutions must create a climate and culture for innovation, especially for accommodating ambiguity before data are available. In the case of TBR, a competitive, incentivized request for proposal process promoted faculty-led innovation. Incorporation of a financial model that supports innovative and sustainable change additionally fosters among stakeholders a higher comfort level with ambiguity and lessens anxiety around change, whether mandated or not. Such a model offers a framework for identifying clear, measurable outcomes, predicting the sustainability of initiatives, allocating resources, and tracking expenses.

Set Expectations

Stakeholders must know what is expected of them and why. Leaders who set and communicate expectations bring clarity to the highly complex process of initiating change across and within institutions. Leadership at the system level also identifies or anticipates barriers to curricular redesigns and decides how and when to communicate expectations around the work. TBR set expectations through deliverables and timelines in its requests for proposals and subsequent policy change. Although senior administrators credit system-level leadership with striking an effective balance between open discussions and firm expectations, it is an ongoing challenge to ensure that faculty and staff receive the same message as administrators, which is fundamental to buy-in and long-term success.

Promote Collective Action

While systems are well-positioned to lead change across institutions, collective action is key. This requires that campus leadership and relevant staff and faculty be engaged and mutually invested in the change process and targeted outcomes. TBR sought collective action by establishing urgency, working with a task force, communicating a vision, establishing buy-in, empowering action through a request for proposal process, generating short-terms wins, and building on change. Even with these efforts, securing multilateral collective action has been a challenge for TBR. Reasons differ across institutions, but they include an aversion to perceived coercive power, cultural or structural barriers, and/or pedagogical differences across disciplines. An ongoing collaborative process where leadership at both the system and institution levels adhered to best practices for implementing change might reduce tension and fear within institutions across redesigns.

INTRODUCTION

As higher education grapples with restrained state resources, increased demands for accountability, advances in information technology, and changing student demographics, it continues to examine innovation as a mechanism for addressing its changing landscape. Innovation has been characterized as a departure from current practice—deliberate or not, originating in or outside of practice—which is novel, adds value to the organization, and accommodates the current organizational structure (Cohen and Ball 2007). At the institutional level, this involves the evolution of academic, financial, and administrative systems that balance affordability and quality for increased postsecondary access and attainment by all members of society. This study focuses on innovation related to traditional academic models—the curricula, pedagogies, delivery methods, and supporting infrastructure that colleges and universities use to educate students.

In examining what change should look like in American higher education, Robert Zemsky (2013) points to the need for curricular overhaul, stating that the current undergraduate structure is outdated and inadequately services the present and changing student demographic. Exploring how course redesign initiatives influence the innovation of new academic models is a significant part of this need. Course redesign is rethinking the way we deliver instruction to achieve better learning outcomes. Institutions that redesign their courses typically aim to achieve more effective use of instructor time, increase student time on task and engagement in course material, and potentially reduce institutional costs and student costs.

Reconceptualizing the way existing structures deliver quality, affordable higher education is a challenge of institutional innovation. Piecemeal, innovative practices are not uncommon; achieving systematic and sustainable change in a domain as complex as higher education is challenging (Gagliardi et al. 2015).

For sustainable change in higher education, collective action is needed across stakeholder groups (Zemsky 2013). The system can be a mechanism for creating economies of scale and scope in high-impact practices by incentivizing innovation and coordinating work across institutions around a defined and shared vision (Gagliardi et al. 2015). "System" refers to a governing body that acts on behalf of its board and oversees a constellation of institutions under its purview. Systems also identify problems that are inherently cross-institutional in nature, either because they involve a common characteristic such as computer systems or a student behavior that proves difficult for institutions to manage (e.g., transferring course credit between institutions or transitioning from developmental education courses to credit-bearing courses).

The ability of a system to successfully leverage the collective capacity of campuses toward improved student outcomes depends on its capacity "to foster communication and collaboration, to monitor progress, and to offer direct support to assist in overcoming challenges as they emerge" for institutions (Gagliardi et al. 2015). The growing interest in the role that systems play in meeting the demands of the changing landscape in higher education requires a deeper understanding of contextual influences and the conditions systems both confront and generate in their efforts to enact change.

The Case of Tennessee

Within Tennessee's college-completion agenda, course redesign has served as a mechanism for innovating change and building capacity along the "curricular pipeline." This case study explores the Tennessee Board of Regents' (TBR) two curricular redesigns—its 2006–09 Developmental Studies Redesign (DSR) and its 2014–present Course Revitalization Redesign (CRR). The DSR explored technology-supported active learning strategies aimed at improving student learning outcomes, accelerating time to credit-bearing courses, and reducing instructional costs. After the DSR, the TBR understood that the broader challenge is redesigning gateway classes to facilitate students' movement through credit-bearing classes, not just developmental education courses. The CRR targeted high-enrollment gateway classes to determine the feasibility of applying a learning support to a co-requisite structure. TBR's curricular redesigns are explored within Harvard University (MA) business scholar John P. Kotter's (2012) leading change framework to highlight the complexity of system-led curricular change in higher education. The complexity of change, a senior administrator from one of the two participating institutions noted, "is a big problem."

> [H]ow much of [change] should be led by faculty and how much of it needs to be mandate? Striking that balance is tough. If it is just led by people who are doing it without real direction and there are no proper incentives in place, people tend to just go back to what they were doing. . . . When you want to make major changes, sometimes it is hard to do without mandating things. [T]here is a tough balance [between] how much you want to mandate and how much you want to discuss about it. I think there is nice middle ground, but it is hard to find sometimes.

Similarly, change is dynamic and complex, requiring continual engagement and commitment. As such, it often stalls or never starts due to "inwardly focused cultures, paralyzing bureaucracy, parochial politics, a low level of trust, lack of teamwork, arrogant attitudes, a lack of leadership in middle management, and the general human fear of the unknown" (Kotter 2012, 22). In an attempt to address these barriers and sustain transformation, Kotter proposes an eight-stage process: 1) create a sense of urgency, 2) form a powerful coalition, 3) create a vision for change, 4) communicate the vision, 5) remove obstacles, 6) create short-term wins, 7) build on the change, and 8) anchor the changes in organizational culture.

To understand TBR's use of course redesign at one of its two-year institutions and one of its four-year institutions, 16 key stakeholders in Tennessee's higher education community were interviewed to facilitate understanding of the background and impetus for course redesign and its intended outcomes at both the system and institutional levels. The following research questions guide this case study:

- What conditions facilitate institutional innovation as a mechanism for addressing a changing higher education landscape while increasing degree attainment?

- What were the conditions under which a course-redesign initiative was developed and implemented?

- What influence do system-level course-redesign initiatives have on academic models?

Data Collection

Fourteen one-hour, semi-structured interviews and document analysis:

- Tennessee Board of Regents: four system-level staff; relevant documents
- Two- and four-year institutions participating in Tennessee Board of Regents course-redesign initiatives from inception in 2006 to present:
  - Austin Peay State University: six senior and mid-level administrators, staff, and faculty; relevant documents
  - Chattanooga State Community College: six senior and mid-level administrators and faculty; relevant documents

This report begins with a description of the course redesign movement, followed by the Tennessee context, specifically TBR's course redesign initiatives from 2006 to present. An overview of redesigns at one two-year and one four-year TBR institution follows. Kotter's eight-stage process for leading change is the lens through which implications of TBR's course-redesign initiatives are presented from system- and institutional-level perspectives. Finally, core crosscutting themes are summarized, and considerations to further inform policymakers and system office and institutional leaders, staff, and/or faculty engaged in or considering similar large-scale curricular change initiatives are offered. While the findings are grounded in the experiences of selected system office staff and institutional-level stakeholders from one two-year institution and one four-year institution, they can stimulate discussion around ways that systems encourage institutional innovation aimed at increasing student success across a variety of institutions.

THE COURSE REDESIGN MOVEMENT

With funding from The Pew Charitable Trusts, the course-redesign movement was set in motion with the National Center for Academic Transformation's (NCAT)[1] Program in Course Redesign from 1999 through 2003. The project applied NCAT's definition of course redesign—the process of redesigning whole courses (rather than individual classes or sections) to achieve better learning outcomes at lower costs by taking advantage of the capabilities of information technology—to its work with 30 colleges and universities to redesign instruction in high-enrollment introductory courses through the use of technology to reduce costs and improve student learning.

From the Program in Course Redesign project, NCAT identified and advocated for five models: the supplemental model, the replacement model, the emporium model, the fully online model, and the buffet model. Redesigns that utilize one of these models are characterized by five principles: 1) redesigning the whole course, 2) facilitating active learning (e.g., flipped classrooms and simulation labs), 3) providing students with individualized assistance (e.g., small group work and alternative staffing), 4) building in ongoing assessment and prompt feedback (e.g., formative assessments and adaptive learning), and 5) implementing a mastery learning approach (e.g., modularization) (National Center for Academic Transformation 2005; Twigg 2003). NCAT's work has since been updated to include a sixth redesign model—the linked workshop model, developed at Austin Peay State University—and three additional principles. The modified principles include increasing interaction among students and monitoring student progress and measuring learning, completion, and cost.

Building on lessons learned from the institution-focused Program in Course Redesign project, NCAT began its first system redesign projects in 2006, working with the University System of Maryland, the Tennessee Board of Regents, and the Arizona Board of Regents on their planning, implementation, and evaluation efforts. While the NCAT framework dominated higher education in the early years of course redesign, its work with institutions, then with states and systems, has generated diverse approaches. New approaches to innovation have shifted the course redesign landscape, creating space for broader interpretations and frameworks.

The New Mathways Project, a joint initiative of The University of Texas at Austin's Dana Center and the Texas Association of Community Colleges, is an example of a statewide mathematics reform effort expanding beyond its original border to collaborate with co-development institutions in other states interested in implementing the New Mathways Project. It is an accelerated multiple-mathematics pathways redesign that allows developmental math students to take courses aligned to their field of study. In addition, each pathway has an introductory class with a co-requisite course that teaches students strategies to succeed in college-level courses and beyond.

Funded by the Bill & Melinda Gates Foundation, Completion by Design is a five-year initiative that works with community colleges in Ohio, North Carolina, and Florida to increase student outcomes, with a com-

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1   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.

mitment to low-income adults under age 26. Completion by Design's framework facilitates systemic change in institutional policies, practices, and programs while containing costs and maintaining quality. Course redesign is a component of Completion by Design.

Complete College America has capitalized on the upward evolution of course redesign from institutions to the state and system levels by working with states to close the college completion gap and advocate for remedial education reform as a key game changer for increasing completion rates. As a member of Complete College America's Alliance of States, Tennessee and its universities and colleges commit to college completion by setting completion goals, collecting and reporting common measures of progress, developing action plans, and moving key policy levers.

THE TENNESSEE CONTEXT

The motivation to improve developmental education in Tennessee came largely out of a need to more effectively educate a growing population in light of a projected increase in students needing remedial coursework and budget shortfalls (Daggett 2002; Tennessee Board of Regents n.d.; Stephens 2003). A review of educational attainment data in the years leading up to 2006—the start of the TBR course redesign initiatives—illustrates that Tennessee has had much to do to increase higher education attainment to bring the skills and knowledge of its population to more competitive standards. According to U.S. Census Bureau data between 2000 and 2005, the proportion of the population with a college degree increased by only 1 percent and remained significantly lower than the national average. Tennessee's high school graduation rate during this period also trailed the national average, as did its college graduation rates for both associate and bachelor's degree seeking students (see Figures 1 and 2).

Figure 1. Three-Year Graduation Rates for Associate Degree Seeking Students (2000-2005)
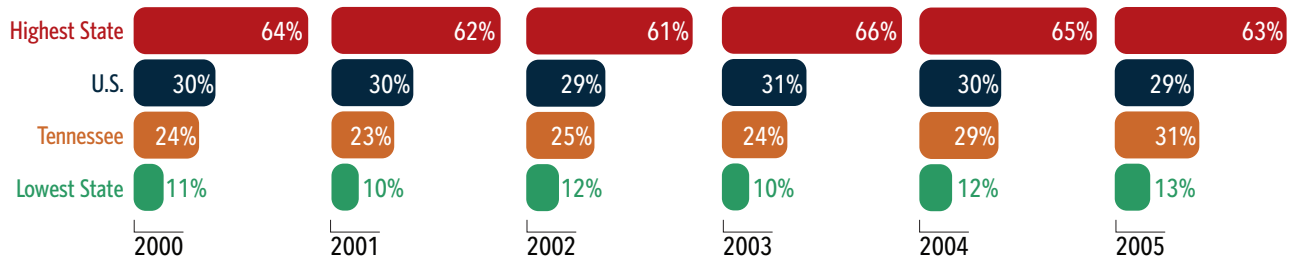
	2000	2001	2002	2003	2004	2005
Highest State	64%	62%	61%	66%	65%	63%
U.S.	30%	30%	29%	31%	30%	29%
Tennessee	24%	23%	25%	24%	29%	31%
Lowest State	11%	10%	12%	10%	12%	13%

Data compiled from: The National Center for Higher Education Management Systems 2015, Graduation Rates 2000-2005.

Figure 2. Six-Year Graduation Rates for Bachelor's Degree Seeking Students (2000-2005)
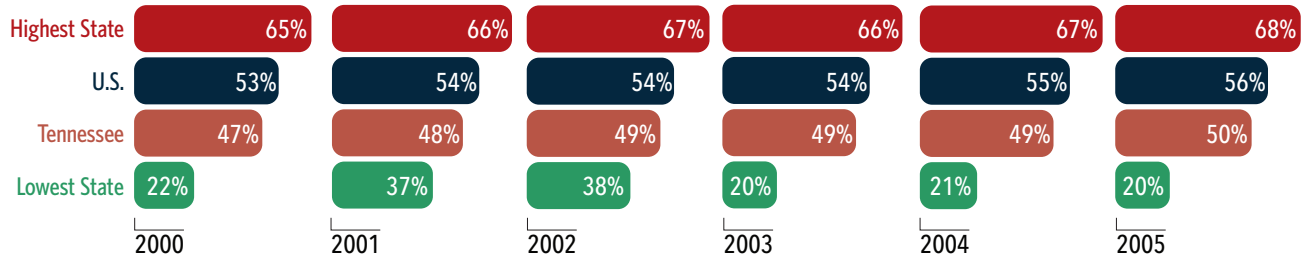
	2000	2001	2002	2003	2004	2005
Highest State	65%	66%	67%	66%	67%	68%
U.S.	53%	54%	54%	54%	55%	56%
Tennessee	47%	48%	49%	49%	49%	50%
Lowest State	22%	37%	38%	20%	21%	20%

Data compiled from: The National Center for Higher Education Management Systems 2015, Graduation Rates 2000-2005.

Governance Structure of Tennessee Public Higher Education

Public higher education governance in Tennessee is unique, composed of a two-tiered hierarchy of coordinating and governing bodies. The Tennessee Higher Education Commission, created by the Tennessee General Assembly in 1967, coordinates two state-level governing boards: the TBR system and the University of Tennessee system. The University of Tennessee system encompasses three primary campuses, a health science center, and various institutes, and has a total student enrollment of approximately 49,000. TBR oversees six state universities, 13 community colleges, and 27 technology centers, with a combined annual enrollment of more than 200,000 students. It is the sixth-largest system of public higher education in the United States, and is governed by 18 board members who set policies and guidelines administrating all TBR institutions.

TBR as Architect of Innovation

TBR's role supporting innovation for its institutions shifted throughout the past decade, gaining momentum over the past few years. The TBR system office, according to its website, implements "board policies and directives, initiating and conducting studies, serving as liaison between the institutions and other state offices, providing certain centralized services, and providing leadership in the management of the system" (Tennessee Board of Regents 2015). TBR institutions adhere to system policies and guidelines and incorporate them into campus policies and guidelines. Historically, this charge translates into a system of compliance and accountability. Although this remains true, TBR aims to build capacity for institutions to innovate over time.

Intermediary organizations were instrumental in this process. After Governor Phil Bredesen secured a Race to the Top[2] grant for Tennessee, his attention turned toward higher education during the last two years of his second term (2009–10). In light of Tennessee's progress with Race to the Top and the formation of the governor's higher education working group in 2009 "to begin to think about higher education in Tennessee and what needed to be done," Gates Foundation representatives connected the governor's office to Complete College America and the National Center for Higher Education Management Systems. When representatives from these two organizations visited Tennessee later that year, Chancellor John G. Morgan recalled:

> *They asked a very simple question that turned the whole conversation around—what do you need public higher education to do to promote the public agenda in Tennessee? That seems simplistic and intuitive but frankly it was a question that we hadn't asked in Tennessee. . . . Historically, anytime [the higher education] conversation had taken place in Tennessee over the last 35 years, the conversation generally was about organizational structure. It was like a light bulb came on and people stopped thinking about organization and started asking what is it that we need public higher education to do in order to promote the state's development agenda. That became the conversation that led to the Complete College Tennessee Act of 2010.*

Complete College Tennessee Act

The **Complete College Tennessee Act** (CCTA) of 2010 is a reform agenda focusing on higher education efforts in workforce development and preparedness in light of decreasing state appropriations. Under the CCTA:

- Institutional allocation of state appropriations is determined by a weighted, outcomes-based funding formula.
- Four-year institutions are prevented from offering remedial and developmental education courses.
- Public institutions must implement certain articulation and transfer policies to facilitate student transfer.

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2   Race to the Top is a U.S. Department of Education initiative supporting selected states in K–12 reform for low-achieving schools around standards and assessments that promote college success and workplace preparedness; data systems; and teacher recruiting and retention. The Bill & Melinda Gates Foundation awarded funding to Tennessee and 14 other states to hire consultants to assist with the Race to the Top application process.

Prior to the Complete College Tennessee Act (CCTA) in 2010, the systems and institutions were tangentially part of the state development plans and initiatives conversation. "Higher education in Tennessee," a system office staff member shared, "was really never fully integrated into the state's agenda. Higher education . . . had a role to play, the institutions were certainly well regarded by legislators and policymakers in the governor's office and so forth, but never really at the table when it came to the state's development agenda . . . until 2010."

The CCTA created clarity of mission for TBR and its institutions, thus providing space for TBR[3] to focus on building capacity to innovate the "curricular pipeline" over time. Much like the higher education pipeline considers student progression along a continuum from high school through postsecondary completion, curricular pipeline considers a continuum of building capacity for curricular transformation at the course, program, and institutional levels.

"We will increasingly see vastly more students completing initial and foundational curricular coursework, and the challenge then will be to see how that leads to success in discipline classes further down the curricular food chain. That work," TBR emphasized, "is yet to come, but that's the objective—to see how this curricular pipeline plays out and realize the structural way those classes are taken has a significant role in how well students are able to navigate that." TBR ultimately aims to facilitate the work of 19 independent institutions to coordinate more effectively. Institutions themselves sense this shift, as one senior administrator commented:

> There is more involvement. . . . I think their goal is to increase support. Obviously there is increased accountability from them for us [over the] last five or six years. There is also with that an increasing amount of support. The Complete College Act was a mandate to them but . . . I think that Act gives them permission as a statewide institution and gave us parameters by which we should be judged.

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3   From this point further, unless specified, TBR refers to the work of the Office of Academic Affairs within TBR; the use of TBR is meant to reflect the views of those interviewed in the Office of Academic Affairs, the Office of the Chancellor, and/or the Office of Community Colleges.

TBR-LED COURSE REDESIGNS

This case study explores TBR's two curricular redesigns—its 2006–09 Developmental Studies Redesign (DSR) and its 2014–present Course Revitalization Redesign (CRR). The DSR was a program redesign that explored technology-supported active learning strategies aimed at improving student learning outcomes, accelerating time to credit-bearing courses, and reducing instructional costs. It led to a policy change on the delivery of remedial education at TBR institutions that supported an evidence-based, continuous improvement approach to developmental education.

Although TBR's vision for developmental education redesign was set in place with its 2005–10 Strategic Plan, a broader vision for increasing student attainment was not codified until the implementation of the CCTA in 2010. The CCTA's outcomes-based formula sharpened TBR's focus around ways institutions can improve student success. System- and institutional-level leaders began to think more seriously, TBR Chancellor John G. Morgan said, "about what are the things that create barriers to our students being successful, what are the things we can do to remove those barriers, what are those interventions, what are those initiatives that would have the potential of moving the needle when it comes to student success."

> **Gateway courses** are 1) foundational, 2) high-risk, and 3) high-enrollment courses (John N. Gardner Institute for Excellence in Undergraduate Education 2015). They are typically college credit-bearing introductory or core courses (e.g., Public Speaking, Art History Survey I, Principles of Macroeconomics, Astronomy I, Critical Reading, and Expository Writing). High risk is determined by the D, F, and W (withdrawal) rates across all sections of a course.
>
> **Co-requisite** structure is an academic course taken in conjunction with another course. While various co-requisite models exist, the goal is to accelerate student progress and move those in need of support to college-level courses as quickly as possible.

TBR understood that the broader challenge is redesigning gateway classes to facilitate students' movement through credit-bearing classes, not just developmental education courses. The CRR, designed to align more closely with Tennessee's college completion goals, targeted high-enrollment gateway classes to determine if a learning support model could be applied to a co-requisite structure with gateway classes.

TBR Developmental Studies Redesign (DSR)

Access was one of the four priorities in TBR's 2005–10 Strategic Plan. Research tells us that postsecondary students are more likely to enroll in and fail developmental math than other academic subjects (Bailey, Jeong, and Cho 2010; Le, Rogers, and Santos 2011), and those who fail are least likely to earn a degree (Le, Rogers, and Santos 2011). From 2005–07, the percentage of students at two-year TBR institutions requiring remediation ranged from 72 to 76 percent; at TBR universities that percentage hovered around 40 percent in 2006 and 2007 (Berryman and Short 2009; Berryman and Short 2010). State appropriations and student tuition revenues toward remedial and developmental instruction before the DSR were approximately $25 million annually, at a 50/50 split between the two sectors (Berryman and Short 2010). The strategic plan called for system-wide developmental and remedial reform driven by technology and best practices to prepare students to be college ready. This reform was also motivated, in part, by the convergence of two factors:

Figure 3. The Architecture of Innovation: System-Level Course Redesign in Tennessee

STATE

LEGISLATION

Complete College
Tennessee Act
2010

POLICY

2005–10   Tennessee Board of Regents
Strategic Planning   **2010–15**

POLICY LEVER

developmental
studies redesign
(request for
proposal process)
2006-09

POLICY

policy change
in the A-100
Guideline
2010

POLICY LEVER

(gateway) course
revitalization
redesign
(request for
proposal process)
2014–present

POLICY

policy change

SYSTEM

TRIAL
INNOVATION

developmental
studies redesign
pilot
(6 institutions)

SCALED
IMPLEMENTATION

institutionalize
policy change
2010–13

TRIAL
INNOVATION

(gateway) course
revitalization
redesign
pilot
(17 institutions)

SCALED
IMPLEMENTATION

institutionalize
policy change

AUTONOMOUS INNOVATION

Austin Peay: Revitalize Academic Success Initiative

AUTONOMOUS INNOVATION

Chattanooga State: Seamless Alignment and Integrated Learning Support

INSTITUTION

pressure from the state legislature to do more with less due to state budget shortfalls and projected population and enrollment growth (see Figures 4 and 5 for actual head count), and a projected increase in students needing remedial coursework (Daggett 2002; Tennessee Board of Regents n.d.; Stephens 2003).

Prior to the 2006–09 DSR, developmental math, reading, and writing courses at the 19 TBR colleges and universities were divided into basic remedial, basic developmental, and intermediate developmental courses and followed the traditional 16-week semester format. Students had to successfully complete the remedial course they tested into before advancing to the next level and/or before finishing all required remedial coursework as prerequisites for credit-bearing coursework.[4]

DSR Implementation

TBR and the Education Commission of the States received a three-year, $240,000 Fund for the Improvement of Postsecondary Education grant (October 2006–December 2009) to pilot a system-wide redesign of developmental math and English curricula. The DSR initiative followed a request for proposal process (see Box 1) to support technology-supported active learning strategies aimed at improving student learning outcomes, accelerating time to credit-bearing courses, and reducing instructional costs. The Education Commission of the States and NCAT provided technical assistance and the National Center for Higher Education Management Systems conducted the project evaluation. NCAT supported campuses engaged in redesign, while the Education Commission of the States supported policy discussions. (See pages 13 and 14, respectively, for Austin Peay's and Chattanooga State's pilot implementation details and outcomes data.)

TBR's DSR shaped the revision of TBR's A-100 Guideline for the delivery of remedial education.[5] The new Learning Support policy established core student competencies and mandated that learning support integrate technology and learner-centered pedagogy.[6] The policy allowed TBR institutions to implement an evidence-based model that aligned with their context. TBR approved of plans and set data metrics and benchmarks to measure effectiveness of the reforms. Institutions unable to reach benchmarks had to revise and resubmit their plans. This continuous improvement approach supported innovation based on evidence

Box 1. TBR Request for Proposal Processes

Developmental Studies Redesign Process
(2006–09 with two-year no-cost extension)
1. Submit proposals: summer 2007
2. Proposals submitted/selected: 27/6
3. Grant award: $40,000
4. Develop pilots: fall 2007
5. Implement pilots: spring 2008
6. Assess pilots: spring 2008–spring 2009

Participating Institutions (subject areas):
Austin Peay State University (algebra)
Chattanooga State Community College (math and algebra)
Cleveland State Community College (math and algebra)
Jackson State Community College (math and algebra)
Northeast State Technical Community College (reading)
Columbia State Community College (reading and writing)

Course Revitalization Redesign Process
(2014-present)
1. Submit proposals: winter 2014
2. Proposals submitted/selected: 120/56
3. Grant award: Two faculty, one course $9,000; three or more faculty, one course $13,500
4. Develop pilots: spring/summer 2014
5. Implement pilots: fall 2014
6. Assess pilots: winter/spring 2015

Participating Institutions (subject areas):
17 institutions; 15 different subject areas (e.g., biology, sociology, speech, health)

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4   Prior to 2007, students with an ACT score of 19 or below were required to take developmental coursework; as of 2007, students with ACT scores of 18 or below are required to enroll in a structured learning assistance lab.

5   The former A-100 Guideline, A-100: Basic, Developmental Studies Program, was revised in August 2010 to Learning Support: A-100 policy.

6   Technology was a focus because of a strong evidence base supporting its use in remedial education reform at the time.

and emerging models in the field. All TBR institutions had until fall 2013 to comply with the new system-wide Learning Support policy.

TBR Course Revitalization Redesign (CRR)

TBR's evidence-based, continuous improvement approach to developmental education informed TBR's course revitalization initiative in 2014, the second iteration of its course redesign work. TBR understood that developmental education "is not an end to itself; developmental education needs to be coordinated with credit-bearing classes for substantive change to take place." TBR institutions offer approximately 8,000 courses every term, with the 30 most-enrolled courses accounting for more than half of system enrollment. The broader challenge then becomes redesigning gateway classes to facilitate students' movement through credit-bearing classes. According to the vice chancellor of academic affairs, a curricular analysis showed that "success students have in the gateway classes leads disproportionately to their success, and, equally well, the failures they have in those classes to learn the materials leads disproportionately to their not completing their degrees and not progressing and being retained."

CRR Implementation

Funded by internal TBR funds earmarked for initiatives that promote advancement of student learning and success, the CRR followed a request for proposal process similar to that for the DSR. It targeted high-enrollment gateway classes for TBR to learn if the learning support model could be applied to a co-requisite structure with gateway classes. Teams of two or more faculty were required to participate (see Box 1).

Data from the fall 2015 co-requisite mathematics and writing pilots show more than a 40 percentage point increase overall in passing grades for students enrolled either in a credit-bearing Introductory Statistics course with required co-requisite support (645 students across nine campuses) or a freshman writing course with required co-requisite support (393 students across seven campuses) (TBR 2015).

Austin Peay State University

Austin Peay State University is an urban four-year public, master's-level university. It enrolled 10,449 students in fall 2013 and is one of Tennessee's fastest-growing universities (see Figure 4).

Figure 4. Student Enrollment Headcount (Fall Term)
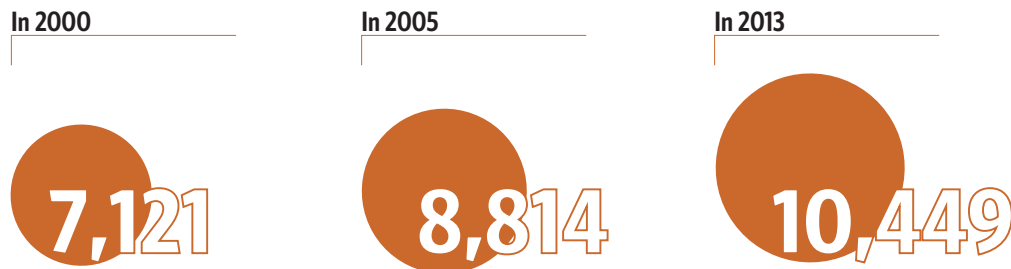
In 2000

In 2005

In 2013

7,121

8,814

10,449

Data compiled from: Tennessee Higher Education Commission 2015, Tennessee Higher Education Fact Books 2010-2014.

Developmental Studies Redesign. Austin Peay eliminated its two developmental math courses and added enhanced sections to two introductory college-level math and statistics courses based on an iteration of Michigan's Ferris State University's Structured Learning Assistance (SLA) model. The SLA model links a credit-bearing, college-level course to supplemental, supported workshops for students who scored at or below a predetermined score on their ACT, SAT, or COMPASS exam. SLA workshops are facilitated by advanced students who provide individualized and computer-based instruction on course content and prerequisite competencies for students needing developmental math instruction. SLA facilitators also attend introductory courses with students and meet with faculty to discuss students' academic development.

Model:	Structured Learning Assistance (SLA)
Target Course(s):	Elementary Algebra; Intermediate Algebra
Tuition/Fee Structure:	Students pay tuition for the credit-bearing course and a lab fee under $100 for the SLA workshop.
Cost Savings: [7]	Annual cost savings from a) eliminating 52 developmental math sections ($209,248) and b) adding SLA workshops staffed by students.
Student Outcomes:[8]	The pass rate of students who took an enhanced math course was at least 25 percent higher than that of those required to take a developmental math course prior to a college-level math course.

Course Revitalization Redesign

Model:	Co-requisite Model
Target Course(s):	English 1020; Health and Human Performance 1250; Psychology 1010; Sociology 1010
Outcome(s):	To be determined

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7   Cost savings cover operating costs for personnel over an academic year after completion of the DSR (National Center for Academic Transformation n.d.).

8   Austin Peay's redesign eliminated its developmental education courses, so comparable data on traditional and redesigned courses do not exist; instead, Austin Peay data compare pass rates (grade D or higher with deficiencies removed) of developmental education math students in subsequent college-level math courses before and after redesign.

Chattanooga State Community College

Chattanooga State Community College is an open enrollment institution that offers more than 50 majors of study toward certificates and associate degrees. With 10,123 students in fall 2013 (see Figure 5 for enrollment growth), it serves the tri-state area of Tennessee, north Georgia, and Alabama.

Figure 5. Student Enrollment Headcount (Fall Term)
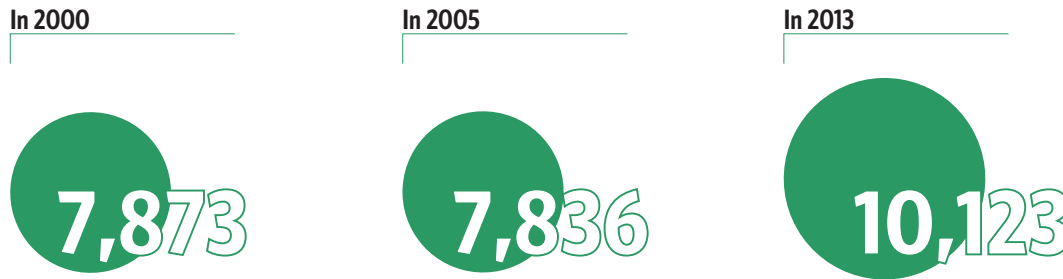
In 2000

In 2005

In 2013

7,873

7,836

10,123

Data compiled from: Tennessee Higher Education Commission 2015, Tennessee Higher Education Fact Books 2010-2014.

Developmental Studies Redesign. After an unsuccessful attempt to fully implement the initial redesign of its three developmental math courses, Chattanooga State hired a faculty member who led a successful redesign at Tennessee's Cleveland State Community College to assist with a second redesign. The Chattanooga State redesign modularized the courses and implemented the emporium model, which provides on-demand individual assistance to students in a math lab. With this new format, the developmental math program collapsed into two instead of three courses and class size capped at 24. Class met twice a week, once with instructors in a computer lab and again in the math lab. Standardized content and assessment across all sections ensures consistent quality. Modularization supports mastery-based learning and individualized instruction. Streamlining the courses allows students to complete their developmental math course in one or two semesters.

Model: Emporium Model

Target Course(s):   Basic Math; Elementary Algebra; Intermediate Algebra

Cost Savings:[9]   Annual cost savings from a) reduced cost per student and b) reduced reliance on adjuncts by increasing the number of sections taught by faculty ($165,600).

Student Outcomes: From 2007 to 2011, withdrawal rates dropped, students exiting developmental math increased, and student GPAs increased.

Course Revitalization Redesign

Model: Co-requisite Model

Target Course(s):   Biology 2010; English 0810; English 1010; English 1020; Reading 0810; Math 1530; Psychology 1030

Outcome(s):   To be determined

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9   Cost savings cover operating costs for personnel over an academic year after completion of the DSR (National Center for Academic Transformation n.d.).

LEADING CHANGE

Utilizing Tennessee's higher education system as a mechanism for incentivizing innovation and coordinating work across institutions around a defined and shared vision (Gagliardi et al. 2015) requires an understanding of conditions that systems both confront and generate in their attempt to engage institutions in curricular change. Kotter's (2012) leading change framework highlights the complexity of TBR's efforts to innovate beyond traditional academic models as a means of addressing student attainment in Tennessee. His framework has been used in the private sector for decades as a tool to implement and reflect on change, and it proves to be a robust analytical framework to explore higher education change using primary research documents and interviews.

Drivers of and impediments to change are similar across organizational contexts; higher education is no exception. Change typically is necessary when costs (tuition) are too high, products (outcomes) are unsatisfactory, or customer (student) needs are unmet (Kotter 2012). Change often stalls or never starts due to "inwardly focused cultures, paralyzing bureaucracy, parochial politics, a low level of trust, lack of teamwork, arrogant attitudes, a lack of leadership in middle management, and the general human fear of the unknown" (Kotter 2012, 22). To address these barriers and sustain transformation, Kotter proposes an eight-stage process that serves as the lens through which we present implications of TBR's course redesign initiatives from system- and institutional-level perspectives (see Box 2).

While considerable value exists in exploring individually the DSR and CRR given the two initiatives' fun-

Box 2. Kotter's Eight-Stage Change Process

1. **Create a sense of urgency.** Consensus and motivation around change is paramount; 75 percent of management must believe the status quo is problematic and buy into change.

2. **Form a powerful coalition.** Strong leadership alone does not sustain change. An influential team that is representative of an organization's hierarchy must develop and remain over time as it guides the change process.

3. **Create a vision for change.** The guiding coalition contributes to a vision that clarifies the direction an organization should move and connects to values that resonate with stakeholders; visions typically exist in five-year plans.

4. **Communicate the vision.** Communication must be frequent, clear, and credible, and include benefits of targeted change.

5. **Remove obstacles.** Change requires identification and removal of impediments so people are empowered to enact the vision. Impediments typically involve structures or systems not aligned with the vision.

6. **Create short-term wins.** Maintain credibility and momentum of the change process by identifying and celebrating incremental successes based on short- and long-term goals. Short-term wins provide data that minimize the influence of naysayers.

7. **Build on the change.** Maintain focus on urgency and vision that guides development and implementation of new efforts along the hierarchy; use data from short-term wins to inform work moving forward.

8. **Anchor changes in organizational culture.** People need time to internalize the fact that the change has become the way of conducting business; the old model no longer serves a purpose. This requires clearly communicating the validity of the new approach and hiring senior leaders who embody the new direction.

damental differences previously outlined, they are explored jointly to capture the process TBR underwent to achieve sustainable, large-scale curricular change. We believe this approach also provides insight into the complexity of this process as experienced by various stakeholders. The findings are grounded in the experiences of selected system office staff and institutional-level stakeholders from one two-year institution and one four-year institution and, as such, are intended to stimulate discussion around ways systems encourage institutional innovation aimed at increasing student success across colleges and universities.

Establish Importance and Urgency

Importance and urgency often come from discontentment with relevant performance standards and the resulting motivation to move forward across stakeholder groups (Kotter 2012). Implied in this first stage is what Simon Sinek[10] calls the "law of innovation." It follows that people do not buy into what you do; they buy into *why* you do it. For higher education in Tennessee, much of the urgency for curricular change was developed around a broader effort to increase student attainment.

Provide evidence of existing problem. With almost two-thirds of its student population entering higher education with ACT scores below 18 in math, reading, and/or writing, institutional-level buy-in to the conclusion that the status quo was not working well for students was widespread. As one administrator lamented, "success rates were dismal. Students were not succeeding. They were taking learning support in reading, writing, and/or math two, three, and four times and then honestly just dropping out. They could never get to college-level courses."

Despite a history of lackluster education attainment statistics, TBR experienced a push-pull of faculty resistance and support that, according to one administrator, "depends on different programs and different disciplines." One Chattanooga State faculty member shared, "Every math program I have heard of that has redesign that followed the emporium model has seen increased success and retention. It works beautifully for math, and it can for reading if the program is designed properly, but it will not work for writing. It's a different discipline; there is no right or wrong answer [as with math]."

Considering such reservations, motivating change might instead call for elevating urgency to a level that challenges the status quo.

Dismantle the status quo. Dismantling the status quo is another approach for establishing a sense of urgency (Kotter 2012). This was TBR's end goal when it convened a group of 250 faculty across the system to introduce the request for proposal process for the DSR. "The challenge," TBR told participating faculty, "is to take the best of what you know, look at the new technologies you have, and do your best to start with a blank slate. . . . Forget policies. Pretend they don't exist. We are developing the competencies, policies, standards, etc." This approach resonated with some faculty. One faculty member said that "the word[s] 'blank slate' hit him like a plank in the head." He told TBR, "I took you seriously." This faculty member went on to develop the nationally recognized Do the Math program and assisted Chattanooga State with the second iteration of its developmental studies redesign.

Engineer a crisis. Austin Peay State University "created a crisis" (Kotter 2012) when TBR's DSR and pressure from the state legislature to do more with less served as a catalyst to eliminate its Developmental Studies Program (DSP) before the passage of the CCTA in 2010. Prior to the DSR, the president at the time attempted a technology-only route for entering academically underprepared students, requiring them to work on modules with instructional software in a computer lab with instructors available for support. The goal was larger groups with more efficient instruction, driven by low revenue and a desire to increase student attainment. In the end, this model was no better or worse than the traditional lecture model, which led Austin Peay to consider Ferris State University's (MI) structured learning assistance (SLA) program. Initially used to support students in high-DFW courses such as anatomy and physiology, Austin Peay modified it for students needing to satisfy pre-college level requirements.

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10   Simon Sinek is a leadership expert and author on inspiring innovation.

While bold moves such as dismantling Austin Peay's DSP to reduce complacency can work, they tend also "to increase conflict and create anxiety" (Kotter 2012, 46). Although Austin Peay leadership realized the urgency to reform before the DSR request for proposal, some faculty did not share either this urgency or the manner in which it was addressed. Litigation ensued with the threat of developmental education faculty being forced from their positions as a consequence of the DSP's dissolution. It was not until data came in years later that, according to one faculty member, faculty recognized "[the DSR] was a good decision for students and for serving our community and our region. But [the process] was hard—you know, we have people who have lost their careers over it. So it was a painful process."[11]

As these issues make clear, institutions must think hard about how best to establish urgency among their stakeholders and to what extent they can absorb any aftershock of disruptive change.

Form a Powerful Coalition

A powerful coalition, made up of influential stakeholders across the hierarchy, guides change over time. Coalition members shift to meet evolving demands required from collective leadership and expertise and, if necessary, additional teams are formed to guide change further down the hierarchy (Kotter 2012).

For the DSR, TBR created a 21-member task force composed of at least one representative from all 19 colleges. This coalition included institution-level stakeholders at all levels, including presidents, chief academic officers, student affairs officers, admissions directors, developmental studies directors, and faculty. In addition, TBR assembled four subcommittees—math, reading/writing, assessment, and funding—with six to eight faculty members on each. TBR asked each campus to nominate three to five individuals for possible membership on the task force and the subcommittees, and the vice chancellor of academic affairs then chose members from among the nominees. The Education Commission of the States worked closely with TBR and later the task force to provide technical assistance for the project.

The task force and subcommittees were broadly charged with 1) recommending policy changes for developmental studies across the system, 2) developing learning outcomes and competencies for developmental studies, and 3) preparing shared criteria all for redesigns regardless of the model piloted. The funding subcommittee considered how to sustain the redesigns over time. The assessment committee looked at how to assess students and the newly developed competencies. An important component of the assessment work included working with admissions and records to coordinate work with the Banner[12] information system to track outcomes.

Generally, institutions applauded the work of the task force. As one faculty member noted, "there was broad involvement from faculty. [It was] good work" that provided students consistency "so when they go to another institution, move from community college to university, there are some allowable minimum expectations. Fabulous idea. It was a great idea whether we had redesign or not." Less clear is the role of the task force after development of the competencies. It appears TBR used the task force explicitly to engage stakeholders and enlist the expertise of faculty and staff, but no one mentioned a system-level task force or subcommittees beyond the initial work of the DSR.

Campus-level engagement. Campuses had autonomy in organizing themselves around the DSR pilots, thus leaving buy-in across campus stakeholders in the hands of a campus champion or campus leadership, which might have included a task force member. While TBR considered faculty as primary drivers behind redesign implementation, as "leaders that had the vision to start [course redesign] and seek the support," developmental education faculty at both institutions expressed otherwise.

It appears each campus had buy-in from leaders or champions who promoted the redesign, but data from institutions indicate it was still a challenging process for some. The DSR was described as "extreme" by a senior administrator at Austin Peay. Leadership at the time "mandated that everybody just do [the rede-

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11   Developmental studies faculty had the option of transitioning to other professional positions on campus with no cut in pay.
12   Banner is a comprehensive information system used by higher education institutions to maintain information on courses, students, alumni, and financial and personnel data.

sign], [without] a lot of discussion how to do it. . . . It was actually a staff member who wrote the [proposal] without any interaction with math faculty. So we had a staff member write [a grant] that radically shifted everything we did in mathematics at Austin Peay." In the CRR phase, Austin Peay faculty mentioned being more involved in the process and therefore appear to have taken greater ownership of and satisfaction with the work.

At the two-year level, some faculty and staff appeared resigned to the course-redesign work. "We could see the writing on the wall," one faculty member said of the CRR phase. "We could see that this co-requisite model was coming down to the system from the Board. So what [one colleague] decided to do is to go ahead and do a co-requisite grant application. . . . We basically felt that that way we might have more of a voice in how this co-requisite model would take place in the fall of 2015."

Develop a Vision and Strategy

At the system level, course redesign is a specific initiative that is part of a much broader effort in Tennessee to improve student success. "Thinking of course redesign as an isolated initiative," Tennessee Board of Regents Chancellor John G. Morgan cautioned, "is really misleading. There's a broader context." Within Tennessee's student completion agenda, course redesign has served as a mechanism for innovating change and building capacity along the curricular pipeline. The curricular pipeline, however, was not fully understood and situated until after the DSR and the passage of the CCTA in 2010.

System and state policy convergence. Although TBR's 2005–10 Strategic Plan tasked TBR with redesigning developmental education and the subsequent DSR likely better-positioned TBR to implement the CCTA, a broader vision for increasing student attainment was not codified until the implementation of the CCTA. For TBR, the CCTA helped define "what it is we were going to be doing and how we were going to measure it and determined if we were doing well or not. In an environment where there's clarity, there's no ambiguity about mission." The outcomes-based formula developed as a result of the CCTA sharpened TBR's focus around how institutions can improve student success and the role of TBR in doing so. Prior to the CCTA, the systems and institutions were tangentially part of the conversation about state development plans and initiatives. For the first time, public higher education in Tennessee focused on the state's development agenda.

State policy, system strategy, and institutions' understanding. An effective vision clarifies the general direction for change, motivates relevant stakeholders to move in that direction, and coordinates actions of various stakeholders (Kotter 2012). A senior administrator recognized increased institutional accountability after the passage of the CCTA in 2010, commenting, the "CCTA was a mandate to [TBR] but . . . that Act gives them permission as a statewide institution and gave us parameters by which we should be judged." Some faculty understand CRR to be about "student progression" or "speed and graduation." One faculty member shared, "Tennessee is trying to address student completion. . . . All of this is a drive to get students to complete. That was a part of this grant and why these gateway courses were chosen. . . . The board wanted us to put our grant applications into prioritizing those types of courses student could not complete, could not continue towards graduation when they failed those courses." The CCTA might have helped reframe system-led course redesign, whereas the lack of a broader vision across constituent groups prior to 2010 might have contributed to tensions within institutions during the DSR phase.

Dire student completion statistics created a sense of urgency, but without a comprehensive vision, such as the CCTA, that clarifies the general direction for change, motivates people across stakeholder groups to take action in the same direction, and helps quickly and efficiently to coordinate actions of different people (Kotter 2012), interpretation and implementation of the DSR for some faculty contributed to perceptions of "top-down" change.

One Austin Peay faculty member recalled that the administration at the time "approached us and said, '[the] state legislator created this problem for us we have to respond to or we will lose too many of our students.

We are going to respond using the SLA approach.'" According to one administrator, this reinforced among faculty that "[they] were not making decisions. [They] were not decision makers in it. . . . They were not overly involved in the big, broad picture, you know, 'here is our goal, this is what we want to do, and let's see how we are going to do things.' Subsequently, after many years, the faculty have adjusted and made changes. I think now they have ownership of that redesign and they're comfortable and working well inside of it."

The response from Chattanooga State faculty was mixed. Several shared, "It was one of these things [that] basically was a good idea and we decided to try it." Another faculty member at the institution expressed frustration over a strategy that seemingly failed to take local resources and context into consideration.

If incorporating all stakeholders, faculty in particular, into the vision and strategy creation process is impracticable for the system office, the significance of communicating the change vision is intensified. "The real power of a vision," Kotter (2012, 87) states, "is unleashed only when most of those involved in an enterprise or activity have a common understanding of its goals and direction."

Communicate the Vision

Kotter (2012) emphasizes that communication of vision cannot be understated and must be credible, simple, shared through various mediums, recurring, reinforced through behavior, consistent and transparent, and two-way. Everyone spoke to the importance not only of communicating the vision, but also the value of communication generally, and the challenges of developing effective outgoing and/or incoming communication regarding the redesign processes.

TBR knew communication would be a challenge given the complexity of a redesign across 19 institutions. One system office staff member shared:

> I don't care how good you are at communicating, you [had] best assume that you are not very good. No matter how many times you've communicated, be prepared to communicate over and over again. We assume we are doing a really good job, but when you get in to it and people ask questions, you realize it can be a huge challenge.

TBR's proactive attempt included a clear, consistent, and frequent message communicated at convenings, workshops, meetings, and, at least during the DSR, assigning a point person at the system office to address questions and concerns.

Communicate for understanding. Senior administrators at both institutions agree that the vice chancellor of academic affairs communicated the CRR message through open discussions, clear expectations, and/or data sharing. This is evident in shared interpretations of course redesign across system- and institutional-level participants. They generally define course redesign as a focus on redesigning an entire course, not just sections of a course, to support students' academic success.

Communicate for buy-in. The system's approach to communication is less evident among faculty, and the vice chancellor of academic affairs knew that would be a challenge. "I convene and see all the provosts and student affairs officers on a quarterly basis," he said, "but to really take these ideas and drive them deep down into the institutions so they really get to the faculty level is a much more challenging communication experience." While provosts learned about the CRR at one of TBR's quarterly academic council meetings, what trickles down to faculty is difficult to manage and therefore unclear. One provost mentioned speaking to his deans and faculty senate about the grant to let them know what was happening, which was followed by TBR's CRR request for proposal that was distributed across the campus.

Two- and four-year institution faculty indicated that communication and support during the CRR phase were piecemeal. One faculty member lamented, "If there's an administrator at our school

> "To really take these ideas and drive them deep down into the institutions so they really get to the faculty level is a much more challenging communication experience."
> –Tristan Denley, Vice Chancellor of Academic Affairs

going to the meetings and finding out what's going on, they're not disseminating the information to the faculty. They're not talking about it." Another indicated that communication was ambiguous and last-minute, leaving faculty to feel like "go implement your redesign . . . and see you later." Given the transformational nature of the DSR, communication and inclusion were understandably core considerations for TBR. Through the lens of Kotter's leading change model, the same or a similar system should have been in place for the CRR.

Enable Action and Remove Obstacles

Empowerment is the crux of enabling action across a broad group and removing obstacles that impede implementation of the vision (Kotter 2012). Kotter outlines structures, skills, systems, and supervisors as four common barriers to empowerment. Findings point to faculty engagement and development and resource allocation as dominant barriers to TBR's course redesign initiatives.

Faculty engagement. Stimulating faculty engagement increases buy-in, but efforts need to be transparent and intentional to establish trust and confidence in the change process. During the CRR, TBR utilized a competitive request for proposal process with monetary incentives so that

> people [will] invest themselves and feel that by being chosen they were being affirmed. We provided financial support for the work that was done. . . . Faculty are encouraged to be innovative in the education that they do, but of course being innovative takes work, so providing that financial support to acknowledge the fact that going above and beyond takes extra effort.

In general, faculty responded well to TBR's approach. At the four-year institution, one faculty member commented, "whenever there is an incentive, it gets my attention and I make a note of it." The CRR "wasn't a particularly hard sell [to colleagues]. . . . Austin Peay tends to be a fairly lower-pay university, which is well known, so I don't think it's too hard if you wave a carrot for those things."

Faculty need clarity on the net and gross income for such incentives since they go directly to the faculty and are not meant to cover operational costs. Austin Peay ran into difficulties with its faculty when it had to deduct taxes and benefits. This, according to one faculty member:

> started a big fight. . . . It appeared to me that that snafu happened to TBR, and they just did not think of the fact that when the word "stipend" is used around here people interpret that they are getting $500, not $500 minus [the] employer's share of taxes and benefits.

Notably, the issue was later resolved. The incentivized request for proposal process enabled action on one hand, but on the other revealed sensitive issues for faculty that, if unaddressed, could have derailed their good work.

> If technology is used, it needs to "solve the problem you have" instead of "us[ing] technology for the sake of using technology, [which] can be a tough thing to try to figure out and get away from."
> –Senior Administrator

Faculty training and development. Another area that calls for attention is faculty training and development, which is vital for this work, and, according to TBR, one of its "biggest challenges." With the technology-focused DSR, this included intentional use of technology. TBR recognizes that

> the research clearly shows that the software doesn't make the difference; it's how the faculty use it. Indeed we had some pilots where that was so obvious. When the faculty was there for the student and used the software appropriately, we saw huge success. If a faculty without adequate training—and that's one of our biggest challenges is making sure that faculty have the right training, especially when adjuncts are often hired to teach developmental courses—come in thinking that [course redesign] is just the software, you assign the students to do the software, and that's it, it doesn't work.

One senior administrator agreed that if technology is used, it needs to "solve the problem you have" instead of "us[ing] technology for the sake of using technology, [which] can be a tough thing to try to figure out and get away from."

Faculty from disciplines such as math and physics seem to embrace technology as a tool for providing immediate feedback and increasing efficiency. At least in math, "if students solve the problem [yet] have to wait four or five days for answers . . . they have already forgotten the problem," a senior administrator shared, "so immediate feedback is huge. The second thing is efficiency. Instead of having faculty spending time grading papers, now faculty can actually spend their time with students. Technology solves two important key issues. It makes faculty time more valuable because they are doing more valuable things and improves instruction at the same time." But, he stressed, "[Technology] needs to be very intentional."

English (writing) faculty, on the other hand, responded to TBR-led course redesigns with skepticism, thinking either the administration intended to increase their student load or that certain redesign models do not translate well across disciplines, especially for developmental education students. Initial fears of "you're going to take these students who are really struggling and set them in front of a computer and tell them how to write," one Austin Peay faculty member shared, have "proven mostly unfounded." Yet to reach this stage, Chattanooga State English faculty questioned implementing a model proven successful in math when "clearly English and math are vastly different in both instruction and outcomes." Early and ongoing training can establish shared understanding of the benefits and limitations of course redesign to better arm faculty with the skills and resources necessary to move forward confidently.

Institutional barriers. While TBR has largely tried to address potential barriers through policy informed by a competitive request for proposal process "to make sure [course redesign] is something that can actually be done and done more broadly," institutional systems and structures can support or undermine system-led course redesign initiatives.

Resource allocation is a very real concern for institutions. Faculty and administrators at Chattanooga State suggested that they might have to revise their hiring processes; some questioned the likelihood of hiring sufficient properly credentialed faculty to teach the required number of sections. An administrator at the institution noted:

> *It would have been easier if we had taken a look at resource allocation. . . . It seems to be a worry of the day knowing that we have enough faculty to teach courses. Are we going to be able to find enough adjuncts? Are we going to able to pay adjuncts enough money to get them to come actually do this? There is also a new piece involved in our institution and across the state. The Tennessee Promise, which is new legislation allowing every student who is a new first-time full-time freshman to attend community college free of tuition and fees with exceptions of course. We are sitting in the place right now where we know that we need more faculty because of [CRR] and we have absolutely no way of accurately identifying the number of students we are going to get because of Tennessee Promise.*

Austin Peay's vice president for finance and administration called attention to the significance of a business model "to determine whether or not an initiative makes any sense from an investment standpoint [by ensuring] you have clear, measurable outcomes focused on student success and completion and that there is positive return on investment. And, the most important, that [an initiative] is sustainable." This realization was borne out over time as a pro forma business model was an indirect outcome of Austin Peay's course-redesign work.

> Early and ongoing training can establish shared understanding of the benefits and limitations of course redesign to better arm faculty with the skills and resources necessary to move forward confidently.

Prior to DSR, collaboration between the finance office and academic departments around new initiatives was limited or nonexistent. The pro forma model, he stated, "is very critical to understand[ing] particular outcomes." It "requires you to develop key performance indicators, [a] matrix, outcomes that are measurable and sustainable. It is also an opportunity to really have a conversation with academic folks and discuss what the true costs are." Chattanooga State administration emphasized this point as well, suggesting that institutions implement a method for identifying student numbers and resources "right out of the gate."

Findings suggest that innovations beyond traditional academic models must involve financial and administrative systems and warrant further study. While the DSR, which was designed to generate cost savings, showed short-term cost savings from alternative scheduling and staffing, reallocation of those dollars is less clear. With the co-requisite CRR, which is taking place in an outcomes-driven policy environment, institutions might incur more front-end costs. Implications of a co-requisite approach could differ by campus given the variety of dual enrollment models. "We're allowed to hit whatever type of dual enrollment we want," a faculty member clarified. "We just have to hit the guidelines [TBR] want[s]." Gains for Austin Peay's zero-credit, fee-based lab come when students are retained, for example. "If you looked at our business model just from the semester standpoint," a staff member shared, "it costs us money. If you look at it from the [standpoint of] academic year or career, it becomes an investment instead of a loss." Two-year colleges might be particularly sensitive to co-requisite redesigns since they, according to an administrator, "have a great deal of funding coming from learning-support courses. . . . If we can get students through learning-support competencies quickly, there are going to be more [students] inclined to stay with us and complete their degrees," which would presumably generate new resources. Clearly, business models that accommodate innovative practices must adapt to academic, administrative, and financial systems to sustain any resulting improvements.

Create Short-Term Wins

Short-terms wins need to be visible, unambiguous, and connected to the change effort (Kotter 2012). For TBR, pilot data largely supplied short-term wins. The requests for proposals encouraged experimentation with evidence-based models, so student-outcomes data, regardless of the results, provided evidence of which direction to move forward in addition to reinforcing and/or informing vision and strategy.

Visible and clear victories. One component of student-outcomes data is student persistence. "I think when faculty see students succeed in these courses," a Chattanooga State administrator said, "that will be incentive." With the SLA model, students can earn college credit straight away and pay a fee for their enhanced component instead of tuition for non-credit-bearing developmental studies courses. Students tend also to be in smaller classes where they can receive more personalized assistance.

Reward change agents. Celebratory acknowledgment is another strong motivator for some stakeholders. Faculty and staff invest a great deal of time and energy and should receive recognition for their work. Faculty have authored articles on their redesign and received state and national recognition for their course redesign work (see Box 3). The more visible the short-term win—whether through positive student feedback, improved student outcomes data, or acknowledgment

Box 3. National Recognition for TBR-Led Redesigns

- Jackson State Community College (TN) won the 2010 Bellwether Award for Instructional Programs and Services for innovation in its SMART (Survive, Master, Achieve, Review and Transfer) math developmental studies redesign.
- Cleveland State Community College won the 2009 Bellwether Award for Innovation in Instructional Programs for its Do the Math developmental and college-level math redesign.
- NCAT adopted Austin Peay's SLA model as its sixth redsign model.

of a well-designed model—the more connected to the change process stakeholders feel and the more the change process benefits (Kotter 2012).

Fine-tune strategy. Short-term wins might appear elusive to those receiving weak results, but it is important to reiterate that with TBR's request for proposal process, a failed pilot is as valuable as a successful pilot. When Chattanooga State's student-outcomes data fell short of expectations, one administrator shared that "there was [a] feeling with some faculty that we put in all this effort and results were not there. There was disappointment, but we moved on." The institution subsequently sought assistance from a colleague who piloted a different redesign at another institution. He worked with Chattanooga State faculty to develop and implement another, and this time successful, redesign. A continuous improvement model has capacity to promote a culture of change where small "setbacks" are hailed as steps in the right direction.

Build on the Change

Efforts to build on system-led course-redesign innovations are under way at both system and institution levels. System-led course redesign initially involved remedial education and developmental studies. It was not until after the DSR that TBR realized the broader challenge is to redesign gateway classes to facilitate students' movement through credit-bearing classes and to help institutions to coordinate more effectively, partly to ease students' transition to other institutions in Tennessee. Results from these pilots, TBR interprets, point to the need for a co-requisite structure. What remains for TBR after the CRR, its second course-redesign initiative, is twofold: 1) to create a set of metrics to accompany the pipeline narrative and 2) to see how success with the gateway-course redesigns leads to success in classes further along the curricular pipeline.

Institutional redesign grants. In the time between TBR's DSR and CRR, some institutions initiated their own course-redesign programs. After Austin Peay eliminated its DSP, new leadership implemented the Revitalize Academic Success Initiative (RASI) as an institutional initiative to support faculty-initiated and -developed projects that make substantial changes in pedagogy and/or delivery methods to promote student retention and success.

Austin Peay's Revitalize Academic Success Initiative (RASI)

The Center for Teaching and Learning provides financial incentive and academic support for faculty to revitalize high-enrolled courses that traditionally have had low success rates. If selected by the faculty senate for this 18-month process, full-time faculty attend a required RASI Teaching Academy prior to revitalized course development and pilot. Pilot evaluations inform ongoing improvement. The stipend is a two-tiered structure based on single-faculty participation or multiple-faculty participation and student enrollment. Initially funded by a five-year Title III grant in 2008–09 to strengthen student retention and revitalize faculty/staff development, RASI funds are now a line item in Austin Peay's operating budget.

Collaboration with secondary schools. Partially to assuage Chattanooga State's concern about its capacity to accomodate co-requisite remedial students at the college level after TBR modified the learning support guidelines, Chattanooga State designed and piloted the Seamless Alignment and Integrated Learning Support (SAILS) math program at a local high school. Termed "Bridge Math," students take learning support

math embedded in high school senior math. After the initial pilot, they received funding from TBR to conduct a regional pilot with four community colleges and their local high schools, which, according to a senior administrator, "was highly successful, [with] close to 80 percent of students pass[ing] our learning support competencies." The following year they received state funds for a statewide scale up. Due to its success with SAILS math, Chattanooga State is in the process of designing a pilot for SAILS reading and writing with high school English.

> ### Chattanooga State's Seamless Alignment and Integrated Learning Support (SAILS)
>
> Chattanooga State merged its successful high school student enrollment model with its learning support model to create SAILS. Through the SAILS program, high school seniors take math embedded with learning support, called "Bridge Math," to address deficiencies prior to postsecondary education, thus saving them time and money by accelerating their path to college level math. Juniors scoring less than 19 in math on the ACT are required to take Bridge Math their senior year.
>
> Chattanooga State partnered with Red Bank High School to pre-pilot Bridge Math in 2012. In the 2012–13 academic year, TBR provided Chattanooga State with funds to pilot the program regionally with four community colleges and 20 local high schools. Since 2013–14, the state has contributed over $5 million for statewide scale up. In 2014–15, 13 community colleges and 184 high schools participated, with a 91 percent completion rate. Of those students who completed, just over 600 registered for dual enrollment (college-level) math.

Anchor Changes in Organizational Culture

Complex, transformational change is the synergy of vision, leadership, incentives, data, and other elements that take root over time in the behavior and shared values across state-, system-, and institutional-level stakeholders. For this reason, cultural change is the last stage in Kotter's leading change framework.

A shift in organizational culture appears at the participating two- and four-year institutions through their SAILS and RASI initiatives, respectively. SAILS is a nationally recognized and funded math bridge program, and Austin Peay institutionalized RASI as a line item in its operating budget. These pockets of transformative and sustainable change are indicators of innovation.

Institutional leadership. The reality is that institutional leadership is vital to bolstering the realization of both Tennessee's and TBR's college completion agenda and resulting initiatives. After the DSR, new leadership at Austin Peay had, according to a senior administrator,

> *a very clear mission in mind for the institution to focus on student success and completion. . . . Over the years, everyone seems more engaged in understanding that student success is what it is all about. Because of that, you have more faculty engaged in looking at how they can improve their courses, how they're delivered, and how students can be more successful. It is really permeated the fabric of the institution, not just academic, just every aspect of the university and community.*

A faculty member echoed this sentiment, and reflected on Austin Peay's journey with system-led course redesign:

> We say that there was this developmental education course redesign, [but] really it was not. It was a redesign of our entire campus culture and how we handle incoming freshmen … everything from aligning core math to intended majors to how we prepare our students for those math courses. If our developmental education was designed to prepare students for college algebra, now it is general core courses.

Despite the effect of the DSR on Austin Peay's organizational culture, each institution undergoes its own journey, making it difficult to gauge shifts in organizational culture across an entire higher education system. Innovative practices such as course redesign more likely take hold incrementally at the system office before taking root within institutions.

> Each institution undergoes its own journey, making it difficult to gauge shifts in organizational culture across an entire higher education system.

Time. Time is another fundamental ingredient for organizational change. Widespread behavioral norms and shared values take time to change, and it takes time for that change to take root. When asked to describe the culture around course redesign, several Chattanooga State faculty expressed resistance to the idea. "I think most faculty I talked to at our institution and other schools feel this is a big mistake," due mainly to concerns around the co-requisite model meeting the needs of students with low ACT scores enrolled in the same class as those with considerably higher scores. The conversation reverts to pedagogical differences across disciplines and whether or not the institution can attract faculty who meet the Southern Association of Colleges and Schools Commission on Colleges accreditation requirements. The hope is that SAILS will reduce co-requisite needs at the college level so some of these concerns fade away.[13]

Resistance to course redesign seems steeped in valid and deep-seated concerns about what is best for students generally and for developmental education and remedial students particularly. While TBR's evolving role is a step toward innovations beyond traditional academic models for student success, time will be the ultimate measure of change anchored in organizational culture for TBR institutions.

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13   At the time of data collection, results from the CRR had yet to be disseminated to institutions and participating faculty.

CROSSCUTTING THEMES AND CONSIDERATIONS

Kotter's leading change framework highlights the complexity of TBR's efforts to innovate beyond traditional academic models to improve student academic attainment in Tennessee; it enables further analysis through the identification of cross-cutting themes and associated considerations for policymakers and system office and institutional leaders, staff, and/or faculty engaged in or considering similar large-scale curricular change initiatives. Transformative curricular change is the synergy of context, meaningful analytics, effective structures and systems, strong leadership, and collective action that, over time, take root in the behavior and shared values across state-, system-, and institutional-level stakeholders.

Recognize That Context and Governance Structure Matter

A holistic and comprehensive approach to improving higher education attainment considers how contextual characteristics influence the adoption and implementation of public policy (Perna and Finney 2014; Richardson and Martinez 2009). Discussions regarding developmental education reform were under way prior to the DSR as Tennessee braced for budget constraints amid projected population and higher education enrollment growth. With authority to enact guidelines and polices that coordinate the work of its institutions, TBR managed a developmental education redesign effort as a pilot program devised, in part, to address demographic and financial concerns specific to the state context. The nexus of system- and state-level policies in Tennessee provided TBR not only a broader vision for focusing its redesign work, but also the teeth needed to implement it across institutions and sustain it over time.

Readiness for change. Identify the problem, then gauge the climate for change at the state, system, and institution levels and the intensity behind the impetus for innovating curricular change.

State and system policy convergence. State- and system-level policy should be complementary. State development plans and initiatives provide the broad vision for student success that system-level policies and guidelines support.

Governance structure. Systems with authority to set policies and guidelines governing their institutions are well-positioned to leverage the collective capacity of institutions toward improved student outcomes.

Institution context. Develop an awareness of institution-level contexts, including missions and institutions' capacity to garner the resources necessary to accommodate new academic models and create policy that accommodates contextual differences.

Use Data Analytics to Guide Innovation

The use of data; statistical analysis; and academic, learning, and predictive analytics can provide insight into complex issues (Bichsel 2012; van Barneveld, Arnold, and Campbell 2012). TBR has been using data on the front and back end of its course redesigns as a tool to increase student attainment. Initially, educational attainment statistics created urgency for change in traditional academic models. Outcomes data from redesign pilots measured the effectiveness of new academic models, contributed to faculty buy-in, and informed policy. The revised A-100 Guideline embeds the use of data and benchmarks to facilitate a culture of contin-

uous improvement.

After the DSR, an analysis of TBR institutions' course and enrollment data indicated that the 30 most-enrolled classes are taken by more than half of students in the system, and how students perform in these classes disproportionately impacts their overall likelihood of graduating. This informed TBR's decision to conduct a redesign of its gateway courses. As higher education moves into this emerging area to describe, predict, and improve, common data language and interpretations are beneficial (American Council on Education 2015; van Barneveld, Arnold, and Campbell 2012).

Administrators and staff guiding data analytics must pay attention to faculty sensitivities involving terminology in particular. For example, faculty, staff, and administrators commented on faculty's preference for "data informed" decisions—implying that decisions are not predicated solely on the data, but on additional relevant factors—as opposed to "data driven" decisions. Furthermore, if systems have data requirements, system- and institution-level structures must align with monitoring or data collection policies to promote effective and efficient data collection. Outcomes and other data then become another mechanism for advancing student attainment.

> *Data collection.* Collect appropriate data across institutions, support institutions in collecting these data, and have measures in place to ensure the data are accurate. Standardize data across institutions to facilitate economics of scale and scope and to address issues that are inherently cross-institution in nature.

> *Monitor and evaluation.* Consider how to transition from measuring outcomes by "if" students are learning to measuring outcomes by "what" and "how" students learn (van Barneveld, Arnold, and Campbell 2012).

> *Data sharing.* Establish transparency around how data are disseminated, who has access to which data, and tools for interpreting data.

Create Space for Innovation

As faculty and staff work through established assumptions about teaching and learning, systems and institutions must create space for innovation that avoids immediate, reactionary criticism and that can accommodate ambiguity before data are available. Mechanisms that help create space for innovating academic models include TBR's request for proposal process and institutions' business models. Employing a competitive, incentivized request for proposal process promotes faculty-led innovation. Despite such a process, in some instances, innovation was hampered by faculty concern over resource allocation. Institutions discovered that having a financial model in place that supports innovative and sustainable change fosters a higher comfort level with ambiguity in stakeholders and lessens anxiety around change, whether mandated or not. It provides a framework for identifying clear, measurable outcomes; predicting the sustainability of initiatives; allocating resources; and tracking expenses.

> *Business model.* Support institutions in developing business models that allocate funds for innovation and are able to adapt academic, administrative, and financial systems to sustain any effective changes the institution wants to retain.

> *Scalability of innovation.* Consider a request for proposal process with pilots meant to shape existing or develop new policy. This provides data to guide system-led reform; ascertain the scalability of models across institutions with different missions, populations, and needs; and allows faculty to experiment with new academic models.

Set Expectations

Leaders who set and communicate expectations bring clarity to the highly complex process of initiating change across and within institutions. Leadership at the system level identifies or anticipates barriers to curricular redesigns and decides how and when to com-

> Employing a competitive, incentivized request for proposal process promotes faculty-led innovation.

municate expectations around the work. Stakeholders must know what is expected of them and why. TBR set expectations through deliverables and timelines identified in its requests for proposals and subsequent developmental studies policy change. Although senior administrators credit system-level leadership with striking an effective balance between open discussions and firm expectations, it is an ongoing challenge for system-level leadership to strike that balance within institutional hierarchies so faculty and staff receive the same message as administrators. Tying expectations to accountability is good practice generally, but fundamental when leading change.

Frames of reference. Competing interests among stakeholders are a challenge to curricular change. The implications of student outcomes in the broader, statewide context must be shared with faculty and staff.

Expectation setting. Expectations must be mutual, clearly defined, and broadly communicated. The leadership necessary to communicate expectations and how and when those expectations are communicated must be considered.

Organizational structure and culture. Existing organizational culture and structure influence stakeholders' capacity for supporting change. Both must be assessed before setting and communicating expectations. A system that supports the flow of open communication in light of or despite organizational cultures and structures is vital.

Promote Collective Action

While systems are well-positioned to lead change across institutions, collective action is key. This requires campus leadership and relevant staff and faculty to be engaged and mutually invested in the change process and targeted outcomes (Gagliardi et al. 2015; Zemsky 2013). TBR sought collective action through establishing urgency, working with a task force, communicating a vision, establishing buy-in, empowering action through a request for proposal process, generating short-term wins, and building on change.

Securing multilateral collective action has been a challenge for TBR. Reasons differ across institutions, but they often include an aversion to perceived coercive power, cultural or structural barriers, and/or pedagogical differences across disciplines. An ongoing collaborative process where leadership at both the system and institution levels adhered to best practices for implementing change might have reduced tension and fear within institutions across both redesigns.

Institutional leadership. Consider the role of institutional leaders as key brokers in large-scale curricular change initiatives.

Information channels. Communication is fundamental and can be stalled by "siloed" organizational structures. Systems must have efficient and effective reporting mechanisms in place to facilitate the flow of information.

CONCLUSION

In higher education, where organizational structures lean toward the status quo, silos reign, and senior leadership turnover tends to be high and tenured faculty turnover low (Achieving the Dream and Public Agenda 2011), reconceptualizing the way existing structures deliver quality, affordable higher education is a challenge to institutional innovation. Piecemeal innovative practices are not uncommon, but establishing systematic and sustainable change is difficult in a domain as complex as higher education (Gagliardi et al. 2015).

The Tennessee experience shows that systems are well-positioned to manage such curricular change across institutions. Tennessee's college completion agenda includes a system-led course redesign as a mechanism for innovations beyond traditional academic models for student success. An exploration of the Tennessee Board of Regents' efforts to create, establish, and sustain innovations to traditional academic models through course-redesign initiatives offers valuable insight into overcoming the challenges faced by such efforts. System-led curricular change can be transformative through the synergy of state-, system-, and institutional-level contexts and with meaningful analytics, effective structures and systems, strong leadership, effective communication, and collective action that take root over time in the behavior and shared values among state-, system-, and institutional-level stakeholders.

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APPENDIX A

Course Redesign Project

System-Level Interview Questions [10]
[60 minutes]

The Center for Policy Research and Strategy at ACE is conducting phone interviews with key system and institutional level stakeholders in Tennessee to explore system-led course redesign and its intended goals, evolution, and outcomes and the (ongoing) impact of course redesign as a catalyst for new academic and/or business model development.

Opening Question
1. How does the Tennessee Board of Regents define course redesign?

Genesis
2. What was the impetus behind course redesign at the system level in Tennessee?
3. Who were the major parties involved in the development and implementation of course redesign efforts? What role did they play?
4. What was/is your role in the course redesign process?

Implementation
5. What (other) social, economic, political, or cultural circumstances specific to Tennessee have facilitated course redesign as a mechanism for addressing student attainment in Tennessee?
6. Alongside Tennessee's other initiatives designed to increase student attainment, where does course redesign fall within the innovation spectrum?
7. What incentives are in place to support the development and implementation of course redesign initiatives?

Outcomes
8. What measurable outcomes can be attributed to course redesign initiatives?
9. Are there plans to build out or grow existing course redesign activities?
10. Can you share lessons learned for other systems interested in implementing or encouraging course redesign?

APPENDIX B

Course Redesign Project

Institution-Level Interview Questions [11]
[60 minutes]

The Center for Policy Research and Strategy at ACE is conducting phone interviews with key system and institutional level stakeholders in Tennessee to explore system-led course redesign and its intended goals, evolution, and outcomes and the (ongoing) impact of course redesign as a catalyst for new academic and/or business model development.

Opening Question
1. How does [institution] define course redesign?

Initial Involvement
Phase 1 (DSR)
2. What was the impetus behind [institution] participation in system-led course redesign of developmental education courses?
3. How far along was [institution] in course redesign prior to the request for proposal, if at all?

Phase 2 (CRR)
2. What was the impetus behind [institution] participation in system-led course revitalization of gateway courses?
3. How far along was [institution] in course redesign of general education courses prior to the request for proposal, if at all?

Implementation
4. Who were the major parties involved in the [development / implementation] of course redesign efforts? What role did they play?
5. What was/is your role in the course redesign process?
6. What (other) social, economic, political or cultural circumstances specific to [TN / institution] have facilitated your institution's participation in course redesign?
7. What incentives are in place to support the development and implementation of course redesign initiatives?

Outcomes
8. What changes have occurred as a result of course redesign? Were these in line with [system / institutional] goals?
9. To what extent have efforts been made for [institution] to build out existing redesign courses?
10. What have been challenges to [institution] participation in course redesign?
11. Can you share lessons learned for other institutions interested in course redesign?