Doing More, for Many More, with Less

Kentucky Institute for Effective Governance
September 20, 2004

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The Current Environment for Higher Education: A Challenge to Academic Design and Delivery

- ■ Severe (and Likely Long-Term) State Revenue Constraints

- ■ Growing Enrollment Demand

- ■ New Views About Return on Investment from Higher Education (Individual and Collective)

Mild Recession But Severe Fiscal Crisis

State Tax Revenue and Economic Growth
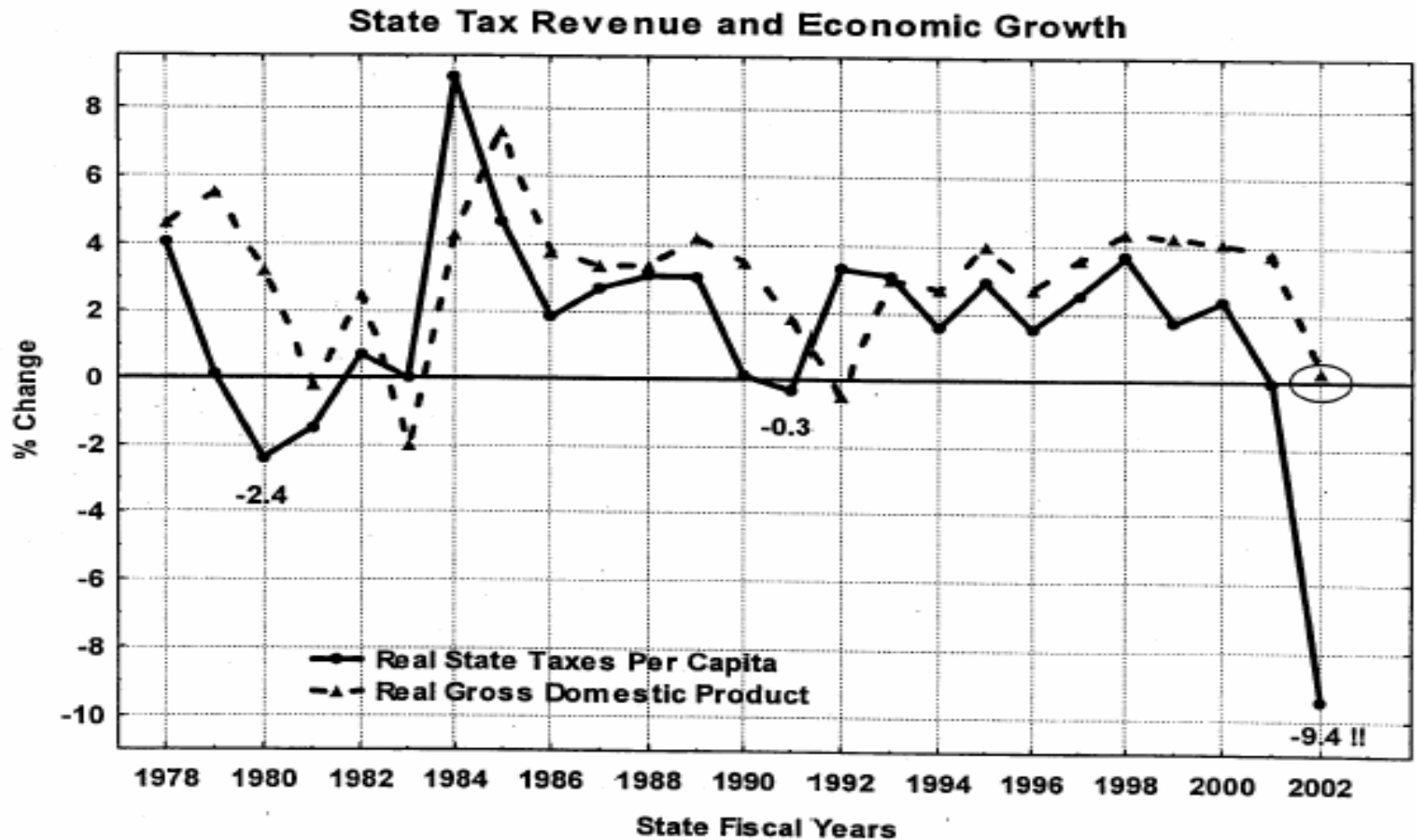
SOURCES: Bureau of the Census, Bureau of Economic Analysis, Rockefeller Institute of Government

What Drives Up Instructional Costs?

- A Labor-Intensive Mode of Instruction

- Growth by Addition and Duplication, not Substitution

- Incentive Systems that Discourage Cooperation/Joint Ventures

Keys to Greater "Learning Productivity"

- ■ Coherent and Intentional "Designs for Learning"

- ■ Based on Known Best Practices from Research

- ■ Involving Critical Re-Examination of the Instructional "Production Function"

What Impedes "Learning Productivity"

- Student Time Spent Passively "Receiving Content"

- Lock-Step Designs that Don't Allow Self-Pacing or Capitalizing on Prior Student Learning

- Linear Designs that Don't Allow Students to Choose their Own Paths through Content

- Infrequent Feedback on Performance

- Duplication of Effort

Developing Solutions: Levels of Analysis

- **State/System** Strategies Based on Scale and Cooperative Arrangements Among Institutions

- **Institutional** Strategies Based on Curriculum Restructuring and Alignment

- **Course-Level** Strategies Based on Technology and Redesigning What Faculty Do

Some State/System Strategies

- Block Purchasing of Academic Content and Central or Contracted Development of Expensive Technology-Based Courses

- "Lead Institutions" for Specific Disciplines, Curriculum Blocks, or Delivery Approaches

- "Seamless" Programs to Allow Efficient Transfer of Credit

- Targeted Incentive Programs (in which Independent Colleges can Play)

Examples of KY State/System Strategies

- K-Core – Redesign General Education to Increase Capacity, Accessibility, Quality, and Student Learning

- Entrepreneurship Program – Modular Program Design through KCTCS

- University Completer Programs – Allow Students to Complete BA Efficiently and Quickly (mostly On-Line) After Attending KCTCS

Some Institutional Lines of Attack

- ■ Increasing Program Productivity

- ■ Improving Curricular Efficiency

- ■ Improving Curricular Coherence

- ■ Improving Faculty Productivity

Program Productivity: Key Questions

What If the Institution:

- Brought Disproportionately Expensive Programs into Line with Peers?

- Reduced its New Freshman Attrition Rate?

- Salvaged "At Risk" Students?

- Reduced Number of Students Graduating with Excessive Numbers of Credits?

Curriculum Efficiency: Key Questions

What If the Institution:

- Increased Average Class Sizes (or Optimized Large-Course Enrollments to Selectively Subsidize Smaller Sections)?

- Reduced the Number of Under-Enrolled Course Sections?

- Reduced the Number of Discretionary or Elective Course Offerings?

- Created a Year-Round Calendar?

Curriculum Coherence: Key Questions

What If the Institution:

- Reduced Content Duplication Across Departmental Offerings?"

- Rationalized Pre-Requisite Sequences and Placement Policies?

- Offered Sufficient Sections of Courses "Just in Time" When Needed?

- Allowed Students to Test Out of Courses?

Faculty Productivity: Key Questions

What If the Institution:

- Reduced its Reliance on Full-time, Tenure Track Faculty?

- Reduced the Number of Faculty on Release Time?

- Restructured Faculty Work from "Teaching" Toward Designing Curricula and Supervising Teams of Less-Expensive Personnel?

Reduce Cost of Disproportionately Expensive Programs: An Example

- Regional Institution with Enrollment of 7400

- Instructional Costs per FTE vary from Under $2,000 to Over $6,000

- Identified 4 Programs Costing more than 40% More than at Peer Institutions

- Reducing Costs in these Programs to Peer Average Would Result in Savings of $456,219 per Year

Reducing Freshman Attrition: An Example

- Institution with 1600 New Freshmen per Year

- Implements Comprehensive First-Year Retention Program Costing $257,000/year

- Increased First-Year Retention by 7% Over 2 Years

- Increased Tuition Revenue Almost $2 Million for Net Increase of $1.75 Million

Reducing Discretionary Offerings: An Example

- **Institution Identified About 350 Upper-Division Courses with Low Enrollments per year, Not Linked to Program Requirements**

- **Cut this to 250 and Reassign Full-time Faculty to High Enrollment Lower-Division Courses Taught by Part-time Faculty**

- **Based on Full-time Load, Savings of 11.5 FTE in Part-time Faculty**

- **Total Savings = $313,594**

Using Technology: Key Assumptions

- Costs Will Continue to Rise if we Rely Exclusively on a "Credit-for-Contact" Model

- If we "Bolt-On" Technology to this Model, Costs will Increase Even More

- While People Costs Continue to Rise, Technology Costs Continue to Fall

- Concentrate on Large-Enrollment Courses where Intervention will Really Matter

Course-Level Redesign: Key Principles

- Redesign the *Whole Course*

- Concentrate on Large-Enrollment Courses where Intervention will Really Matter

- Begin with Clear Learning Objectives for the Course (and how you will know they are met)

- Examine Each Activity and Cost It Out

- Use Technology and Re-Structure Deployment of Teaching Staff

Demonstration Projects by the Center for Academic Transformation (CAT)

- Directed at Redesigning a Single Large-Enrollment Freshman Course

- Pew Grant Program Involving 30 Institutional Redesigns [Now Completed and Documented]

- Current "R2R" Project Involving About 35 More Institutions in a "Streamlined" Redesign

- Overall Result: Costs Cut with Equivalent or Better Learning

CAT Approaches to Re-Design

- *Supplemental*: Supplements Regular Delivery with Automated Out-of-Class Activities

- *Replacement*: Reduce Face-to-Face Meetings and Restructure Learning Activities

- *Emporium*: Eliminate Regular Classes and Replace with Resource Center Featuring On-Line Materials and Personalized Assistance

- *Buffet*: Customize On-Line Learning Environment for Each Student Based on Assessed Characteristics of Learner

Examples of Techniques within Redesigns

- **Shift Students from Passive Note-taking to Active Manipulation of Materials**

- **Materials Present Abstract Concepts Interactively and in Multiple Modes (e.g. Visual, Verbal, etc.)**

- **Opportunities to Refresh Knowledge "On Demand"**

- **Interactive Tutorials, Exercises Give Students Needed Practice**

- **Automated, Low-Stakes Quizzes Provide Immediate Feedback**

Examples of Techniques within Redesigns

- **Self-Pacing of Materials, with Multiple Paths**

- **More Individualized Assistance (both Personal and On-Line)**

- **Collaboration and Use of Teams in Problem-Solving**

- **24 x7 Access to On-Line Learning Resources**

- **Modularization that Allows "Testing Out" of Content Already Mastered**

A Typical "Replacement" Re-Design Effort

- *Base Course*: 15 Weeks, 350 Students, 2 Lecture and 2 1-hour Discussion Sessions (8 sections) per Week

- *Redesigned Course*: Eliminates 1 Lecture and 1 Discussion Session; Adds 24 x 7 Access Modules and Drop-in Help Lab with Lab Monitor

- *Savings*: $21,591 * 8 Sections = $172,730

Virginia Tech's "Math Emporium"

- **Multiple Sections Combined to a Single Course Offered in 500-WorkStation Lab Open 24 x 7**

- **Content Modularized to 1-2 Week Blocks with Associated Problem Sets, Practice Quizzes, and Final**

- **Students Access Materials on Demand at Own Pace**

- **TAs Provide Hints and Assistance on Demand**

- **Scores on Math Problems Improved 17%, Failure Rate Dropped 39%, Cost-per-Student Cut by 68%**

Academic Management Information: The Critical Resource for Transformation

Key Questions to be Addressed:

- **How do Students "Flow Through" the Institution?**

- **How do Students "Act Out" the Curriculum?**

- **How Much Do Instructional Activities Cost?**

- **How Well are Students Learning?**

- **Are Student Learning the Right Things?**

Some Final Reminders

- **Higher Education Faces a Serious, Long-Term, Productivity Problem**

- **This Problem is Not Unlike that Faced by Other Industries (and we can learn from what they do)**

- **This Problem Cannot Be Addressed Without Re-Examining the "Core Business" of Undergraduate Teaching and Learning**

- **It is Possible to Reduce Unit Costs without Sacrificing Academic Effectiveness**

- **Incremental, Individual-Faculty-Based, "Add-On" Strategies Will Not Be Sufficient**