Pointing Students in the Right Direction: the importance of new student orientation | NCSSSMST 2010
Who is Missouri S&T?

1. Top 5 specialized STEM research university.

2. Top 5 public university for highest starting salaries for graduates.

3. Top 5 among national universities for supporting students with high financial need.

4. Top 5 “best values” among national public universities.

5. No. 12 public university as rated by the guidance counselors at America’s top 800 high schools.
Who is Missouri S&T?

- 7,200 students
- Average student ACT/SAT: upper 10% in nation
  - Average ACT: 27.7
- +70% of freshmen from upper 20% of HS class
- 23% out-of-state enrollment
- +90% 5-year average placement rate at graduation
- 5-year average starting salary: +$57,475

Current Undergraduate Students
- Average parent income: $ 78,250
- Family incomes below $50,000: +35%
- First generation college students: 29%
- Pell Grant eligible students: 25%

Graduation Statistics
- Approximate indebtedness: $ 23,000
- Average starting salary: $ 57,475
America’s 16 Technological Research Universities

- At least 25% engineering
- At least 50% engineering, business, science and math
- Intensive research institution
- Cutting-edge graduate program
Students’ Home States

Fall 2010

Total Enrollment
- 48 states & 51 nations
- 70% Missouri residents
- 10% minority students
- 9% international students
Missouri S&T: 90% engineering, science and computing majors

19th in nation for largest undergraduate engineering enrollment (ASEE Prism 2010)
19th in nation for number of BS engineering degrees granted (ASEE Prism 2010)

- 76% Engineering
- 13% Science & Computing
- 5% Business & IST
- 3% Arts & Social Sciences
- 3% Non-Degree & Undecided
Fun Facts

- 80% of grads “actively involved” in student organizations
  - 1-2 organizations (37%)
  - 2-3 organizations (14%)
  - 3-4 organizations (14%)
  - 5+ organizations (15%)

- 60% held a leadership position

- 30% changed their major at least once

- How likely to attend graduate school?
  - Very good chance (56%)
  - Some chance (23%)
  - Very little chance (12%)
  - No chance (7%)
  - Haven’t considered (1%)
  - 24% went to grad school directly after completing a B.S.

Source: Missouri S&T Institutional Data
Our Challenge
Enrollment Growth

38% Total Enrollment Growth: 2000: 4,626  2010: 7,206
Since 2004: 60% of growth due to increased retention

Since 2004: 60% of growth due to increased retention
“Succeeding while Swimming Against the Tide”
% of 1st Year Students at 4-Year College Who Return for 2nd Year

SOURCE: ACT 2009
Freshman Retention and Graduation Rates

- Average 1\textsuperscript{st} to 2\textsuperscript{nd} year retention for NCSSSMST students is identical to all-campus average.
- 4-year graduation rate for NCSSSMST students is +30\% higher than all-campus average.
S&T: 12% “drop out” rate after the first year

- **23.8% “drop out” rate for public Ph.D. granting institutions**
  (July 2001 ACT National Collegiate Dropout and Graduation Rates report)

- **18.6% “drop out” rate for “selective” institutions (average ACT 22-27)**
  (July 2001 ACT National Collegiate Dropout and Graduation Rates report)

- **31% of all students enrolled in science, mathematics, engineering and technology either transferred to a non-STEM degree or dropped out of school completely.**
  (September 2001 Center for Institutional Data Exchange and Analysis)

- **13.4% of students at the participating institutions ranked as highly selective (ACT>24) dropped out.**
  (September 2001 Center for Institutional Data Exchange and Analysis)

- **15% “drop out” rate for technological research universities.**
  (2008 from Education Trust’s collegeresults.org)
Financial considerations the most common reason for leaving college

### Enrolled vs. Not-Enrolled

First-time freshmen class (full-time, degree-seeking)

<table>
<thead>
<tr>
<th></th>
<th>FS97</th>
<th>FS99</th>
<th>FS01</th>
<th>FS02</th>
<th>FS03</th>
<th>FS04</th>
<th>FS05</th>
<th>FS06</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count</td>
<td>576</td>
<td>117</td>
<td>562</td>
<td>118</td>
<td>584</td>
<td>109</td>
<td>652</td>
<td>136</td>
</tr>
<tr>
<td>%</td>
<td>83.1</td>
<td>16.9</td>
<td>82.6</td>
<td>17.4</td>
<td>84.3</td>
<td>15.7</td>
<td>82.7</td>
<td>17.3</td>
</tr>
<tr>
<td>HS GPA</td>
<td>Not Tracked</td>
<td>3.56</td>
<td>3.32</td>
<td>3.5</td>
<td>3.25</td>
<td>3.52</td>
<td>3.27</td>
<td>3.59</td>
</tr>
<tr>
<td>HS % Rank</td>
<td>85.9</td>
<td>78.2</td>
<td>85.1</td>
<td>76.5</td>
<td>82.1</td>
<td>71.6</td>
<td>81.5</td>
<td>74.0</td>
</tr>
<tr>
<td>ACT</td>
<td>28.4</td>
<td>27.1</td>
<td>28.0</td>
<td>26.2</td>
<td>27.1</td>
<td>25.3</td>
<td>27.5</td>
<td>26.5</td>
</tr>
<tr>
<td>S&amp;T GPA</td>
<td>3.01</td>
<td>2.22</td>
<td>3.02</td>
<td>2.21</td>
<td>3.04</td>
<td>2.18</td>
<td>3.16</td>
<td>2.41</td>
</tr>
</tbody>
</table>
Challenges of “Academy” Students

Missouri S&T has Opening Week for freshmen, and a separate experience for transfer students

- “Academy” students are neither, or both. They are hybrids (50-60 credit hours).
- Freshmen orientation has an emphasis on team building.
- Transfer scheduling is intended for a more mature student.
Challenges for “Academy” Students

- Orientation activities introduce them to other freshmen, but not to the students who will be in their junior level classes.
- Study groups in their junior level classes have already formed study groups and routines.
- Instructors and advisors of “juniors” typically expect that the student “knows the ropes.”
- Academy students may not find the same level of assistance, support, or encouragement that they are accustomed to.
Identifying Solutions

- “Academic Alerts”
- LASSI
- HPI
Core Retention Assessments

Why did students who chose S&T stay or leave? Be proactive and intrusive.

- **New Student Survey** (prior to start of classes)
- **Withdrawal Survey** (prior to cancelling classes)
- **Phone/Email Survey of Non-Returning Students**
  (2-4 weeks prior to start of semester and after census date to catch stop-outs)
- **Student Satisfaction Survey** (all returning students)
- **Graduating Student Survey** (prior to commencement or within the first six months after graduating)
- **LASSI Inventory** (required to close an Academic Alert)
While S&T’s freshman class would rank in the top 10% of all U.S. universities, new students...

- are bright but have never been challenged at the level they’re about to experience
- are great “memorizers” but not great “analyzers”
- aren’t used to taking their textbooks home
- aren’t used to reading
- aren’t great at picking out main ideas
- are easily distracted and don’t manage their time well
- aren’t good at dealing with anything but success

The university...

- expected students to change without helping them
- was losing great, high-qualified students that nearly any other university would love to have
- struggled with motivating students to succeed in foundational courses
- struggled with getting new students to make friends
- struggled with getting students to work together in teams
- struggled to help students set realistic career goals
5th Week “Academic Alerts” Issued to General Chemistry Students

- To close their “Academic Alert” students were asked to take the LASSI (Learning and Study Skills Inventory)

- Course Enrollment: 771
- Alerts Issued: 325 (42%)
- Took the LASSI: 267 (82%)

LASSI Results from General Chemistry

- Self test reviewing and preparing for class (SFT) 65.54%
- Attitude and interest/study aids (ATT/STA) 60.67%
- Testing strategies and preparing for tests (TST) 49.81%
- Time management for academic tasks (TMT) 49.44%
- Anxiety and worry about school performance (ANX) 47.57%
- Concentration/motivation (CON/MOT) 36.70%
- Selecting main ideas (SMI) 30.34%
- Information processing (INP) 27.34%
Hogan Personality Index
Measure of personality used to predict job performance
Putting Data Into Action

- Based on HPI data
- Email communications based on
  - Prudence
  - Adjustment
  - Sociability
Implementing Change
CORE ENROLLMENT PRINCIPLE: The most successful retention programs clearly address students’ needs and regularly ENGAGE students in academic and non-academic programs.

- ACT Policy Report: *The Role of Academic and Non-Academic Factors in Improving College Retention*, indicates that many colleges' retention efforts are too narrowly focused.

- Academic help alone is not enough to keep many students in school. These students also need individual support to feel connected to the campus community. Colleges, however, may focus on only academic or non-academic support, rather than both.

Between 2000 and 2009, S&T made 35 major policy, programming and assessment changes to enhance student engagement and retention.
Key Retention Understandings

- There is **no Magic Bullet** – Retention programs must be designed to meet student needs and have an academic success focus.

- Retention programs must be multi-faceted.

- Don’t ignore socio-economic factors.

- Quick improvements can be made by examining processes and points of student interaction.
Exit and Phone Survey Results
Why students leave

Personal Reasons:
- Family issues – needed at home
- Girlfriend/boyfriend issues
- Bad & overpriced dorm & food
- Too small of a town/nothing to do
- Just not the right fit
- Wanted to get away from home
- Wanted to move closer to home

Academic Issues:
- Too hard/grades lower than expected
- Changed major/preferred major at another institution
- Felt university was too focused on engineering/not enough different liberal arts programs/classes
- Advisor/Instructor not helpful enough

Financial Issues:
- Cost/Financial
- Cannot borrow enough
- Parents will not pay

Note: Some students reported multiple reasons.
Do you plan to return to S&T?
- 68% students do not plan to return to S&T
- 25% plan to return
  “Stop-outs” includes students leaving for military service
- 7% were not certain of their plans

What would have kept you at S&T?
- Nothing would have kept me at S&T
- More money or financial aid
- More majors or non-engineering degrees
- Higher or better grades

Would you recommend S&T to another student?
- 38% would recommend to another student unconditionally
- 39% would recommend for engineering/science/math only
- 4% would recommend with a caveat (it’s not for everyone, if they wanted to go away)
- 5% said no
Orientation Is Key
3-Step Orientation

Set the tone during recruitment
student success, expectations

Preview, Registration and Orientation (PRO) Day
1-day, Feb-June

Opening Week Orientation
1-week, August

“Hit the Ground Running”
4-week summer academic bridge program
Problem: Majority of students were not attending
- Limited use of campus resources
- Limited campus and community involvement
- No incentive or commitment to participate
- Students changing/no tools to evaluate change
- Important topics not addressed
- Lecture style presentations
- Weak social interaction
- Lacked expectations and outcomes
- Lacked challenging & interesting activities
- No common learning experience
- Not Fun

Solution: Give students what they want but also what they need!
Opening Week Learning Objectives

- Begin the learning process
- Involve collaborative learning
- Common experience
- Higher retention
- Interact and bond with students, faculty and staff
- Empower students to develop character
- Introduce campus resources
- Understand expectations
- Foundation for future success
- Promote teamwork
- Respect cultural backgrounds and differences
- Understand importance of communication skills
- Other skills developed:  
  - Critical Thinking,  
  - Problem Solving,  
  - Brainstorming, and  
  - Conflict Resolution.
- FUN!
Build a Program Around Your “Purple Cow”
Attendance at Opening Week

Welcome Activities
Convocation
Academic Workshops
Tuesday Mission
Wednesday Mission
Thursday Mission

2001 2006 2008 2009
Correlation Between Opening Week Participation and 1st Semester GPA

- Attended every day: 3.386
- Attended 3 or more days: 3.299
- Did not attend: 2.877
Mix of fun and formal:

- Welcome picnic
- Convocation
- Academic Workshops
- ProjectX
- Missions
- Network with faculty
- Night activities
- Mini career fair with key employers
Academic Workshops

- Review
- Problem Solving Workshop
- Intro to Chem Safety Lab
- Power of Communication
- Leadership the Miner Way
- CPS (College Program for Success)

Help new students understand the realities of academic life at Missouri S&T
Faculty Interaction

- Civility in the classroom and on-campus
- Expectations
- Diversity and Inclusion
- Values
- Casual interaction
70 teams receive radio-controlled chassis and manual

Teams race against time to compete in the “Missions” to seize “Miner Bucks” for gadgets at “The Shop” to complete ProjectX

Teams build vehicle focused on objectives (bridge, etc.)

Focus on judging formula:
- Deliverables/journals
- Aesthetic
- Obstacle course
- Presentations

Limited materials and time

No limitations on design, creativity and presenting projects

Inclusive (all majors)
Missions

Professional Development
- COC Information
- Mini career fair
- Campus Professional Information
- Corporations

Social Commotion
- Social (alcohol, sex, etc)
- Health
- Diversity
- Values

Amazing Miner Race
- Campus resources
  - Police Department
  - Academic assistance
  - Student Affairs
  - Student Life
  - IT
  - Diversity and inclusion
  - Student Union Board
  - Alumni
  - Study abroad
  - Community involvement
Students had a great time and made friends
Interaction with faculty, staff and upperclassmen
More students were informed about expectations, campus resources and programs than ever before for their success
Campus involvement
Introduced S&T traditions
Upperclassmen leadership experience
Built a strong foundation to be successful
  – Third week/first semester retention rate increased.
  – First semester freshmen GPA increased.
Issues Addressed:
What does it take to be successful at a premier university?

- Teamwork
- Communication
- Life-long learning
- Creativity
- Ability to use math and computers and tackle tough challenges
“I expect to complete my degree at Missouri S&T in...”
“I expect to study ____ hours per week at S&T.”

Source: Missouri S&T Institutional Data
“By the end of your first year at S&T, I expect my GPA to be...”