A toolkit for physics department advocacy (and survival) and its connection to EP3

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https://ericbrewe.com/talk/apsaprildepttoolkit/
Parson freezes $180 million in spending; coronavirus cuts to hit higher ed, other programs

MISSOURI WESTERN CONSIDERING PHASING OUT SEVERAL MAJORS, MINORS

Missouri Western State University officials are discussing the possibility majors and minors in the next few years.

Posted: Apr 4, 2020 8:30 PM
Background

- 2011 - Texas state legislature threatens/closes physics departments in 10 state schools
  - Midwestern State,
  - Prairie View A&M,
  - Tarleton State,
  - Texas Southern,
  - University of Texas-Brownsville
  - West Texas A&M
  - Texas A&M Commerce
  - University of Texas-Pan American
  - Texas Tech
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APS Response(s)

- APS News Backpage Article
- Letters of Support from APS Education and Diversity, CEO
- Office of Governmental Affairs outreach
- POPA, Committee on Education discussion
Background

- 2011-15: Additional proposed closures of
  - Departments
  - Programs (Masters, BA/BS, Minors)
- Additional proposed closures in:
  - Illinois
  - Minnesota
  - Oregon
  - Ohio
  - Tennessee
- APS Leadership submits letters of support in many cases.

  APS Education Policy Committee: “We should do something”
Envisioning challenges to higher education

- Focusing on smaller programs
- Regional Public Institutions
- HBCUs
- Sources of physics teachers.
Department Toolkit Taskforce

Jesus Pando, CoM, DePaul

Scott Franklin, EPC, RIT

Eric Brewe, EPC, Drexel
Department Toolkit Taskforce - Initial Actions

- Establish Guiding Problem
- Identify existing resources (letters/presentations)
- Identify places that have been under threat
- Reach out to EP3 & AIP Team UP
- Interview with Texas A&M Commerce
Department Toolkit Taskforce

Guiding Issue: Many physics departments are considered small within the university context, and as a result many departments and programs are under threat of closure. In order to help departments and or programs help themselves, we are aiming to compile a set of resources that have been used by others both successfully and sometimes unsuccessfully.
Department Toolkit Taskforce

Resources to argue against closure:

a. Letters to state/federal representatives
b. Letters to department/College/University level administrators
c. One pagers on what physicists do/careers in physics
d. Illustration of Impacts of Departments (e.g. teacher education, data science, engineering, power grid)
Texas A&M Commerce

- 2011 - On probation by Texas Higher Education Coordinating Board due to low numbers of graduates
  - President/Dean/Department Chair submit appeal
    - 13 Page Continuation Justification
    - Graduation statistics/Projections
    - Student Profiles
    - Strategies
Texas A&M Commerce

Dr. Matthew Wood

Dr. Will Newton

Dr. Robynne Lock
Texas A&M Commerce - Context

- Graduating 3-5 students/yr (comparable to other depts)
- Threat was to close programs (physics degrees)
  - Not strong financial motivation
- Had stopped doing high school recruitment
- Had strong working relationships with President and Dean.
- Implementing recommendations from SPIN-UP
Texas A&M Commerce - What did they do?

- Undertook real change, and implemented
  - Recruiting HS students, Community College
  - Cultivated network of HS teachers
  - Implemented Studio Physics in Intro
  - Started Learning Assistant Program
  - Built Freshman Seminar
  - Established Physics Lounge
  - Building Community
  - Hand out swag
Texas A&M Commerce - Recommendations

● Get advisory board
  ○ Identify marketable skills
  ○ ⅓ alumni, ⅓ local businesses, ⅓ women in industry and research.
● Be proactive - Recruit
  ○ Remember students are best recruiters.
● Mindset of continuous improvement
  ○ Hiring is important
● Keep track of alumni
Texas A&M Commerce - What has happened?

- Real improvement to department
  - Led to greater levels of funding
  - What kind of department do we want to be?
Texas A&M Commerce - Summary

- Threat forced department to consider how department was viewed by others:
  - Critical self-reflection (Who do we want to be?)
  - Developed actions (recruitment), language, communication strategy that conveyed value of dept.
  - Mindset of continual improvement.

- 23,000 students, 5 yr. Graduation rate of 4.2
- (<10 in Tennessee is “low producing”)
- 0 physics teachers in 20 years.
- Lack of knowledge of career trajectories in physics
Middle Tennessee State University - actions

- APS External Evaluation
- External Marketing Consultant.
  - Found difficulty identifying career options beyond graduate school.
- Established concentrations under physics bachelors
  - Applied Physics, Physics Teaching
Middle Tennessee State University - Physics Teaching

- Created curricular pathway to licensure
  - Between graduate school path and emergency certification.
- Earned PhysTEC grant
  - Recruitment
  - Curricular Reform
  - Improved collaboration with College of Education
- Established MTeach - UTeach replication
Middle Tennessee State University - Physics Teaching

- **Recruitment:**
  - Career focused marketing
  - Noyce scholarships

- **Curricular Reform:**
  - Active learning in intro course
  - Physics pedagogy course developed
  - Learning Assistants

- **Systemic:**
  - Physics Education Research hire
  - Monthly meetings with High School Teachers
Middle Tennessee State University - Impacts

![Graph showing projected graduation rates from 2008-2016](image-url)
Middle Tennessee State University - Recommendations

● Recruit continuously
  ○ Work with HS Teachers
  ○ Emphasize career options

● Do not become complacent
  ○ Consider multiple ways to improve the department.
“...continuous course improvement has become the department’s mantra, and faculty attitudes have shifted beyond preparing great candidates for graduate school”
Lessons Learned

● Complacency is dangerous.
● Continuous improvement is critical.
● Both MTSU and TAMUC displayed
  ○ Being/Becoming self aware is crucial
  ○ Knowledge of area
    ■ What are the important features (economy, teacher development, industry?)
  ○ Recruitment!
  ○ Willingness to change.
What additional tools are needed?

- Resources to help departments reimagine themselves
  - Case studies
  - Examples of
    - Recruitment and retention efforts
    - Messaging campaigns
Toolkit Questions:

- What additional tools do you see as necessary?

- Do you know of other places that have been threatened and succeeded (or not)? Please let one of us know.
Thank you!
Be safe.
And join FEd.

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