Alliance for Physics Excellence - Addressing Alabama's HS Physics Teacher Needs

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Outline

- Alabama HS physics teacher needs
- Overview of APEX program
- Baseline data on participants (teachers and their students)
- Concluding remarks

Alabama HS Physics

- Shortage of physics offerings
  - 27% of students attend school with no physics. (Alabama ranks 44 out of 50 states + DC.)
- Shortage of students taking physics.
  - 19% in Alabama vs 37% in US
- Shortage of trained physics teachers
  - 10% are certified with physics major vs 34% US

APEX Partners

- AAMU - lead institution. In-service & pre-service training
- UA – teacher impact research, in-service & pre-service training
- AAPT/PTRA – in-service training
- Alabama Science in Motion – In-service training
- Drake State – leadership development

In-service Training

- In-service training to 77 HS physics teachers + 11 ASIM specialists
  - 2 wks sum + 6 days during academic year for 3 yrs
  - PTRA trainers (Jim & Jane Nelson)
- Topics
  - Year 1: Mechanics
  - Year 2: Fluids, Thermo, E&M, Circuits
  - Year 3: E&M, Waves & Sound, Optics, Modern Physics

ASIM Partnership

- ASIM: Loans equipment and provides training for about 2/3 of public high schools and physics teachers
- 11 regions each with full-time specialist
- Participates in APEX training as leaders and learners and selects teachers for training
- APEX and PTRA trained ASIM specialists may lead APEX training for 3rd cohort of teachers

Education Research and Assessment

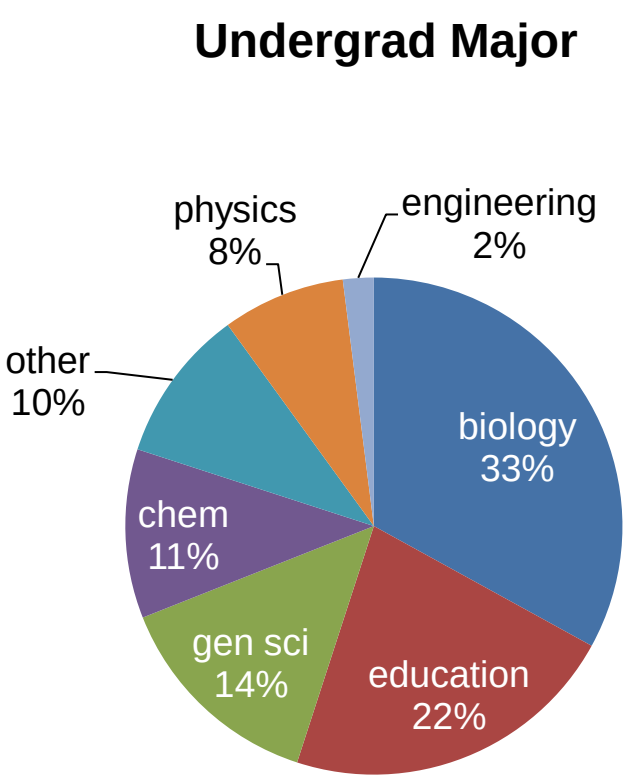
- Baseline data – teacher backgrounds, classroom environment (year 0)
- Action research – teach selected APEX topics and assess and report outcomes
- Assess impact of APEX training on classroom environment (years 2 and 3+)
- 2 days of classroom observations, interviews, surveys each of 3 years.

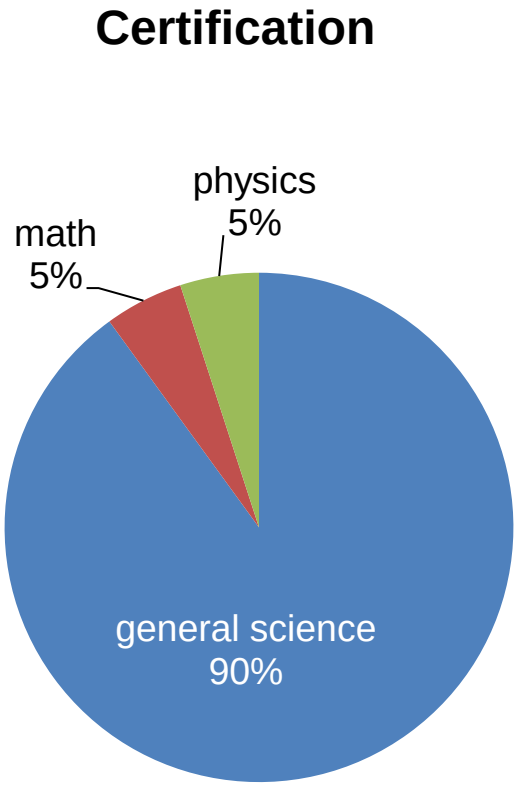
Preliminary Results

- Partial training for 47 teachers + 11 ASIM specialists
- Baseline data on 47 teachers and classes
  - Weak content knowledge and PCK
  - Mostly traditional lecture-based instruction

Instrument	Avg	Range	Min/Max
RTOP	54	10-87	0-100
SLE	67	14-95	0-100
CLES (Teacher)	67	32-112	25-125
CLES (Student)	86	32-124	25-125

Major and Certification





Concluding Remarks

- Baseline studies show critical need
- Initial APEX training very positive
- Strong, evolving partnership with ASIM
- Parallel need for both pre-service and in-service training

  - UA-PhysTEC, APEX scholarships

- See GI01 for APEX talk by Cady et al

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