PhysTEC:
The Year in Review and Looking Ahead

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Associate Director of Education and Diversity
American Physical Society
Latest Data on Need for STEM Teachers

Relative Demand by Field: Highest Demand Fields

Considerable Shortage (5.00 - 4.21)

Physics
Spec. Ed. – Severe/Profound Disability
Spec. Ed. – Visually Impaired
Mathematics
Chemistry

4.52
4.36
4.33
4.23
4.21

Some Shortage (4.20 - 3.41)

Speech Pathology
Spec. Ed. – Multi-categorical
Spec. Ed. – Mild/Moderate Disabilities
ESL/ELL (English Language Learner)

4.15
4.13
4.04
4.00

PhysTEC Institutions

- Supported Sites
- Member Institutions
- Endorsed Site
- Affiliate Institutions
PhysTEC graduates from supported sites
PhysTEC Supported Sites

- Pre-award period
- Award period

<table>
<thead>
<tr>
<th>Sites Funded</th>
<th>Future Teachers</th>
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<tbody>
<tr>
<td>4 Sites funded 2010-2013</td>
<td>40</td>
</tr>
<tr>
<td>4 Sites funded 2011-2014</td>
<td>30</td>
</tr>
<tr>
<td>6 Sites funded 2012-2014</td>
<td>60</td>
</tr>
<tr>
<td>5 Sites funded 2013-2014</td>
<td>20</td>
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• Led by Rachel Scherr
• Are PhysTEC legacy sites sustaining increases in production of physics teachers?
• Did the PhysTEC award precipitate long-term support for physics teacher education at the legacy sites?
• What features should be prioritized for building sustainable physics teacher education programs?
2015 Comprehensive Sites

- University of Northern Colorado
- Colorado School of Mines
- Texas State University
- West Virginia University
New Recruiting Grants Program

- Boise State University
- Bowdoin College
- East Tennessee State University
- Indiana University South Bend
- Northwestern Oklahoma State University consortium
- Salisbury State University
- Sonoma State University
- University of Massachusetts Dartmouth
- University of Wyoming
Online Course

• Partnership with AMTA
• Fall 2014 semester course
• Synchronous format, labs off line
• 60% completed course, several for credit
• Overall positive response, some technical challenges

American Modeling Teachers Association
Teaching Physics Modules

• Developed by Eugenia Etkina
• Curriculum materials for teaching future teachers
• Themes
  • Multiple Representations
  • Planning Instructional Elements
  • Experiments in Physics Instruction
• Freely available at www.phystec.org
• Workshop on Friday at 9:30 a.m.

Eugenia Etkina, Rutgers University
• “Recruiting and Educating Future Physics Teachers: Case Studies and Effective Practices”
• Eric Brewe, Cody Sandifer, eds.
• 5 invited, 16 contributed manuscripts, peer reviewed
• July 2015 anticipated publication
• Session at Summer AAPT Meeting
APS POPA Study

• Led by Michael Marder
• “Attracting Greater Numbers of the Hardest to Recruit Teachers”
• Physics, chemistry, CS, math?, geoscience?
• Survey to explore issues of salary, financial support, department climate, prestige, certification pathways
• Early 2016 anticipated publication
Looking Ahead: New initiatives for PhysTEC members

- Capacity building grants and site visit program
- Awards/recognition
  - “The 5+ Club”
- Reports
  - “National Report Card on Physics Teacher Education”
- Network of colloquium speakers

The 5+ Club
Looking ahead: Resources for effective practices

- Recruiting kit
- Content knowledge for teaching
  - Curriculum materials
  - Online courses
- Other resource guides
- Conferences, workshops
- Webinars, website

5 Reasons to Consider Teaching High School Physics

1. **High Demand**
   Physics is consistently ranked as the academic area with the greatest shortage of teachers.\(^{(1)}\) All of our graduates have jobs teaching physics.

2. **Job Satisfaction**
   Five out of six high school physics teachers would choose the same career path—a high level of satisfaction.\(^{(2)}\)

3. **Pay**
   Teacher pay is highly variable. In the right district, the earning potential is high.

4. **Financial Support for Graduate School**
   For students with a major or minor in physics who are pursuing a Masters of Arts in Education, Virginia Tech has graduate assistantships available. You work, we pay.

5. **It’s Fun!**
   - You get to work with amazing students.
   - No cubicles. Every day is an adventure.
   - You are in charge of all the physics toys.

For more info, contact Mary Norris, Teacher in Residence (mnorris@vt.edu).

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\(^{(1)}\) American Association for Employment in Education, Inc., 2010 Executive Summary: Educator Supply and Demand in the United States (AAEE, Columbus, OH, 2010).

Looking ahead: Development of Assessment Tools

• Goals
  • Help programs evolve more rapidly
  • Enable benchmarking, facilitate learning as a network of institutions

• Possible assessments
  • Survey of student interest in teaching
  • Survey of department climate for teaching
  • Rubric to evaluate quality of pathways to degree plus certification