PhysPort Implementation Guide: Physics Teacher Education Program Analysis Rubric (PTEPA Rubric)

Version 2.0

PhysPort
Supporting physics teaching with research-based resources

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Implementation

Purpose of the PTEPA Rubric

To characterize physics teacher education programs in order to provide guidance for self-improvement and enable comparisons among programs.

Course Level: What kinds of courses is it appropriate for?

Upper-level, Intermediate, and Intro college

Content: What does it assess?

Teaching (Institutional commitment, leadership and collaboration, recruitment, knowledge and skills for teaching physics, mentoring community and professional support, program assessment)

Timing: How long should I give students to take it?

60-120 minutes

Example Questions

Example of PTEPA Rubric items and levels for Component 3C: Early Teaching Experiences for Recruiting Teacher Candidates (within Standard 3: Recruitment).

NP	Possible attributes at Developing Level	Possible attributes at Benchmark Level	Possible attributes at Exemplary Level
3C: Early Teaching Experiences for Recruiting Teacher Candidates *Early teaching experiences[6] give first- or second-year students a taste of the rewards and challenges of teaching.*			
3C-1 **Attractiveness of early teaching experiences** PREVALENT	☐ ☐ Early teaching experiences are *somewhat* attractive to physics students (e.g., low physics content, time-intensive).	☐ Early teaching experiences are attractive to physics students (e.g., high physics content, time-efficient, free, or course credit).	☐ Early teaching experiences are *very* attractive to physics students (e.g., high physics content, paid, or other incentives to participate).
3C-2 **Exposure to intellectual challenge of teaching** PREVALENT	☐ ☐ Students participating in early teaching experiences receive informal mentorship in teaching.	☐ Students participating in early teaching experiences learn about teaching as a rigorous intellectual endeavor.	☐ Students participating in early teaching experiences are exposed to physics education research and/or the scholarship of teaching.
3C-3 **Availability of early teaching experiences**	☐ ☐ Early teaching experiences accommodate the number of physics students who typically enter the certification program.	☐ Early teaching experiences accommodate at least twice the number of physics students who enter the certification program.	☐ Early teaching experiences can accommodate several times the number of physics students who enter the certification program.
3C-4 **Recruitment within early teaching experiences**	☐ ☐ Students participating in early teaching experiences are informed at least once about teaching careers and/or the PTE program.	☐ Students participating in early teaching experiences are regularly informed about the PTE program and encouraged (as a group) to consider teaching as a career.	☐ Students participating in early teaching experiences are individually encouraged to consider teaching as a career and assisted in taking the next steps towards certification.
3C-5 **Exposure to K–12 teaching environments**	☐ ☐ Early teaching experiences include *some* exposure to 4th–12th grade environments or students, with a physics or physical science focus.	☐ Early teaching experiences include *substantial* exposure to 4th–12th grade environments or students, with a physics or physical science focus.	☐ Early teaching experiences occur *primarily* in 4th–12th grade environments, with a physics or physical science focus.

Example of PTEPA Rubric items and levels for Component 4B: Pedagogy Courses and Curriculum (within Standard 4: Knowledge and Skills for Teaching Physics).

4B: Pedagogy Courses and Curriculum[4] *The program ensures that physics teacher candidates have strong knowledge of physics pedagogy.*			
4B-1 **Physics pedagogy credits[5]**	☐ ☐ At least half of physics teacher candidates take 1–3 credits of physics pedagogy.	☐ Almost all physics teacher candidates take 1–3 credits of physics pedagogy.	☐ Almost all physics teacher candidates take four or more credits of physics pedagogy.
4B-2 **Scientific practices credits[6]**	☐ ☐ Scientific practices account for 1–2 credits within the curriculum.	☐ Scientific practices account for 3–5 credits within the curriculum.	☐ Scientific practices account for six or more credits within the curriculum.
4B-3 **Disciplinary context of certification coursework**	☐ ☐ Some of the required certification coursework is taught in the context of teaching science and/or physics.	☐ Most of the required certification coursework is taught in the context of teaching science and/or physics.	☐ Essentially all of the required certification coursework is taught in the context of teaching science and/or physics.
4B-4 **Physics microteaching experiences[7]**	☐ ☐ At least half the physics teacher candidates participate in physics microteaching with peers.	☐ Essentially all physics teacher candidates participate in physics microteaching with peers.	☐ Essentially all physics teacher candidates deliver physics microteaching lessons to peers at least twice.
4B-5 **Teaching/Learning Assistant (TA/LA) participation[8]**	☐ ☐ There are physics TA/LA opportunities, and some physics teacher candidates participate.	☐ At least half of the physics teacher candidates are physics TAs/LAs at some point.	☐ Essentially all physics teacher candidates are physics TAs/LAs at some point.

Access: Where do I get the assessment?

Downloadable PDF and interactive Excel versions of the PTEPA Rubric are available at: https://www.phystec.org/thriving/.

Versions and Variations: Which version of the assessment should I use?

The most recent version of the PTEPA Rubric, released in 2018, is version 2.0.

Administering: How do I give the assessment?

The PTEPA Rubric is intended to be used primarily as a self-study instrument of physics teacher education programs. It is best completed by a program team, in consultation with key stakeholders, to get the most accurate program ratings and best interpretation of results.

Scoring: How do I calculate my students' scores?

To visualize your PTEPA Rubric results, use the Interactive (Excel) version of the PTEPA Rubric, available at http://phystec.org/thriving.

Clusters: Does this assessment include clusters of questions by topic?

There are 6 standards on the PTEPA Rubric, used to look at 6 different aspects of your teacher education program. These standards are: 1) institutional support, 2) leadership and collaboration, 3) recruitment, 4) knowledge and skills for teaching physics, 5) mentoring, community and professional support, 6) program assessment.

Typical Results: What scores are usually achieved?

There are no typical scores on the PTEPA, as it is meant to be used for self-study to show you the strengths and weaknesses of your program. To see typical results for high-producing physics teacher education programs, see the full report, A Study of Thriving Physics Teacher Education Programs.

Interpretation: How do I interpret my students' scores in light of typical results?

Use the PTEPA Rubric results to support continuous improvement by communicating results to stakeholders and using them to drive a program action plan.

Resources

Where can I learn more about this assessment?

R. Scherr and S. Chasteen, Initial findings of the Physics Teacher Education Program Analysis rubric: What do thriving programs do?, Phys. Rev. Phys. Educ. Res. **16** (1), 010116 (2020).

The developer's website contains much more information about the Thriving Programs Study and the Physics Teacher Education Program Analysis Rubric.

The PTEPA Rubric Developer's Website includes:

- User's Guide
- PDF and Excel versions of the PTEPA Rubric
- Full Report: *A Study of Thriving Physics Teacher Education Programs*

Translations: Where can I find translations of this assessment in other languages?

Background

Similar Assessments

There are no rubrics similar to the PTEPA Rubric.

Research: What research has been done to create and validate the assessment?

Research Validation: Gold Star ★

This is the highest level of research validation, corresponding to all seven of the validation categories below.

- Based on research into **relevant theory and/or data**
- Studied using **iterative use of rubric**
- Studied using **inter-rater reliability**
- Studied using **expert review**
- Research conducted **at multiple institutions**
- Research conducted **by multiple research groups**
- **Peer-reviewed publication**

Research Overview

Through extensive engagement with theory, analysis of existing instruments, review of relevant studies, and direct observations of thriving programs, independent researchers and PhysTEC staff collaborated on the development of the PTEPA Rubric. The researchers conducted in-depth visits to eight thriving physics teacher education programs. Program visits were conducted either in-person or virtually, and each visit involved interviews with a wide variety of stakeholders, including program leaders, administrators, teachers, staff, and students. Analysis of the data from thriving programs contributed strongly to the development of the rubric, provided initial validation, and supported research findings. Review by nationally recognized experts in physics teacher education as well as extensive alignment with literature and accreditation processes established substantive validity, content validity, and face validity. During the development and validation process, the PTEPA Rubric was iteratively improved through over 20 versions to better reflect the practices and structures of diverse thriving physics teacher education programs.

Developer: Who developed this assessment?

Stephanie V. Chasteen, Rachel E. Scherr, Monica Plisch, and the PhysTEC Project

References

- S. Chasteen and R. Scherr, Developing the Physics Teacher Education Program Analysis rubric: Measuring features of thriving programs, Phys. Rev. Phys. Educ. Res. **16** (1), 010115 (2020).
- R. Scherr and S. Chasteen, Development and validation of the Physics Teacher Education Program Analysis (PTEPA) Rubric, presented at the Physics Education Research Conference 2018, Washington, DC, 2018.
- R. Scherr and S. Chasteen, Initial findings of the Physics Teacher Education Program Analysis rubric: What do thriving programs do?, Phys. Rev. Phys. Educ. Res. **16** (1), 010116 (2020).