



Appendix C: Evaluating Leadership Models

Although the PMTL task force created both a framework for physics teacher leadership and set strategic priorities, it did not propose any particular rubric for evaluating programs. However, the group did consider both “Qualifiers for good PD&L” as well as “Characteristics for Consideration of New PD&L Models” as set forth by a report developed by the PMTL Leadership Advisory Group (Microchip, 2016). Therefore, as programs are developed based on the fundamental principle and the priorities, these criteria should be addressed, to provide a framework for assessing PD&L programs.

Attributes of Good PD&L

Prior to the formation of the PMTL task force, the PMTL Leadership Advisors representing PTRA, AMTA, and PhysTEC came together and identified three primary attributes that must be present in any future AAPT PD&L program. These programs must include the following:

- **Improvement of Practice:** Physics teaching (taken broadly) must be improved by the proposed programs. Success in this area would look like:
 - Greater teacher confidence in their ability to teach their subject area.
 - Strong teacher identity as an educator of physics.
 - Teachers sharing effective pedagogy.
 - Increased subject matter expertise, including disciplinary core ideas, crosscutting concepts, and science and engineering practices as defined by the *Framework for K-12 Science Education*.
 - Improved student access and outcomes for all learners.
 - Recognition for the efforts of teachers.
- **Community Membership and Building:** Programs should not be created in isolation. PD&L programs should prepare teachers to be a part of an ongoing professional learning network. This could be accomplished by:
 - Membership and engagement in existing organizations (AMTA/AAPT).
 - Online communities (listservs, social media, websites, distance learning resources).
 - Membership and engagement in local AAPT sections and alliances (STEM Teachers XYZ, physics alliances).
 - Cohort models.
 - Mentoring models.
- **Advocacy for Administrative Support:** Regardless of excellence in PD&L programs, teachers need the respect and authority both to engage in professional development and leadership and to teach students using research-based practices. More broadly, administrators need to value physics education and the PD&L programs needed to enhance physics education. Garnering administrative support for PD&L programs and involvement by teachers might entail:
 - Campaigning for the value of physics in K-12 education.
 - Educating administrators about the importance of PD&L to teacher improvement and retention.
 - Helping administrators appreciate physics and their physics teachers.

PD&L Program Evaluation Rubric

<i>Dimension</i>	<i>Details</i>
Addresses a physics teacher need	<ul style="list-style-type: none"> • Physics knowledge • Physics pedagogical content knowledge • Community • Resources • Leadership • Mentoring
Employs research-based practices for PD	<ul style="list-style-type: none"> • Discipline-specific • Focuses on implementation (not just learning) • Over time and ongoing • Coaching and mentoring • 80-120 hours to effect significant changes
Employs research-based practices for physics ed.	<ul style="list-style-type: none"> • See PhysPort.org for a listing of research-based teaching methods.
Cohesive	<ul style="list-style-type: none"> • Relies upon a set of AAPT principles or guidelines • Branded as an AAPT national program
Builds teacher leadership	<ul style="list-style-type: none"> • Empowers teachers to be agents of change. • See www.teacherleaderstandards.org
Flexible and broad	<ul style="list-style-type: none"> • Can engage multiple teachers at many levels (local, section, national) and through multiple media (in-person, online, in print, etc.) • Serves the broader physics education community (members + non members)
Retains participants year-to-year	<ul style="list-style-type: none"> • Retains participants year-to-year
Engages new participants each year	<ul style="list-style-type: none"> • Room for growth in participation.
Actively welcomes teachers of diverse backgrounds	<ul style="list-style-type: none"> • Selection process encourages participation of teachers from under-represented groups
Cost	<ul style="list-style-type: none"> • Grant-funded (NSF, Corporate, Private, etc.) • National, state, local • District • Teacher
Return on investment	<ul style="list-style-type: none"> • Sustainable • Development of “products” or “resources” • Member benefit
Multiple learning pathways	<ul style="list-style-type: none"> • In-person • Online • Blended
Teacher incentive for engagement	<ul style="list-style-type: none"> • Graduate credits • CEU's • Money • Recognition • Free membership or perks • Physics Master Teacher Leader certification
K-12 spectrum	<ul style="list-style-type: none"> • Incorporate teachers across the K-12 spectrum