

## Introduction

As part of continued efforts to improve its journals, the American Physical Society (APS) Committee on Scientific Publications (CSP) produces evaluations of its publications. For the Physical Review Physics Education Research (PRPER) journal, the last review was conducted in 2005. In June 2023, CSP commissioned a review of PRPER, appointing the following members for the committee: Edmund Bertschinger (MIT, USA), Eugenia Etkina (Rutgers University, USA), Katemari Rosa (Federal University of Bahia, Brazil), and Stamatis Vokos (Cal Poly San Luis Obispo, USA). The charge of the committee was to produce an evaluation report with recommendations on possible ways to improve the journal. The full report was submitted to the CSP. In this brief summary we share the methods used for evaluation, the conclusions, and the recommendations that were part of the full report submitted to the CSP.

If you have any questions, please contact Eugenia Etkina at [eugenia.etkina@gse.rutgers.edu](mailto:eugenia.etkina@gse.rutgers.edu).

## Overview of the journal

**Brief history** PRPER came into existence in 2004 through the advocacy of Robert J. Beichner and the strong support of then NSF-rotator Ted Hodapp. The emergence of the journal filled a major need of the Physics Education Research (PER) community, namely creating a first-class publication venue dedicated exclusively to research on the learning and teaching of physics. Even though several seminal PER papers had already been published in *The Physics Teacher* and the *American Journal of Physics* (even before the establishment of a special part of *AJP* as a PER supplement), the mission of neither journal was to publish PER results, especially those that were not directly tied to instructional materials. Several members of the PER community, as well as APS and AAPT leadership, aided the fledgling journal (initially called *Physical Review Special Topics -- Physics Education Research*). (For an account of the early history of the journal, see Robert Beichner's editorial DOI: [10.1103/PhysRevSTPER.11.020001](https://doi.org/10.1103/PhysRevSTPER.11.020001)). Beichner served as the journal's founding editor. Charles Henderson became editor in 2012. The addition of highly capable associate editors and the work of strong editorial boards have brought the journal to its position today.

Currently, Charles Henderson (Western Michigan University) is the Chief Editor. The journal has three associate editors: Eric Brewster (Drexel University), Paula Heron

(University of Washington, Seattle), and Saalih Allie (University of Cape Town), and a journal manager (Debbie Brodbar).

## Methods

In order to gather data for the evaluation, the committee developed a survey and an interview protocol with questions that could elucidate and provide texture to issues raised by the survey respondents, helping the committee to better understand the current status of PRPER. Online semi-structured interviews of approximately ten experienced authors, reviewers, and editors of PRPER were conducted by the committee members. Interview notes and recordings were analyzed. The data set collected by the committee was transformed into themes, which were used to organize the findings and recommendations of the report.

The committee created a survey to capture the opinions of readers, authors, and reviewers of papers in the journal. Special attention was paid to elicit responses to questions in which the editorial team were interested, as well as questions that the APS Editor in Chief, Dr. Randall Kamien, communicated to the committee. Emails encouraging participation in the survey were sent to about 4000 people. Specifically, a solicitation was sent to the members of the AAPT Physics Education Research Topical Group, the APS Group on Physics Education Research, the Brazilian Physical Society Physics Education Group, and the Groupe International de Recherche sur l'Enseignement de la Physique (GIREP). The survey was administered by APS, went live on August 23, was available for 6 weeks, and the survey results were shared with all the members of the committee. The survey received 351 partial or complete responses.

## Conclusions

Based on data about the journal such as citation statistics, the survey data and its analysis, and the interview data we conclude that the journal is vital for the health and prosperity of physics education research as a field of study in physics. The journal enjoys the support of its readers. It provides an important platform for publishing PER findings and crucially supports the professional advancement of young researchers in PER. The journal also serves as a repository of findings for the users of PER. Finally, it helps to improve the teaching of physics by regular faculty. While the data shows that there are areas for improvement that we identify in the recommendations below, overall our review of the current state of the journal is

highly positive. We encourage the APS to continue its strong support. We feel that the success of the journal is vital to the success of the profession.

## Recommendations

In this section we provide the recommendations of the committee. These are based on the analysis of the data in the survey and interviews, as well as the review committee members' personal experience and professional knowledge.

The recommendations are presented as a list grouped by major themes in which the order does not reflect the order of importance of individual recommendations.

### Building the prestige of the journal

- All members of the PRPER community (APS, editors, editorial board, authors, reviewers, and readers of the journal) should take every opportunity afforded them to express to their far-reaching spheres of influence the prestige that the journal enjoys within the PER community. A significant disparity exists in recognition of the unique role that PRPER plays in the professional life of its authors among insiders vs outsiders (PER investigators vs non-PER faculty in physics departments; PER investigators in physics departments vs PER investigators in education departments).
- More physics education research results should be featured in APS publications that reach large numbers of APS members, such as APS News, Physics, or Physical Review Letters.
- The editors should devise and implement efforts to incentivize PER investigators who publish in other journals to publish in PRPER (e.g., by inviting them to serve as guest editors of a focused collection).

### Deepening the role of the journal in the profession

- The journal should proactively define the scope of and standards for physics education research by providing more explicit guidelines to authors. These detailed guidelines should be developed in consultation with the community and the editorial board. The expectations of the journal set the expectations for the field.
- The journal should solicit one or more Focused Collections as primers to methodology in PER. These papers should be pedagogical in nature rather

than applications.

## Keeping the disciplinary focus

- The journal should stay true to physics. We recognize the tension between two competing parts of PRPER’s mission as understood by our survey respondents and our interviewees. The community of PER investigators wants, in part, PRPER to be a vehicle for communicating high-quality research to experts. On the other hand, the community of non-PER faculty who read the journal or who use publications in the journal for evaluating promotion, retention, and tenure purposes, or for evaluating the field as a whole, wants the research results in PRPER to fit their own expectations of what physics education should be. This requires a delicate balance. By “stay true to physics,” we mean that PRPER should continue to publish studies that are based on high quality physics content and research approaches recognizable as such by physicists outside of the field of PER. By this we also mean that any high-quality research publication (experimental, theoretical, computational, methodological, quantitative, qualitative, etc.), which targets the aspect(s) of education for which physics is the main focus of learning and participating, is appropriate. It is expected that some publications will employ research methodologies that are unfamiliar to non-PER physicists (and even to some physics education researchers). In these cases the methodologies need to be explained clearly and be justified. Although it is not the responsibility of the authors to educate every member of the physics community on the details of the research paradigm employed in the research investigation, efforts undertaken by the authors to bridge the knowledge gap are very helpful for building the community both internally and externally.

## Improving the editorial process

- The editors, who otherwise enjoy great respect within the PER community, should improve the review process by
  - Providing clear directions on the journal website to both authors and reviewers on how to write and review qualitative and quantitative papers, similar to the APA [Journal Article Reporting Standards](#).
  - Offering workshops for authors and reviewers, and by providing professional rewards or recognitions (however modest) for participation in the review process.

- Specifying in guidance to authors what elements should be present in qualitative and quantitative research articles.
- Offering guidance and training to new reviewers similarly to the [Peer Review Training Workshop](#) offered by the American Astronomical Society at its annual meetings.
- De-prioritizing graduate students as reviewers
- Better aligning self-reported reviewers' expertise with papers assigned for review
- Being more decisive in resolving disputes between authors and referees at an earlier state of review rather than expecting authors and reviewers to reach agreement without mediation
- Working in concert with the Physics Education Research Topical Group of AAPT and the Group on Physics Education Research of APS to educate later-career reviewers about their crucial role in shaping the research agenda of the community and to build up all reviewers' knowledge and skills in providing high-quality, actionale, bias-free reviews
- Consider asking the SMRC or some other advisory body to advise the editors on issues of the appropriateness of methodology used in publications, whether to encourage articles testing reproducibility of results, on whether to make data and/or codes available as supplemental materials, etc.

## Clarifying journal scope and content

- Given the pivotal role that PRPER plays in shaping and being shaped by the PER community, the journal should develop new or strengthen existing mechanisms through which new methodologies have the chance of being debated within the community. This is especially important for more recent (and less familiar) methodologies around investigating physics identity and underrepresentation in physics. The physics enterprise, like the practices of any community, has defining approaches, values, and habits of mind that should be expected of new members. It also has history and features that we aspire to change, to improve, even to dismantle, through the agency of new, diverse voices, which historically have been excluded from the conversation of who counts in and what counts as physics.
- More (not less) research attention needs to be paid to issues of underrepresentation in physics. Casting the cold light of scholarship on this currently hot-button issue—analyzed in physics contexts—is the only way for

the physics community to first understand and then act upon evidence-based recommendations that are borne out of the research.

- Consider soliciting Focused Collections based on suggestions from the survey. The most frequently suggested topics were: AI/LLMs, Informal physics education, Connections between PER and other DBER, DEI (including accessibility, disabilities, intersectionality, ESL), Assessment/Grading, Teacher preparation, Graduate education, Quantum physics, Translating research into practice, K-12 physics education