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Introduction: 20 Years of ISEE

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History

Origins and evolution of the ISEE PDP

In 2000, the graduate students of the Center for Adaptive Optics (CfAO) met with its new education director, Lisa Hunter, to brainstorm ideas for programming. The CfAO had just undergone a review, and faced a report that made it clear that the Center was not doing enough for its graduate students. With the substantial resources of a National Science Foundation (NSF) Science and Technology Center, a long-term investment in innovative program development was expected. These graduate students pointed out that none of their doctoral programs in astrophysics, engineering/instrumentation, or human vision included training in how to teach.

Among experts in education, a broad consensus had emerged on the big ideas of effective teaching and learning, presented in accessible forms such as *How People Learn* (National Research Council, 2000). The connections between the quality of pedagogy and its particular benefits for marginalized students were being explored (e.g., Ladson-Billings, 1995). All of this knowledge was “out there,” but graduate students in science and engineering — many of whom aspired to be higher education faculty — were not conversant with it, nor did they know if their programs valued it. Why train so carefully in science/engineering only to “wing it” in the adjacent field of *teaching* science/engineering? (This is a sentiment that would soon be expressed well in Handelsman et al., 2004.)

These were the seeds that grew into the CfAO’s Professional Development Program (PDP). The first workshop on pedagogy for CfAO graduate students was held in 2001 in Kona, Hawai‘i. Over time, a single workshop would become an annual cycle of workshops, comprising a ~90-hour experience for early-career scientists and engineers. Each participant worked on a team to collaboratively design an activity, and then put their new teaching skills into practice in affiliated educational programs or courses, usually for undergraduates. Though always focused on teaching and learning, the PDP continually grew to support other professional skills, such as leadership, teamwork, and mentoring.

As the CfAO's NSF funding came to an end, the PDP became the cornerstone program of the Institute for Scientist & Engineer Educators (ISEE) at UC Santa Cruz (still under Lisa Hunter's leadership). Our colleague Barry Kluger-Bell, who was at the Exploratorium's Institute for Inquiry when we first began to work with him, had introduced us to the construction "scientist-educator." This is a scientist who is an educator, an educator who is a scientist, and an educator *of* scientists (the crucial work the hyphen does that a slash could not). Naming ISEE after scientist-educators and engineer-educators signaled that the disseminable product of our work is not curricular material, but people, with knowledge and skills as effective, inclusive educators.

In 2010, as the PDP hit its stride, the new ISEE hosted a 10th-year gathering of PDP alums. A snapshot of PDP work from that time was published as *Learning from Inquiry in Practice* (Hunter & Metevier, 2010). That volume has a detailed description of the PDP itself (Hunter et al., 2010a) along with some perspectives and considerations from its developers (Seagroves et al., 2010). It also has a description of our early work on explicitly incorporating diversity, equity, and inclusion into the program (Hunter et al., 2010b) and early evidence for success in that work (Metevier et al., 2010). Another article describes our initial work with science and engineering practices (which we called "process skills" then; Quan et al., 2010). These became a key element of our "inquiry theme" and our current thinking on authentic, inclusive learning experiences in science or engineering.

In the decade since that set of publications, we organized the PDP around three theme readings given to participants. These readings are now shared on ISEE's eScholarship site (but outside of this collection): One on inquiry¹ (Metevier et al., 2022a), one on equity and inclusion (Seagroves et al., 2022), and one on assessment-driven design (Hunter et al., 2022a). We strengthened our work on intentional facilitation of learning experiences (e.g., Ball et al., 2022) and added significant leadership training (e.g., ISEE 2022a, 2022b, 2022c). Along with those original works, PDP participants continued to engage with other pedagogical resources such as *How Learning Works* (Ambrose et al., 2010) and backward design (Wiggins & McTighe, 2005).

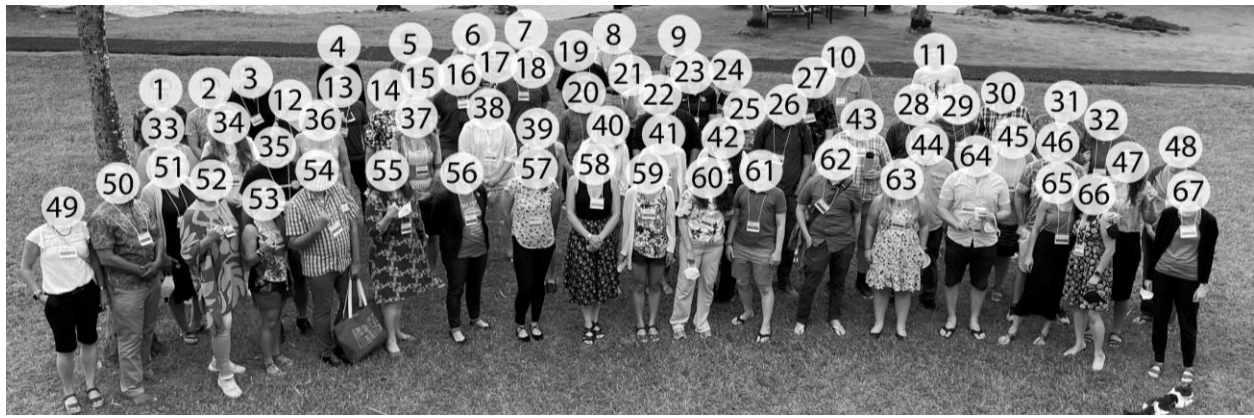
The PDP ran for 20 years (2001–2020) until it was stopped prematurely by the coronavirus pandemic. During that time it expanded from a single workshop in Hawai'i to multiple institutes across the USA and Canada. The initial focus on astronomy, engineering, and human vision (from the CfAO) expanded to cover nearly every discipline of STEM (science, technology, engineering, and mathematics). More than 600 scientists and engineers participated; they now impact thousands of students and professionals across institutions and disciplines with their teaching.

Advancing Inclusive Leaders in STEM: 20 Years of the PDP

After the 20th PDP was shut down, we gathered alums to take stock of the work we have done, how it influences the work we do now, and how that work might go forward in the future. This gathering, "Advancing Inclusive Leaders in STEM: 20 Years of the PDP," was finally held in Hilo, Hawai'i in May 2022. Because of the pandemic, some authors were unable to travel to Hilo, and some traveled to Hilo but spent their time isolating after exposure to the virus. Participants are pictured and listed next.

¹ Our thinking has continued to evolve; for example, we no longer use the term "inquiry" and have updated those ideas in this collection (Metevier et al., 2022b).





Pictured:

1. Samuel Grunblatt, American Museum of Natural History
2. Austin Barnes, Scripps Inst. of Oceanography
3. Gabriel Roybal-Jungemann, Komodo Health
4. Kimberley Mayfield, Lawrence Livermore National Laboratory
5. Stephen Martin, Included Health
6. Kathy Cooksey (& Astrid), U. of Hawai'i at Hilo
7. Patrik Jonsson, SpaceX
8. Sebastiano Cantalupo, U. of Milano-Bicocca
9. Colin West, U. of Colorado Boulder
10. Saul Beceiro Novo, Michigan State U.
11. Firas Khatib, U. of Massachusetts Dartmouth
12. Candice Brown Pacheco, Candice Brown Pacheco Consulting
13. Philip Choi, Pomona Coll.
14. Seth Hornstein, U. of Colorado Boulder
15. Heather Kaluna, U. of Hawai'i at Hilo
16. Scott Seagroves, The Coll. of St. Scholastica
17. Raquel Martinez, U. of California, Irvine
18. Devin Silvia, Michigan State U.
19. Michael Jacox, NOAA Southwest Fisheries Science Center
20. Matthew Glasenapp, U. of California, Santa Cruz
21. Cynthia Nelly Carrión, ISEE, U. of California, Santa Cruz
22. Nicholas Santiago, U. of California, Santa Cruz
23. Jason Porter, U. of Houston
24. Tiffani Quan, U. of California, San Francisco
25. Devin Chu, U. of California, Los Angeles
26. Samuel Van Kooten, Southwest Research Inst.
27. Ryan Dungee, Inst. for Astronomy, U. of Hawai'i
28. Michael Nassir, U. of Hawai'i at Mānoa
29. Kristel Dorigi, Genentech
30. Ryan Montgomery, Lawrence Hall of Science, U. of California, Berkeley
31. Scott Severson, Sonoma State U.
32. Anne Metevier, Sonoma State U., Santa Rosa Jr. Coll.
33. Jocelyn Macho, J. Craig Venter Inst.
34. Mercedes Pozo Buil, U. of California, Santa Cruz / NOAA Southwest Fisheries Science Center
35. Oscar Azucena, Google
36. Linda Strubbe, Strubbe Educational Consulting
37. Lisa Hunter, ISEE, U. of California, Santa Cruz
38. Lynne Raschke, The Coll. of St. Scholastica
39. Heidi Anne White, Dunlap Inst., U. of Toronto
40. Keely Finkelstein, U. of Texas at Austin
41. Monika Egerer, Technical U. of Munich
42. Elissa Olimpi, Virginia Tech
43. Chris Gilly, Laboratory for Atmospheric and Space Physics, U. of Colorado Boulder
44. Barry Kluger-Bell, inquiry science educator
45. Heidi Stauffer, Lydian Academy
46. Nicholas McConnell, U. of the Pacific
47. Carley Corrado, Enliven Leadership
48. Tuan Do, U. of California, Los Angeles
49. Nicole Mattacola, U. of California, Santa Cruz
50. Jerome Shaw, U. of California, Santa Cruz
51. Jessica Lu, U. of California, Berkeley
52. Kauahi Perez, U. of Hawai'i at Mānoa
53. Stacey Sueoka, National Solar Observatory / Association of Universities for Research in Astronomy
54. Joshua Lelemia Irvine, U. of Hawai'i – West O'ahu
55. Catherine Ishida, U. of Hawai'i at Hilo
56. Alicia Lanz, Carnegie Observatories
57. Mia Bosinger, Worcester Polytechnic Inst.
58. Shanna Howard, U. of California, Santa Cruz
59. Carolyn Gee, U. of California, Santa Cruz
60. Samantha Walker, U. of Colorado Boulder / National Inst. of Standards and Technology
61. Robin Lovell, Manhattan Coll.
62. Evan Anders, Northwestern U.
63. Christine O'Donnell, American Physical Society
64. Mark Richardson, McDonald Inst., Queen's U.
65. Danica Roth, Colorado School of Mines
66. Lauren Lui, Lawrence Berkeley National Laboratory
67. Alexandra Holloway, Jet Propulsion Laboratory, California Inst. of Technology

We don't know if the cat has a name.

Participants in Hilo, not pictured:

Nina Nowshiravani Arnberg, Menlo School
 Zoë Buck Bracey, BSCS Science Learning
 Jonathan Cornell, Weber State U.
 Caitlin Casey, U. of Texas at Austin
 Robin Dunkin, U. of California, Santa Cruz

Susy Honig, U. of California, Santa Cruz
 James Neff, National Science Foundation
 Rafael Palomino, Cepheid
 Max Tarjan, NatureServe

Authors in this collection who did not participate in Hilo:

Tamara Ball, U. of California, Santa Cruz
 Frank Black, Westminster Coll.
 Krys Blackwood, Jet Propulsion Laboratory
 Gemma Carroll, U. of California, Santa Cruz
 Barry Cense, U. of Western Australia
 Daniel Contreras, Harvey Mudd College
 Rachel Frisbie, Michigan State U.
 Forrest Glines, Michigan State U.
 Philipp Grete, Michigan State U.
 Michael Hammer, Steward Obs., U. of Arizona
 Hope Ianiri, U. of California, Santa Cruz
 Richard Kassab, U. of California, Santa Cruz

Quinn Konopacky, U. of California, San Diego
 Shaila Kotadia, Stanford U. School of Medicine
 LiSára, LDY Enterprises
 Ali Mousavi, U. of Hawai‘i at Mānoa
 Emily Rice, City U. of New York
 Vicente Robles, U. of California, Riverside
 Kate Rubin, San Diego State U.
 Ivy Summer, The Independent Consultant Inc.
 Amber Tateno-Bisel, U. of Hawai‘i at Mānoa
 Robin Trayler, U. of California, Merced
 Zachary Vanderbosch, California Inst. of Tech.

Overview of the contents of the collection

Because of repeated pandemic delays, we adapted away from the conventional model of a conference and conference proceedings. Some authors in this collection did significant writing before the meeting; some completed their planned writing at, or soon after, the meeting; some ideas for articles were spawned at the meeting itself. We present the resulting collection, *Leaders in Effective and Inclusive STEM: Twenty Years of the Institute for Scientist & Engineer Educators*, published on the University of California’s eScholarship platform. We have gathered articles into seven rough groupings to help guide the reader’s attention, but many articles touch on issues beyond their particular placement in the collection.

Articles on professional development

The first section of this collection features professional development both within the ISEE PDP and extending out from it to influence other settings.

The first article, led by Anne Metevier, presents ISEE’s vision of the sorts of learning experiences the PDP has always aspired to; this article updates our previous conception of “inquiry” to our new nomenclature of “authentic, inclusive STEM learning experiences.”

Metevier, A.J., Hunter, L., Seagroves, S., Kluger-Bell, B., Quan, T.K., Barnes, A., McConnell, N., & Palomino, R. (2022). ISEE’s framework of six elements to guide the design, teaching, and assessment of authentic and inclusive STEM learning experiences.
<https://escholarship.org/uc/item/9cx4k9jb>

The next article, led by Barry Kluger-Bell, describes the in-the-moment facilitation of learning in such experiences, and our professional development work to grow participants’ facilitation skills.

Kluger-Bell, B., Barnes, A., Seagroves, S., Ball, T., Metevier, A.J., McConnell, N., Palomino, R., & Hunter, L. (2022). Facilitating learning in the Professional Development Program.
<https://escholarship.org/uc/item/46p8j3t6>

The work led by Max Tarjan adapted leadership professional development from ISEE’s PDP to non-academic workplace settings.

In a bridge between this section on professional development and the next section on diversity, equity, and inclusion (DEI), the piece led by Carley Corrado describes a model of organizational DEI work and its connections to experiences in the ISEE PDP.

Articles on diversity, equity, and inclusion

In the ISEE PDP, social justice for groups that are marginalized in STEM was first addressed in the “diversity and equity” strand; later we renamed that part of our work the “equity and inclusion” theme. This section features two articles on these issues, following the previous article on DEI professional development, and leading into the first article of the next section on inclusion in internships.

Christine O’Donnell’s contribution compares the equity and inclusion focus areas from ISEE’s PDP with the well-known culturally responsive and culturally relevant frameworks from the K–12 context.

An article led by Nicholas Santiago details how a suite of science workshops for college transfer students was designed with a focus on promoting the learners’ science identities, in an effort to support students who may have backgrounds that are underrepresented in STEM fields.

Articles on internships

One of ISEE’s other major programs is the Akamai Internship, which helps build Hawai‘i’s scientific and technical workforce (Barnes et al., 2018; Metevier et al., 2015). Because of the close interplay between the PDP and Akamai, ISEE and its participants have worked a great deal on the design of internship programs and internship projects. This section features three articles relating to internships.

Flowing from the previous section on issues of diversity, equity, and inclusion, the first article led by Jerome Shaw discusses intentional strategies in the Akamai Internship for building a sense of inclusion and community among the interns and program staff.

The entry led by Alexandra Holloway describes the design of internships at the Jet Propulsion Laboratory as analogous to the design of “PDP-style” active learning experiences.

Tarjan, L.M., Raschke, L., & Hunter, L. (2022). Transforming an academic into a leader: Providing a framework and behaviors for leading teams in the workplace. <https://escholarship.org/uc/item/9dq6b611>

Corrado, C., LiSára, Pacheco, C., Summer, I., & Kotadia, S. (2022). Applying The Transformation Tri-fecta model to an organizational diversity, equity, and inclusion assessment. <https://escholarship.org/uc/item/7p80r3cp>

O’Donnell, C. (2022). Culturally relevant and responsive education: A re-examination of the ISEE Equity & Inclusion Theme. <https://escholarship.org/uc/item/3rg256z3>

Santiago, N.A., Gee, C., Howard, S.L., Macho, J.M., & Pozo Buil, M. (2022). Utilizing equitable and inclusive design principles to promote STEM identity of community college transfer students. <https://escholarship.org/uc/item/2kz8h9s7>

Shaw, J., Barnes, A., Hunter, L., & Sueoka, S. (2022). Strategies for building an inclusive community within a STEM internship program. <https://escholarship.org/uc/item/4p12g5nm>

Holloway, A. & Blackwood, K. (2022). Backward-designing the perfect user experience internships for Deep Space Network operations. <https://escholarship.org/uc/item/85d9b142>

The second article led by Jerome Shaw presents frameworks that support interns' deeper understandings of their own projects, and how these frameworks interact with PDP activities the interns experience.

Shaw, J., Barnes, A., & Hunter, L. (2022). Inquiries and frameworks: Synergistic support for STEM student interns.

<https://escholarship.org/uc/item/4p12g5nm>

Articles with international perspectives

Two members of the ISEE PDP community provide an international perspective on STEM and education in this section.

In his contribution, Sebastiano Cantalupo describes graduate-level astrophysics courses with an emphasis on scientific practices that he designed and taught at universities in Switzerland and Italy; he compares the emphasis on practice to classical approaches to teaching and learning.

Cantalupo, S. (2022). Rediscovering practice and inquiry in academic education: experiences in a European university environment.

<https://escholarship.org/uc/item/32p685gq>

The next essay from Barry Cense discusses his experiences using inquiry teaching and learning techniques in different cultural contexts.

Cense, B. (2022). Aspects of inquiry applied in Japan and Australia.

<https://escholarship.org/uc/item/4xc0m7tx>

Articles on assessment

Participants in the ISEE PDP used an assessment-driven backward design process, and many participants have continued to use and expand on these assessment ideas. This section has two articles that describe assessment-related work after PDP participation.

In his article, Michael Hammer describes developing homework problems influenced by the PDP's frameworks.

Hammer, M. (2022). Developing inquiry-based homework assignments with Astrobites.

<https://escholarship.org/uc/item/0dh7k64h>

The article led by Kathy Cooksey explains using quizzes before and after a backward-designed unit, and using these data for long-term evaluation of one's teaching.

Cooksey, K.L. & Jonsson, P. (2022). Using pre-/post-quizzes intentionally in curriculum development and evaluation.

<https://escholarship.org/uc/item/6fz0181f>

Articles describing activity designs

Every PDP participant worked on a team to design some sort of STEM learning experience. Many articles in Hunter & Metevier (2010) describe activity designs from the first decade of PDP participants; this section features more activity design descriptions from the PDP community.

The article led by Daniel Contreras, a collaborator of PDP alum Philip Choi, discusses how PDP-influenced lab modules were adapted into self-guided physics labs for students to do on their own, remotely, during the pandemic.

Contreras, D., Robles, V., & Choi, P.I. (2022). Self-guided inquiry modules for the remote teaching of undergraduate physics labs.

<https://escholarship.org/uc/item/1808f7rw>

The entry led by Keely Finkelstein describes an activity on young stars-in-formation; this activity was designed and re-designed through the PDP for an undergraduate course in astronomy research methods and included a focus on the scientific practice of explanation.

A second article led by Kathy Cooksey details a “starter” activity on galaxy classification that has been used to pique learners’ interest in galaxies in a variety of settings, from K–3 classrooms to undergraduate laboratories to outreach activities for all ages.

The piece led by Rachel Frisbie discusses an activity on software development, and the challenges inherent when the activity’s STEM “content” is so much like what our community would call a STEM “practice.”

The article led by Amber Tateno-Bisel describes an activity for high school students in a biodiversity program in Hawai‘i, including molecular and ecological content and scientific practices of explanation from evidence.

A second article led by Nicholas Santiago describes an activity for transfer students entering the university that explores dose-response relationships in toxicology, and includes students role-playing as the Environmental Protection Agency.

The contribution led by Mercedes Pozo Buil discusses another activity for transfer students entering the university, this one on the complexities of climate and its variabilities.

In his piece, Frank Black details an ocean circulation activity, its effects on student performance, and how it was adapted for the pandemic.

The entry led by Kauahi Perez explains a form of jigsaw the ISEE PDP community calls an “expert training model,” used here in a renewable energy activity for the Akamai Internship Program.

Finkelstein, K., Martinez, R., & Vanderbosch, Z. (2022). Designing and implementing a PDP inquiry activity for an introductory astronomy research methods course. <https://escholarship.org/uc/item/9r8167ms>

Cooksey, K.L., Metevier, A.J., Rubin, K.H.R., Choi, P.I., & Raschke, L. (2022). Galaxy-classification activity for all ages. <https://escholarship.org/uc/item/2tk5j8zh>

Frisbie, R.L.S., Grete, P., & Glines, F.W. (2022). An inquiry approach to teaching sustainable software development with collaborative version control. <https://escholarship.org/uc/item/6fv1s464>

Tateno-Bisel, A. & Perez, K. (2022). Teaching DNA barcoding for the identification of algae. <https://escholarship.org/uc/item/7dx183mk>

Santiago, N.A., Glasenapp, M.R., & Howard, S.L. (2022). Dose-response in context: A backward design, inquiry activity workshop for college transfer students. <https://escholarship.org/uc/item/28r6g3kf>

Pozo Buil, M., Ianiri, H., Carrol, G., & Trayler, R. (2022). ClimateWEST: A climate science activity. <https://escholarship.org/uc/item/7ch3f7zz>

Black, F.J. (2022). Ocean circulation activity that incorporates inquiry and the use of real-world data. <https://escholarship.org/uc/item/9wq3h6zr>

Perez, K., Barnes, A., Mousavi, A., & Kassab, R. (2022). Incorporating PDP themes the Akamai way. <https://escholarship.org/uc/item/7mn8v4zb>

Articles on impacts and future directions

At the meeting “Advancing Inclusive Leaders in STEM: 20 Years of the PDP,” panels reflected on the impact of the ISEE PDP from different perspectives, and looked ahead to future ways in which this

work might continue. This section features contributions from the meeting's panels, and our recommendations for the future.

The contribution led by Tuan Do describes the history of PDP influence on two major advanced summer schools for astronomical instrumentation.

Do, T., Lu, J.R., Lanz, A., & Konopacky, Q. (2022). Impact of PDP on training for astronomical instrumentation. <https://escholarship.org/uc/item/0sq6r7pd>

In the entry led by Colin West, four PDP community members discuss how the PDP's focus on STEM practices impacted their research and teaching practices.

West, C.G., Honig, S.E., Lui, L.M., & Raschke, L. (2022). Integration of authentic STEM practices in real-world education and research environments: Lessons from the PDP. <https://escholarship.org/uc/item/13c3x5vb>

In the piece led by Linda Strubbe, four PDP community members review their takeaways from the PDP's work in inclusive leadership, and share examples of these lessons in action in their current work.

Strubbe, L., Bosinger, M., Stauffer, H.L., & Tarjan, L.M. (2022). The value of teaching leadership skills to STEM graduate students and postdocs. <https://escholarship.org/uc/item/8sp532b4>

The contribution led by Scott Severson describes three PDP community members' applications of ISEE PDP ideas toward mentoring contexts.

Severson, S., Dunkin, R., Walker, S. (2022). Applying principles of the PDP towards mentoring. <https://escholarship.org/uc/item/0mb4644g>

The discussion co-led by Raquel Martinez, Devin Silvia, and Emily Rice describes their experiences with advanced roles for returning participants within the ISEE PDP, and how those experiences influenced their subsequent careers.

Martinez, R.A., Silvia, D.W., Rice, E.L., & Porter, J. (2022). Value of the array of returner roles within the Professional Development Program. <https://escholarship.org/uc/item/4m80g97s>

The entry led by Nicholas McConnell discusses four PDP community members' applications of PDP approaches to new contexts as their careers have advanced.

McConnell, N.J., Casey, C.M., Macho, J.M., & O'Donnell, C. (2022). Applying PDP lessons learned about inclusive teaching and assessment. <https://escholarship.org/uc/item/41q869sh>

The piece led by Kimberley Mayfield explores four PDP community members' experiences outside of academia, applying ideas from the ISEE PDP to careers in government and industry.

Mayfield, K., Holloway, A., Jacox, M.G., & Martin, S. (2022). Applying the PDP to government and industry career pathways. <https://escholarship.org/uc/item/1vh495wp>

The contribution led by Lauren Lui explores the possibly less explicit, indirect impacts of an experience like the ISEE PDP on participants, particularly on members of underestimated groups, through four PDP community members' narratives.

Lui, L.M., Roth, D.L., Roybal-Jungemann, G., & Irvine, L. (2022). The unseen impact of inclusive professional development and pedagogic training on underestimated minority graduate students. <https://escholarship.org/uc/item/30r3j4qs>

The entry led by Robin Lovell shares case studies in the use of backward design and other pedagogical principles from four PDP community members.

Lovell, R.J., Egerer, M., Montgomery, R., & Olimpi, E.M. (2022). Pedagogical training for graduate students: Applications in academia and beyond. <https://escholarship.org/uc/item/7np735s7>

The contribution led by Devin Chu shares the experiences of four PDP community members who had originally interacted with the PDP from the student/learner perspective, when they were Akamai interns.

Chu, D.S., Barnes, A., Sueoka, S., & Irvine, L. (2022). From Akamai intern to PDP instructor: The coupled impact on becoming a STEM professional. <https://escholarship.org/uc/item/5mv3k3p7>

The entry led by Saul Beceiro-Novo discusses the instructor as facilitator, and PDP community members' uses of facilitation strategies in various contexts after their PDP participation.

Beceiro-Novo, S., Azucena, O., & Carrión, C.N. (2022). Impact of facilitation in the learning process in STEM. <https://escholarship.org/uc/item/4tk1v31p>

Our recommendations

The last article in this section on impacts and future directions — and in the entire collection — is the PDP team's review of the impacts and lessons learned from 20 years of the program. We describe what we feel are the essential features of the PDP, its impacts, and our recommendations for those who want to adapt or expand this work.

Hunter, L., Metevier, A.J., Kluger-Bell, B., Seagroves, S., Quan, T.K., McConnell, N., Barnes, A., Brown Pacheco, C., Raschke, L., Palomino, R., & Porter, J. (2022). Recommendations from 20 years of professional development of early-career scientists and engineers. <https://escholarship.org/uc/item/12g5j62m>

Thanks and acknowledgments

PDP developers and instructors

We would like to acknowledge and thank the large team of developers and instructors who created and re-created the PDP for 20 years. The PDP slowly expanded its capacity and explored new areas largely by realizing the potential of its own community: Many new participants would return, some returning participants would return again, and many of those veterans would eventually contribute in developer and instructor roles (as discussed in Martinez et al., 2022; in fact, all of Lisa Hunter's co-editors on this collection were PDP participants at some point). Other organizations struggling to meet demands that they "scale up" might consider this model.

PDP Developers and Instructors. Names are listed *roughly* in order from more to fewer years of contributions. We include ourselves because each of us would like to recognize the work of the others.

Developer & Instructor	Instructor
Lisa Hunter	Katherine Kretke
Barry Kluger-Bell	Mike Jacox
Scott Seagroves	Mike Nassir
Anne Metevier	Devin Silvia
Tiffani Quan	Max Tarjan
Nicholas McConnell	Gabriel Roybal-Jungemann
Austin Barnes	Stacey Sueoka
Candice Brown Pacheco	Tuan Do
Lynne Raschke	Saul Beceiro Novo
Rafael Palomino	Sally Duensing
Jason Porter	Linda Strubbe
Patrik Jonsson	Scott Severson
Andrew Norton	Caitlin Johnson
Oscar Azucena	Emily Rice
Ryan Montgomery	
Doris Ash	

Workshop and conference organizers

We thank Nicole Mattacola and Cynthia Nelly Carrión at ISEE for their work on recent PDP events and on the 20th-year conference.

eScholarship

We thank Martha Stuit (UCSC Library), Alainna Wrigley (California Digital Library), and Katie Fortney (California Digital Library) for helping us choose and set up the eScholarship platform for ISEE in general and this collection in particular.

We thank Cynthia Nelly Carrión (ISEE) for her continuing work on ISEE's eScholarship sites.

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In memoriam

Any community of our size and duration experiences profound loss. We know of these losses in the PDP community, and we pause for a moment to think of them and their lives cut too short: Amitabha Bhakta (1983–2020), Sally Duensing (1949–2015), and Kelly Peach (1984–2020).

References

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