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Leadership and teamwork development

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Introduction to Leadership Development in the PDP

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Introduction to Leadership Development in the PDP
Institute for Scientist and Engineer Educators (ISEE)

This paper was written and produced by the developers of the Professional Development Program (PDP) at the Institute for Scientist & Engineer Educators (ISEE) at University of California, Santa Cruz. The PDP was a flexible, multi-year program which trained participants to teach STEM effectively and inclusively at the post-secondary level. Participants were primarily graduate students and postdocs pursuing a broad range of science and engineering careers. Participants received training through two in-person multi-day workshops, worked on a team to collaboratively design an authentic, inclusive STEM learning experience (an "inquiry" lab), and then put their new teaching skills into practice in programs or courses, mostly at the college level. Throughout their experience, PDP participants used an array of online tools and received coaching and feedback from PDP instructors. The overall PDP experience was approximately 90 hours and was framed around three major themes: inquiry, assessment, and equity & inclusion. Leadership emerged as a fourth theme to support PDP teams, which were each led by a participant returning to the PDP for a second or third time, who gained training and a practical experience in team leadership. ISEE ran the PDP from 2001-2020, and there are more than 600 alumni.

CONTEXT FOR THIS PAPER WITHIN THE PDP
This document served as an introduction to leadership development in the PDP and served as a framework for grounding PDP leadership development in research and theory.

Introduction to Leadership Development in the PDP

Leading your PDP Design Team

As a Design Team Leader (DTL) you play a crucial role in the success of the PDP, both for your individual team and for the community that supports a sustained program year after year. ISEE's aim is to support you in this role, via resources and instruction to develop your abilities as a leader, as well as tools to help navigate the PDP task (design, teach, assess, and reflect on an equitable and inclusive inquiry activity). We expect that you will have many informal and formal opportunities to act as a leader throughout your career, and we view leadership development as an investment toward your long-term goals, and our goals for the STEM community. At the same time, we recognize that our own expertise in leadership and leadership development is still growing and evolving.

Martin Chemers employs a definition of leadership we often use in PDP:

Leadership is "a process of social influence through which an individual enlists and mobilizes the aid of others in the attainment of a collective goal" (Chemers 2001).

In this case, *the collective goal is related to completing the PDP task.*

While completing and implementing a teaching activity is a large part of the task, there are other important outcomes associated with PDP participation. We ask you to strive for each of the following:

Outcomes of success as a DTL (with support from PDP instructors)

- Team completes PDP task in appropriate amount of time
- Team completes PDP task collaboratively
- All team members experience an inclusive environment
- Team members gain an effective professional development experience

Supporting these outcomes drives much of our engagement with teams and DTLs. We strongly encourage you to enlist our help as consultants while you develop your activity design, and to tell us about any situations or obstacles that may put one of these outcomes at risk.

In the rest of this document and throughout the PDP sessions and workshops on leadership, we focus on broader aims and strategies that can guide your decisions and actions toward attaining the outcomes above.

Approaching leadership as informed by social sciences

There is a massive body of literature on leadership and leadership development. For several years ISEE has framed our support of PDP Design Team Leaders' leadership skills and practices around a paper by Martin Chemers (2001), who integrated the various models for leadership at that time and put forward what he called three elements of effective leadership. We have found

these elements to be useful in practice, and inclusive of multiple perspectives on leadership. Yet much more research has been done in the last two decades, and several leadership models have evolved to reflect changes in the structures of professional and social organizations. We are therefore looking to update our theoretical base for leadership development within ISEE's programs.

In the PDP we continue to use Chemers' framing of leadership, while we explore more recent models and broaden our own understanding of leadership and leadership development. We would like your help in this effort. We hope that as a DTL you will use the Chemers' three elements, and help us to identify what is useful about them and what parts of them you may find less effective. If you know of other sources that we should consider in future years, please bring them to our attention. Our priority is to use the social sciences to inform our work, so we are looking for sources that are based in research but are also accessible.

Finally, please recognize with us that exploring leadership from a social sciences research base is an interdisciplinary endeavor! Leadership scholars may use language or jargon that does not immediately resonate with you. Please press on and get what you can from it, and ask questions as you go.

Three elements of effective leadership

(from Chemers 2001, "Leadership Effectiveness: An Integrative Review")

"First, leaders must enlist the aid of others. That is, they must act as credible sources of influence that encourage others to follow them, that is, they must establish legitimacy. Second, they must mobilize others. […] That is leaders must establish a relationship with followers that encourages followers to apply their capabilities and efforts for the common purpose. [...] [A]nother aspect of mobilization, directed more toward the external task environment, involves the application of group members' knowledge, capabilities, energy, and material resources to the attainment of the group's goal. I label these three elements of effective leadership **image management**, **relationship development**, and **resource deployment**."

1. Image management (*"*Establishment and maintenance of a credible leadership image")

"The decision to become a follower is an important one. It involves the loss of personal autonomy as one chooses to relinquish some independence of action and to expend one's efforts under the direction of another person. It also involves a degree of risk, as the follower has now placed some probability of personal goal attainment in the hands of another person. The decision to follow depends on the perception of the leader as credible and capable. [...] The leader candidate must project an image that evokes a sense of trust and commitment in the follower."

2. Relationship development (*"*Motivate followers to give their best")

"The second major element of effective leadership concerns the leader's ability to establish a relationship with followers that motivates them to bring their full attention, energy, and commitment to the collective endeavor. In a goal-oriented group, the primary momentum for building that relationship is provided by the leader's **coaching and guidance**. Appropriate task-related mentoring helps the followers to feel empowered in their roles, to grow and develop intellectually as team members and as individuals, and to accomplish assigned tasks effectively. The leader's basic resource for providing the appropriate type and amount of structure and support is an accurate understanding of the followers' needs, with respect both to task-relevant skills and to personal or emotional needs. Accurate **attributions and judgments** form the basis for that understanding. Finally, the relationship must be built on **fair and equitable exchanges** between leader and follower."

3. Resource deployment

"The potential effort, energy, and knowledge of a group of motivated followers represent the resource base for task accomplishment[,] as do the skills, knowledge, and energy of the leader. These resources must be applied toward goal attainment[.] […] When a group is confronted with a complex and unpredictable environment, it will function most effectively if it employs flexible processes that involve many group members and much information in the decision. When situations are more structured and predictable, more regimented, time-efficient strategies can be successful. Good leaders must be able to recognize these features of the external environment to be able to adapt group processes. They must also have developed the kind of working relationships with followers that allow a group to function smoothly in various modes. A sense of personal efficacy leading to a calm and non-defensive posture seems to be the link between personal and team deployment."

ISEE summarizes Chemers' three elements of effective leadership in a way that focuses attention the practical aspects of serving as a DTL as follows:

Image management:

      a. Legitimacy in role as DTL
      b. PDP task-related competence
      c. Clearly conveying a compelling goal or purpose (overall and in steps or tasks along the way)
      d. Trustworthiness, honesty

Relationship development:

      a. Coaching and guidance, balancing structure with autonomy and room for intellectual growth
      b. Attributions and judgments that accurately account for team members' capabilities and needs
      c. Fair exchanges between DTL and team members

Resource deployment:

      a. Using own skills, knowledge and energy (self deployment)
      b. Utilizing team skills, knowledge and energy (team deployment)
      c. Using directive or participative approaches depending on situation

Reference

Chemers, M., 2001. "Leadership Effectiveness: An Integrative Review" in Hogg, M. and Tindale, R. (Eds.) *Blackwell Handbook of Social Psychology: Root Processes*. Malden, Mass: Blackwell Publishers.