



Developing a Shared Vision for Change: Moving toward Inclusive Empowerment

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Abstract

Shared vision is an important process for change projects, serving to amplify success, increase participation, and erode the divide between project leaders and constituents. Yet there are few empirical examinations of the process of building shared vision within academic departments. Using focus groups and participant observation, this study examines shared vision development within 13 large-scale change projects in engineering and computer science higher education. We find that teams of faculty, staff, administrators, and students built shared vision with stakeholders through co-orientation, formational communication, and recognition of stakeholder autonomy. Our results delineate practices for developing shared vision for academic change projects and demonstrate the benefits of inclusive stakeholder empowerment.

Keywords Academic change · Buy-in · Computer science · Engineering · Shared vision · Stakeholders

Within the science, technology, engineering, and mathematics (STEM) higher education community, there are repeated calls for changing the ways we educate our students (The Coalition for Reform of Undergraduate STEM Education 2014; Vest 2005). Despite the development of research-based teaching strategies, innovative co-curricular projects, and many years of funding and development, however, change in STEM higher education is not pervasive. For example, a large-scale observational study of undergraduate STEM education demonstrated that faculty persistently rely on “conventional lecturing” rather than improved teaching methods (Stains et al. 2018). In observations of nearly 550 faculty as they taught more than 700 courses at 25 institutions across the United States and Canada, only 18% of the observed STEM classes emphasized “student-centered” learning that promoted interaction among students and active engagement (Stains et al. 2018). This study is one among many in the last decade (e.g., Brownell and Tanner 2012; D’Avanzo 2013;

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Lund and Stains 2015; Shadle et al. 2017) to document that new practices in undergraduate teaching and learning have not permeated STEM programs.

In the hope of supporting change in STEM education that could be sustainable and pervasive, the United States National Science Foundation (NSF) has offered funding directed at organizational and cultural change. Since 2015, the REvolutionizing engineering and computer science Departments (RED) program¹ has awarded 21 grants for departments or university colleges to couple pedagogical change with the systemic change that will make the pedagogical improvements institutionalized and sustained (National Science Foundation 2016). In parallel with funding these projects, NSF solicited and funded the authors of this paper as the RED Participatory Action Research project (REDPAR), a practice and research initiative designed to support the efforts of RED teams to make systemic change. REDPAR provides faculty development curriculum on change-making and studies the work of the RED teams in order to improve our understanding of systemic change in action. Through this work, REDPAR works with the RED teams to identify best practices for change-making that may inform the work of others in transforming STEM higher education.

In both research and team development, REDPAR has focused on an important challenge: systemic change requires the continuous commitment of a significant number of stakeholders. Developing shared vision is one method for change agents to navigate this challenge. Change agents are the individuals who transform organizations through analytic approaches, behavior modifications, attending to internal processes and culture, and examining different change alternatives (Lunenburg 2010), while stakeholders are the individuals and groups whose regular activities and expectations might be affected by the change (Rose 2013). Building shared vision can help change agents gather wide support and preempt resistance to change among stakeholders (De Cremer and Tyler 2005; Kuhn 2008; Luthans 2002; Michel et al. 2010; Singh 2002; Taylor 2016). Fairness and inclusiveness in the change process is a top priority for highly committed members of an organization (van Knippenberg et al. 2006), and shared vision is a key method to create an inclusive community of stakeholders. However, in a survey of 191 studies of change in STEM instructional practices published 1995–2008, Henderson et al. (2011) found only 16 of the articles focused on shared vision, and they judged that none of these presented adequate empirical support for their claims. This study addresses this gap in the literature, by addressing the following research question: How do change agents empower stakeholders to develop a shared vision for change?

In this paper, we tackle this research question by bringing together theories of organizational change and stakeholder engagement within higher education to analyze the process of building shared vision. Using focus group and observational data with 13 NSF RED teams, we move beyond earlier research focusing on collaborative decision-making (Lueddeke 1999; Kezar and Eckel 2002a) to investigate how change agents co-create shared vision with stakeholders at all stages of project development and implementation. While our project is located within the STEM education community, we see the application of our findings to the broader higher education community and show the importance of building shared vision throughout any systemic change project.

¹ The program was originally named “Revolutionizing Engineering Departments” but expanded with the inclusion of Computer Science departments. From the 2019 solicitation for proposals the scope has narrowed again to Engineering only, and the name has reverted to the original.

Shared Vision and the Change Process

Several of the most well-known practitioner-driven change models (Beer 1980; Beer et al. 1990; Cooperrider and Srivastava 1987; Kanter et al. 1992; Kotter 1996) include developing a vision for the change (Stouten et al. 2018), a sense of the desired future workings and outcomes of an organization (DuFour and Eaker 1998; Gurley et al. 2015; Pekarsky 2007). These models vary in whether this vision is developed cooperatively or dictated (Stouten et al. 2018). In their synthesis, Stouten et al. (2018) observed that empirical research on change validated these models' emphasis on vision, and researchers needed to turn their attention to deriving practices that promote shared vision. Conventionally, a project vision emerges from a two-stage process in which the vision is created by the project leaders without stakeholder engagement, then followed by sharing the stated vision (Gioia and Chittipeddi 1991; Gioia and Thomas 1996); this progression was common to all seven change models Stouten et al. (2018) reviewed. The traditional model of stakeholder engagement is a participation model in which change agents leverage stakeholders' personal motivations to extract cooperation (Hattori and Lapidus 2004). They activate participation by alerting stakeholders to the opportunity for involvement and inviting "buy-in," i.e., assent with already-established goals and a logic of change.

In the shared vision (Kose 2011) model of stakeholder engagement, change agents still rely on stakeholders' personal motivations, but the process and end result are different. Developing shared vision is a *cooperative* effort of creating and agreeing on the frames (Benford and Snow 2000), which are the ways people interpret and make sense of key aspects of the change process. These key aspects include the goals, strategies, roles, and individuals involved. Inviting stakeholders into the visioning process is an act of co-orientation, building agency for both change project leaders and stakeholders through communication about the project (Taylor 2005, 2009, 2016), that helps project leaders and stakeholders "tune in" to each other (Kuhn 2008). Shared vision is an ongoing process that can occur at every stage in a change process or in the life of an organization. Dialectic communication with stakeholders provides regular feedback about project goals and logics, and leaders and stakeholders establish and reestablish shared language and shared imagination of the future (Kezar 2014). The result is that stakeholders are empowered to affect and own the change project, rather than sign onto it. Stakeholders become collaborators.

Democratic Values, Higher Education, and Shared Vision

Building shared vision is especially suited to change in higher education contexts. Universities are diffuse institutions (Kuhn 2008) where the structure and culture require the involvement of a broad range of individuals to enact change, and change is often far-reaching in terms of whom it affects. As Barnard and Stoll (2010) observed, sustainable departmental change requires that department constituencies modify their roles and job duties, which might be perceived as changing the psychological contract between the department and its members. That is, faculty and staff have expectations both of their own responsibilities and of what support or compensation they are owed by the department (Guest 1998; Rousseau et al. 2018; see also Robinson 1996; Rousseau 1998). Changing expectations can be a source of discomfort and opposition, but trust in change leaders can mitigate these feelings (Oreg 2003). A key task for change projects, then, is to develop and maintain the trust of stakeholders.

Trust is built through belief in the process. Building shared vision is designed to incorporate democratic values into the process of change. Stakeholders will judge the change project based on the values and norms it models (Meyer and Rowan 1977; van Knippenberg et al. 2006). In alignment with current ethical norms that value deliberative processes, change leaders must consider how stakeholders can be included in more than a nominal way (Kezar 2014). Faculty in particular have a long-standing expectation of inclusion in decision-making (Gerber 2001; Jones 2011; Kavanagh 2000). Termed “shared governance” (Clark 2004) or “collaborative leadership” (Kezar and Eckel 2002a, b), stakeholders must be thoroughly, collaboratively involved and not simply treated as consultants (Ansell and Gash 2008; Mulford 2006; Singh 2002). As Singh (2002) argues, “Participation is a bit like antibiotics. If you do not do the full course, stakeholders can develop an ‘immunity’ to participation” (p. 57). By its inclusive nature, shared vision engenders commitment to the change project (De Cremer and Tyler 2005; Michel et al., 2010). For example, at one organization, involving stakeholders in strategy formulation increased their commitment, satisfaction, and involvement with the organization’s work (Oswald et al. 1994). The process of shared vision infuses the change project with personal agency (Meyer and Jepsen 2000) and effective participation, foundational concepts that reflect the democratic culture (Dahl 1989) of many academic institutions.

An Effective Approach for Change

Shared vision works stakeholder empowerment into all aspects of the change project. This makes it an effective approach for leading change. It is aligned with higher education stakeholders’ expectations that all relevant interests and voices will be represented. Co-orientation is a way to “marshal consent” (Kuhn 2008) for the new rules of organization and action. Stakeholders have room to share hesitations and constraints, and change agents and stakeholders together can problem-solve how to achieve their shared goals in ways that match different individuals’ capacities and interests. Consistent and intentional empowerment of stakeholders helps change agents to address stakeholders’ reactions to change as they occur (Oreg et al. 2011) in order to maximize positive and engaged reactions.

Moreover, co-oriented stakeholders become a community of change agents that can influence their peers and encourage the adoption of change by others (Luthans 2002) as a grassroots process (Kezar and Lester 2009). These individuals can continue communication with more hesitant or resistant individuals. The growing network of collaborating change agents can disseminate new concepts and cultural models (Rao et al. 2003) and multiply the efforts of the change leaders (Lozano 2006). Empowering stakeholders to exercise their agency diffuses the project more broadly and more effectively than the original core of change agents could do on their own.

Although the shared vision approach offers change agents an alternative and more promising path toward achieving systemic change, it is necessarily more complex than simply building buy-in for a project, precisely because it requires a democratic orientation in processes and in values. While shared vision and buy-in certainly have overlap, the former requires more time, energy, and broader stakeholder engagement than is typically needed for buy-in. However, developing shared vision can co-opt resistant stakeholders and fold them into the change process, giving them input into the project as well as the opportunity to learn more about it (Luthans 2002). Embracing faculty and other stakeholders as full partners through a shared vision process is a proactive way to expose concerns and strategize about incentives for change adoption. While visioning for the change project might

be a site of contestation and conflict (Hargrave and Ven 2006), which can be a barrier for the change leaders' success in instituting change, the process is also an opportunity for leaders, faculty, staff, and other stakeholders to share their hopes and confront their fears. In fact, conflict within the visioning process can be productive and generative (Coser 1957; Hargrave and Ven 2006) if project leaders are able to adapt to alternative ideas and address stakeholders' concerns. Developing a deeper understanding of the process of building shared vision is critically important for the success of change projects in institutions of higher education.

NSF RED and the Context for Studying STEM Education Change

With the initial funding of six projects in 2015, the National Science Foundation's REvolutionizing engineering and computer science Departments (RED) grant program has provided an opportunity for the study of change-making teams at US universities. The NSF RED program is designed to support awardees in creating sustainable, systemic change in engineering and computer science higher education, both to improve undergraduate educational outcomes (through a focus on the middle years of undergraduate education) and to create more inclusive environments for students and faculty. The projects, ranging in scope from one department to a whole college, are attempting massive overhauls of educational environments, from dismantling the traditional isolated course structure to reformulating assessments of student achievement. Projects' curricular and cultural interventions are aimed at improving retention and academic success, particularly for underrepresented and minority students, via peer mentoring programs, community outreach, support for transfer students, challenging faculty and student stereotypes, and building ethics and social justice into the curriculum.

From inception, NSF program officers envisioned the RED awardees working as a national consortium to advance and promote the outcomes of their work. The RED grant mechanism is one of several initiatives (Hurtado et al. 2017; DeAro et al. 2019) funded by federal agencies to update and revolutionize higher education in the US to meet societal and workforce needs. In order to encourage the adoption of educational innovations and support systemic change, each proposal needed to include a change model or theory to ground the work. In addition, NSF required that RED project teams are multidisciplinary, consisting of instructional faculty, education researchers, social scientists, and administrators (e.g., the department head or college dean). RED teams range in size from 4 individuals to over 10, with some variation over time. Faculty (tenured, tenure-track, and contingent) form the core of each team, with some teams incorporating academic services staff, administrative staff, postdoctoral researchers, graduate students, and/or undergraduate students. Beyond Engineering and Computer Science, team members disciplinary fields include Anthropology, Education, Organizational Science, Psychology, and Sociology.

In conjunction with the RED grants, NSF also funded the RED Participatory Action Research (REDPAR) project in order to support the work of RED teams and to conduct research with RED teams on the change processes across project sites. REDPAR is a collaboration between faculty development practitioners and social science researchers. To support RED teams, we offer a customized faculty development curriculum based on the Making Academic Change Happen workshops (<https://academicchange.org/>). We work with the RED team members to refine their skills as change agents in areas such as effective communication, strategic partnerships, and change management. The REDPAR objective

is to equip team members with the practical knowledge, skills, and abilities that will serve them as they push their change projects forward. In facilitating connections across teams through an annual in-person meeting and monthly teleconference calls, REDPAR supports the RED teams in sharing insights about their progress, learning from each other, and promoting their work with the goal of dissemination and propagation. In conjunction with the focus on the practice of change-making, we are investigating specific research questions related to systemic change projects. By engaging RED team members through focus groups and collecting observational data during monthly calls, we are examining how academic change agents develop shared vision with stakeholders and what the process looks like.

Methodology

The REDPAR project is designed as participatory action research. This approach is a collaborative, self-reflective, and empowering inquiry undertaken by both researchers and participants; “action research is research *with* subjects, not *on* them” (Case and Light 2011, p. 197, *italics original*). Participatory action research recognizes the capabilities and valuable input of research subjects, undermining the traditional hierarchy between researcher and subject. Our design is especially appropriate given that we are working with team members who are experts in their disciplines. By engaging the RED team members through participatory action research, we leverage, rather than minimize, their expertise in their fields and in their own contexts. We share our research questions and methods with participant teams; solicit input both on lines of inquiry, in-process findings, and research products; and collaborate to produce papers and presentations with participant teams and their individual members. Because our goals for this work are to empower participants within the research study and to concentrate on investigating participants’ experiences, we utilized qualitative data collection through focus group discussions and observations of monthly RED calls.

Focus groups are a particularly advantageous form of data collection about team projects in that they allow members time to reflect and recollect, especially in response to the comments made by other participants, which may trigger recall (Lofland and Lofland 2006). Further, participants explain themselves to each other, giving researchers access to their reasoning processes and insight into motivations (Ansayet al. 2004; Morgan 1996). As with individual interviews, focus groups gather data on what participants say, which may not completely match what they believe, how they feel, or what actions they take (Litosseliti 2003). However, RED projects are implemented by teams, not isolated individuals, and thus these insights into the sources of complex behaviors, group dynamics, and points of consensus and disagreement are necessary for an in-depth understanding of the process of change.

Beginning in 2015, we conducted 12 semi-structured focus group discussions via phone and/or video conference call with all six teams from the first cohort of RED awardees (awarded in 2015) and with six of seven teams from the second cohort (awarded in 2016). Between three and seven individuals attended each focus group, with four participants being the median. The focus groups were conducted approximately 6 months into the first grant year for each team. These focus groups were designed to gather information on the initial stages of the RED projects, including preparation, relevant previous experiences, successes and challenges encountered thus far, institutional climate, and expected outcomes. Two members of the REDPAR team attended each focus group: one to facilitate

and the other to take notes and transcribe the discussions. In addition to focus groups, we observed each monthly conference call; all 13 teams from the first and second cohorts participated in at least some of the calls. Early calls included members of as few as four people from three teams, and later calls included members of up to twelve teams, with a maximum of 29 participants. A minimum of two members of the REDPAR team observed and transcribed each call. For this paper, a total of 21 call transcriptions, representing all of the RED calls in the first two years of the RED grants, were coded and analyzed.

Analysis Procedures

We rely on abductive analysis, a recent development in grounded theory approaches to data analysis (Charmaz 2009; Tavory and Timmersman 2014; Timmermans and Tavory 2012). Unlike the inductive approach of grounded theory, abductive analysis makes iterative moves between the data and theory to builds upon preexisting theoretical frameworks; however, this approach also refutes a deductive case study approach that confines research questions to predefined theoretical concepts (Tavory and Timmersman 2014; Timmermans and Tavory 2012). Through recursive moves between data and theory as well as attention to unanticipated or surprising findings, an abductive approach seeks to develop new insights and theoretical hypotheses (Tavory and Timmersman 2014; Timmermans and Tavory 2012). Our sample size (the 13 teams of the first two cohorts of RED awardees) lends itself to an abductive approach. Researching the change process with multiple teams enables us to focus on high-level comparisons and trends across teams, rather than the detailed accounting of case studies, which aids in generative theorizing.

After reviewing the first six focus group transcripts and first eight RED call transcripts, we developed a coding scheme to catalogue institutional, cultural, and organizational contexts; motivations; aspirations; team dynamics; communication strategies; engagement with stakeholders; and progress towards change goals. The coding scheme was updated and revised with emergent codes during the coding process, and memo-writing was used to explicate the coding categories (Charmaz 1994/2001). Using NVivo qualitative data software, each transcript was read three times and coded on the second and third reads. Table 1 provides a list of selected salient codes along with their coding frequency and joint occurrence with the shared vision code. To protect confidentiality, we do not give identifying information about the teams within the text. Tables of the institutions and their projects (Table 3) and of the NSF-prescribed RED team roles (Table 4) are included in the appendix.

To build trustworthiness of the data, we employed both triangulation and member-checking. Triangulation is a validity procedure that seeks both convergence as well as a holistic view of the findings through the use of multiple sources of data (Carlson 2010; Creswell and Miller 2000; Curtin and Fossey 2007). We employed triangulation by collecting data through multiple methods (focus groups, observation), at multiple points in time, and across multiple settings (i.e., the different RED teams). Member-checking is a validity procedure in which the data and interpretations are taken back to the participants so that they can assess the credibility of the findings (Carlson 2010; Creswell and Miller 2000; Curtin and Fossey 2007). Following each round of focus groups, RED teams were given individualized data briefs that related their team's discussion to the themes identified within the larger dataset. All of the RED team members were also sent early drafts of this paper. Throughout the member-checking processes, participants were asked if the themes

Table 1 Selected codes: descriptions and frequencies

Code	Description	Frequency	Intersection with “shared vision”
Shared vision	Developing (or not) shared vision, i.e., deliberation with stakeholders over goals, logic, and/or implementation	209	–
Communication strategies	Methods or philosophies of communicating goals and progress; how, to whom, and when	213	97
Faculty	Faculty, including research faculty; implied instructional responsibilities	341	116
Students	Undergraduate students; mentions of “students” without specifying graduate or undergraduate are assumed to be undergraduates	92	12
Outside perspectives	Advisory boards; practitioner/professional groups; centers or institutes not explicitly involved in the grant; specific companies; other funding organizations	59	17
Staff	Administrative and instructional support staff; university staff in the focal unit or explicitly engaged in the change process	29	4
Resistance	Presence, absence, or anticipated resistance to collaboration or cooperation	123	30
Reward	Payoffs, incentives, or rewards for collaboration or cooperation	40	7
Collaboration	Working with others to accomplish RED goals	91	24

identified made sense and if the overall narrative was reflective of their experiences. Feedback received during this process was incorporated into the final narrative.

The results presented below are limited by the timing of the grants so far. It is still early in the change process. We can discuss the apparent strategies and challenges so far, but the timeframe does not allow us to assess how these strategies impact the overall ability of change-making teams to institutionalize and sustain change. However, we believe that having a window into the early processes of teams embarking on major change projects helps identify critical steps in this process; institutionalization of each change project is a different process to which our on-going research may later speak. It should also be noted that these conclusions are limited in that all of the change projects within this study exist within the context of receiving an NSF RED grant, and thus we are unable to tease out the specific impact of this context. Given the variety of institutions and projects involved in this study, we believe that the major lessons are certainly valuable to consider for other change teams outside of the NSF RED context.

Results

In our analyses, we identified two tasks teams undertook to create shared vision in the course of implementing sustainable departmental change to prepare an inclusive community of students for the STEM workforce. First, teams chose which stakeholders they included and how they motivated those stakeholders' engagement. Investigating which groups the change teams court, involve, or view as experiencing the change project, and how they do so, reveals the priorities and change management strategies of the change teams. The other task was including stakeholders in the project in ways that stakeholders could shape the projects' goals and methods. Teams practiced inclusion through co-orientation, strategic communication, and making room for stakeholders as collaborators. These results provide the basis of a practice-based understanding of shared vision, which can provide a more concrete and accessible conception for other change-making teams.

Stakeholders: Who Did Teams Engage?

The RED teams initiated their change projects by reaching out to a range of individuals and groups, including faculty, alumni, advisory boards and local professionals, staff, and students. Relationships with these stakeholders ebbed and flowed as different challenges or opportunities arose. All of the RED teams considered faculty as their primary stakeholder group. During baseline focus groups, team members brought up faculty as they discussed prior experiences and their progress thus far, before we asked them what stakeholders they were working with. The project teams were themselves primarily composed of faculty or academic leadership, so it is unsurprising that the RED team members looked first to their peers for implementing change in their units. After all, RED teams were charged with revising the undergraduate programming in their units, and fellow faculty were gatekeepers on curriculum committees and were teaching the courses change agents hoped to remake. Teams even mentioned faculty as being the motivation to apply for the RED grant: one team thought they had momentum because faculty had been involved in other recent change projects, while another thought the program description matched their faculty's values for student success. In addition, NSF encouraged this focus by describing faculty as "paramount to the process" in the call for proposals (National Science Foundation 2014,

2015, 2016). RED team members described faculty as potentially posing the greatest challenge to getting their projects off the ground; teams characterized faculty as “critically important” to project implementation. “Our entire project is driven by faculty and faculty time,” declared one education researcher. Interestingly, the theme of resistance to change was only connected to faculty; administration, students, staff, and other stakeholders were not forecasted to resist or impede change efforts.

In order to connect with faculty stakeholders for their projects, RED project teams used a variety of approaches. Teams’ narrations of their progress started with receiving the grant and mostly followed immediately with department retreats. Nine of the teams led workshops during faculty retreats or planned separate RED-focused faculty retreats. One team focused on changing a whole college held a series of informational meetings for faculty. Another team, embedded in a department within a large institution, encountered considerable difficulty in communicating with faculty due to institutional structure; the college is split into several sub-units that are not organized to coordinate across faculty in different sub-units. “I feel like the machinery...was not in place to get the word out,” reported a Co-PI. Change teams seemed to meet with faculty in venues already institutionalized within their units.

Schools exhibited a range of relationships to students as relevant stakeholders. Eleven project teams actively consulted students about the cultural climate within the department or college, and three teams invited students as collaborators on project implementation. Project teams consulted with students through interviews, informal discussions, and surveys. For example, a team at a large university recruited undergraduate students for focus groups to design and then pilot their student engagement innovation. At another university, an upper division undergraduate course performed a similar function by studying and then reporting on the proposed curriculum changes. One college-focused team expanded their focus to acknowledge and include graduate student teaching assistants, as “a link between faculty and students,” by offering new teaching assistant training and inviting graduate students to faculty teaching development workshops supported by the grant. In contrast, two project teams described undergraduate students as end-recipients of their projects but not participants in the change processes. A member of one of these teams explained the lack of engagement with students by referring to their theory of change, stating, “There are no direct changes at the student level, with the belief that faculty influences students.”

In addition to engaging faculty and students as stakeholders in their change projects, seven project teams mentioned staff, but not necessarily in connection to engaging them in the creation of a shared vision for change. No team commented on specific outreach to staff, although staff were included in at least three of the faculty retreats. One department-focused team put together a working group of faculty and staff “that will be [a] sounding board for some of the faculty development.” Teams did appear to be including staff in project work, but they were often lumped in with faculty as secondary participants or their contributions minimized, such as by one Co-PI who described staff as “not at the same level” and “requir[ing] effort” to work with.

We found higher levels of engagement with industry, especially through advisory boards. Ten project teams contacted advisory boards already connected to their departments or colleges. While one urban, department-focused team was especially pro-active and invited its advisory board to participate in brainstorming ahead of proposal submission, several other schools spent early months after award notification soliciting feedback from advisory boards while the teams began to solidify plans. At one large university, the team used an early meeting with their unit’s advisory board to “target the people [on the board] who will be enrolling in initial teams” that formulate the specific plans for their

Table 2 Observed practices for creating shared vision

Component of shared vision	Practices
Co-orientation	Shared expectations Shared sensemaking
Communication	Common language Align with an organizational mission Support from institutional leadership Evidence Formational communication
Collaboration	Participatory process Meaningful roles Autonomy and self-determination Recognizing contributions and expertise Incentives Shared products

change project. Another urban team was developing a new network of local professionals interested in providing professionalization opportunities.

Team Approaches to Shared Vision

Through conversations about challenges, successes, and project progress, change leaders in RED teams revealed to us their strategies and rationales for working with stakeholders. Our analyses discerned that change leaders built shared vision with stakeholders through efforts towards co-orientation, communication, and collaboration. In order to illuminate these components, we expound on each one individually below, as families of related practices. Table 2 summarizes each component and its associated practices. While this may help to isolate each component for clarity, these components are not a sequence or checklist. Each team might begin the shared vision process with a different stakeholder or practice, or return to one if they encountered challenges or obstacles. They tried different tactics with different stakeholders and changed directions if they thought something else would be more effective. Change leaders were focused on the prize of stakeholder cooperation more so than how they got there.

Co-orientation

Co-orientation of RED team members and stakeholders was often a starting point once the initial engagement with stakeholders had been made. Co-orientation, orienting together towards the same concept, action, or object (Taylor 2009), was often pursued through the creation of shared expectations for the project and shared sensemaking of the project's goals and objectives. For RED teams, co-orientation with stakeholders created a dialectic relationship where change leaders and stakeholders could both express their understandings of their contexts and then build consensus on what to do.

Shared expectations were written down so there was clarity among team members and stakeholders regarding roles, implementation strategies, and goals. For their faculty development program, for example, one computer science team “drew up a document...that talked about why [they] are doing it, the meaning, and what [they] expect in return for participating,” similar to a contract or syllabus. More informally, the two PIs emphasized

transparency and “continual updates” at faculty meetings for the purposes of keeping faculty informed of upcoming activities and needs. We observed that collective agreement on expectations provided room for agency and created accountability.

Similarly, shared sensemaking provided a way for the members of the RED project teams, particularly the social scientist on each team, to understand their change projects in new, shared ways. As stated previously, the NSF RED funding solicitation required awardees to conduct social scientific reflection on their context and project implementation. However, consulting stakeholders through interviews and focus groups is a one-way process. We found that several teams were engaged in shared sensemaking, a full-circle process that takes the next step of sharing back the results of the social scientific research. One team’s external evaluator led a workshop for faculty to review student climate survey data. Another team shared faculty survey results before conducting a brainstorming activity with faculty on the challenges and opportunities of the project. In both of these cases, working the social science data into project discussions co-oriented with faculty stakeholders and helped them to make sense of their cultural and curricular environments.

Communication

In addition to co-orientation, we found communication to be an essential feature of the shared vision process. How and what RED teams communicated with stakeholders helped teams to be more effective in co-orienting and in motivating interest and collaboration with stakeholders. RED teams recounted how using a common language, aligning with another institutional mission, testifying to support from institutional leadership, and using evidence from their own departments helped the teams to communicate effectively. We develop the term formational communication to describe what teams’ vignettes about communication had in common, an emphasis on change as a mutual undertaking that sought and incorporated stakeholder influence.

Most notably, we identified the use of a common language and shared frames of understanding in many of the RED teams’ efforts. By referencing concepts with tightly defined meanings, communicating with institution-specific or disciplinary jargon can quickly get change leaders and stakeholders on the same page. A Co-PI from an electrical and computer engineering department discovered in a faculty retreat that sharing a discipline-specific concept as a metaphor “totally got the message across” for what the team was hoping their curricular redesign would address. The use of a common language was also a strategy to link project work at the faculty level with support for the work at the administration level. Two teams working on college-level change both rely on university strategic plans in their messaging to stakeholders, which taps into broader cultural knowledge of their institutions and provides a scaffold for understanding what their projects are hoping to achieve and why. Utilizing existing shared language was a shortcut to shared interpretation of project goals.

Aligning with other organizational communication served a second purpose: reinforcing the importance and value of the change project to institutional leadership. Two of the teams communicated that their projects had leadership support, either directly or indirectly. At a faculty retreat, one team “sent the message that RED was not an imposed thing and not a thing this little group is doing on the side.” They located the authority for the project as coming from college leadership while simultaneously offering partnership instead of authoritarianism. In a different approach, another team developed communication themes consistent with their dean’s already-established strategic planning vision for their

unit. Referring to institutional authority diminishes the risk and uncertainty of investing in the change project because stakeholders know that resources are invested in its success. Teams that deployed this strategy were inviting stakeholders to a shared understanding that a change project is worthwhile.

Several other teams did not want to impose change on faculty, but wanted to convince them, in part through the evidence of the project's success. One team at a large university had created opt-in support and incentives for curricular change and then invited the change adoption process to occur naturally. The project manager elaborated, "We have a strong base of faculty who have begun, and we have data, so they can see the evidence. We are hoping that [evidence], along with the messaging, will recruit more faculty." This team planned to use data and evidence of early successes to motivate additional faculty to be involved. Another team from a large university planned to do likewise, but with the pressure for pedagogical change coming from students who encounter the new curriculum and then take courses with resistant faculty. A few teams discovered that utilizing student perspectives was helpful in communications with faculty; one social scientist described data from students as "a lever for trying to make change." "What we are getting is a lot of ... examples that we can use to help people become a little more aware of their impact," said another social scientist from a computer science team. "It helps to create more buy-in," reflected one project coordinator. A 2016 cohort team was successfully using an evidence-based approach. After meeting with industry representatives, who identified skills graduates were lacking, team members presented these results to faculty. Soon after, faculty proposals for new curriculum modules were "directly addressing" these professional skills. As they described it, this team thought that their call-to-action, evidence-based approach yielded the interest and collaboration they were looking for.

We draw a key distinction here about the nature of the communication the RED teams employed with stakeholders. We characterize the communication that was engaging stakeholders as full partners in change projects as *formational communication*. Roughly half of the discussions about communicating with stakeholders concerned vision-building, evidence that the project teams were inviting stakeholders to influence plans for change. Team members often used "buy-in" to name how they were working with stakeholders, and about half of the time (7 teams, 13 of 27 mentions), "buy-in" was used to describe "consensus" and soliciting feedback from everybody, which are methods consistent with shared vision. For example, a PI of one department-focused team concentrated on "get[ting] the word out that this is everybody's work and not just the RED team...it is the work of the community." Another RED team passed out branded red stress toys at a faculty retreat to communicate that "it's RED...it might be a little stressful, but it's fun...[and] we are all in this together." Teams that created this narrative of collective effort believed that their efforts were rewarded. "We convey a true belief that our solution is in our midst," related one team member. "We pose it as, 'With cleverness and commitment, we'll figure it out,' and people really respond to that." Clearly, the language and messaging about the collective responsibility of stakeholders empowers their participation in the change project. In contrast, other mentions of "buy-in" did not describe methods consistent with shared vision as a concept. The language divided the RED teams, as change agents, from stakeholders, as the recipients of change. Associated with the term "buy-in," teams mentioned that they wanted faculty to have "interest" in the change project, to be "pumped up about this," to "see the relevance" of project components, and to be "on board." PI teams were "trying to move" faculty and were "educating" faculty; change teams wanted to "sell" their project. These are all phrases belonging with a concept of cooperation by which stakeholders sign onto an existing effort without the opportunity to shape the effort's goals or implementation.

While the use of formational communication was a marker for collaboration on shared vision, RED teams resorted to *informational communication* (Chandler and Munday 2011) when needed. For one team, for example, rumors and misconceptions backed team leaders into focusing on information-focused communication. Project leaders had not consulted with faculty at the earliest stages of the project. Consequently, discussion at the information sessions centered on clarifying the project scope. Some faculty expressed disappointment about items they thought had been left off the project, and the team explained that it did in fact include these components. As a result, the team was not able to focus on accepting influence (Small and Rentsch 2010) or developing a consensus about the vision in these key meetings. When the team shifted the conversation by utilizing the institution's established strategic planning language and goals, and created a shared language and common goals, the tide turned. "It used to be us versus them," reported one team member. "I don't feel like that anymore. The rest of the faculty realize this is the direction the university is going." When teams were able to use communication to signal that their projects were collective work, they built shared vision instead of transmitted vision.

Collaboration and Agency

Finally, we noted that the process of building shared vision relied on collaboration and agency, so that both RED team members and stakeholders committed to their change projects and their success. This occurred through several different tactics, including through instituting participatory processes, offering meaningful roles, allowing autonomy and self-determination, recognizing contributions and expertise, providing incentives, and producing shared products.

Many of the RED teams instituted participatory processes to draw stakeholders into decision-making and implementation, affirming the stakeholders' agency and the importance of their collaboration. Teams recognized that stakeholders wished to contribute their voices, not just their labor. An engineering education researcher on one RED team pointed out that faculty want to "feel their ideas are being valued and they have good ideas and they are getting something out of it." For one RED team, completing a brainstorming activity during a faculty retreat enabled detractors "to air their concerns," with the end result that these detractors "came out really confident." In meeting with an external advisory board, project leaders from another team initially felt anxiety and insecurity about how the advisory board would respond to their pitch. However, the meeting was "tremendously successful in terms of the advisory board seeing how they could contribute to the project now and over time." The board supported the project because they could imagine how their collaboration would shape the change project. In many instances among the RED project teams, stakeholders were treated as collaborators who had valuable insights and opinions; participatory processes provided the methods for working their insights into shared vision of the change projects.

Hand-in-hand with participatory processes, RED teams offered stakeholders meaningful roles for collaboration. For some teams, meaningful roles disrupted the perception of a top-down change or an isolated effort. Two teams mentioned drawing in new people to their projects, including a prominent naysayer, by opening up their regular steering committee meeting times and asking faculty and others to join in deliberating over project management. Several teams offered roles in working groups. We also noted instances where formal leader roles were discarded in order to create a more equitable, less hierarchical, team organization. When a department-focused team, for instance, invited outside facilitators to

conduct a workshop, the change team was put on the same level as the rest of the faculty and staff, leading to the feeling that they are “operating from the same page now.” RED teams cultivated unity when they welcomed stakeholders to work alongside them in ways that mattered for charting the change project’s future.

To democratize and truly share the work of the project, teams also had to recognize stakeholders’ individual agency and affirm the values of self-determination and autonomy that are highly prized within academic settings. Teams thought that when stakeholders were able to choose their own motivation for participation and the conditions of their participation, they would be more committed and find their participation more rewarding. One 2015 cohort PI advised other teams to “help [faculty] find their own engagement in this.” In faculty members’ annual evaluations, this PI “asked them which piece of all this work in the RED grant calls to you and how do you want to get involved.” Another PI made sure to keep faculty apprised of when they would be involved and at what stages they would be contacted. This honors faculty members’ heavy workloads and helps them plan, instead of abruptly imposing additional job duties.

As stated earlier, faculty members are all experts, and change projects can challenge their sense of their role within their departments or their perception of the respect others should afford them. This is particularly true for changing curriculum, when faculty are supposed to be the subject matter experts as well as teaching experts within their classrooms. “We struggle with trying to tell someone who is great at what they do that they need to change something,” said one project manager. “Find places so they can get a small win so they can keep motivation to keep going.” A Co-PI from another team said, “We haven’t just jumped out and said, hey RED is here, we’re going to fix you ... we want to be cognizant and respectful.” Teams felt a need to be respectful of the faculty’s existing strengths as well as improvements that had already been made. One team experienced some push-back because initially “[faculty] felt like people weren’t honoring what was already done.” Change projects are delicate endeavors in which change leaders must manage their relationships with stakeholders as much as managing the roll-out of new policies and resources. Especially in an academic setting, engaging with stakeholders means acknowledging their potential and empowering them to pursue it within the change project.

Incentives can help bring people into the project and help them feel more connection and ownership with the project. Six teams envisioned incentives as a way to counter or preempt resistance. A Co-PI from one of these teams observed that “the reward structures don’t align with the change [they] want to make,” so they were researching what incentives would align with faculty values. Team leaders at another of these six concluded that a prior change effort did not stick because it had no incentives aligned to it. For this change project, they designed an incentive structure to restructure teaching loads and reweight faculty teaching evaluations so that implementing the change project did not impact evaluations punitively. A third team also rebalanced faculty reviews to give more weight to teaching evaluations; they also incentivized participation in pedagogical training and mentoring by paying participants. The fourth team offered course buyouts, and another offered either money over the summer or course release in return for work on course design.

Most discussion of incentives concerned instrumental payoffs (such as money, teaching releases, etc.), but a few individuals noted emotional or psychological payoffs as well. One project manager, for example, wanted faculty to see “that the change will ultimately get them to a place where the teaching will be more fun and they will spend less time on the tedious parts.” Emotional and psychological payoffs also were used when engaging stakeholders in the industry and local advisory boards. In engaging with local professionals, one RED project PI noticed, “The engineers love to feel that they are giving back,

and they love to see the students...they love to be around excited young people.” Whether as inducements offered by the change project or other personal rewards, incentives provide motivation for stakeholders to become involved and tie personal advancement to the broader success of the project. When stakeholders have personal incentives, the change leaders implicitly acknowledge that stakeholders have agency to change or not.

Some RED teams consulted with stakeholders and invited their collaboration on the products and artifacts that their curricular and institutional change efforts will generate. Two teams—one from a smaller department and one from a large department—both elected to use a consensus process for their new curricula. Faculty were co-creating the new curriculum in these institutions. Faculty in one medium-sized department were invited to give feedback on prioritizing core concepts for new curriculum. At two other universities, change leaders solicited proposals for new courses and modules, which the change leaders then will shepherd through the curriculum approval process. A college-focused team was using findings from a faculty survey to revise their college’s promotion and tenure process. These efforts ensured that stakeholders, particularly faculty, were acknowledged for their contributions and had an active interest in the project moving forward. Likewise, several teams made space for faculty or other stakeholders to collaborate on developing the change project, even at the earliest stages of proposal development. One department held retreats before submission and after the award to solicit input and then confirm plans and commitments. Similarly, two other teams described working to ensure that all of the faculty had some kind of input. Early collaboration sets a precedent and gives stakeholders an active interest in the success of the project. Faculty in one department were helping to define the central research topics for a reorganized unit structure; they were “starting to self-organize into those groups now and thinking about their courses.” Inclusion as collaborators provides motivation to fully participate in the change project.

Discussion

The results from these 13 change-making teams suggest that engaging stakeholders and building shared vision are key elements in many of their change projects. From building strategic partnerships with external stakeholders, such as industrial advisory boards, to initiating structural changes to shift internal culture in their institutions, we find that the RED teams have pursued different paths to engage their respective stakeholders. Below we reflect on practices for initiating change within higher education and provide some takeaways that other academic organizations can use to understand how different types of stakeholder engagement can propel or decelerate a large-scale change project.

Think About Timing from the Beginning

Research indicates that in the first stages of a change process, it can be difficult or impossible to enact change for all stakeholders (Lozano 2006), and change leaders must prioritize what changes to make first and which stakeholders to target. The RED teams engaged with diverse stakeholders to different extents, with some teams focusing on faculty members and other teams engaging students, staff, and advisory boards as well. One team was able to engage with faculty stakeholders on a deeper, formational level because they had already done the work of soliciting cooperation during the proposal process. Because of this, they were able to move forward more quickly once the grant was received. In contrast, another

team did not engage their faculty stakeholders during the proposal process and spent a good part of the first year of the grant informing their stakeholders and retrofitting the proposed activities to their department/school culture. Involving stakeholders throughout all phases of a change process, including initial planning and dreaming, is not only important (Bruhn et al. 2016), but it can also save time and effort later on that could derail or delay the project.

Of course, it takes time, and sometimes resources, to connect with stakeholders early. For change efforts that will rely on funding that has not yet been received, it can be risky for potential change agents to dedicate this time for projects that may not happen. Putting together a change project vision within even a small team can be contentious or cacophonous, and bringing stakeholders into the process can make it unpredictable (Bergmark and Westman 2016). For change agents who cannot or do not engage stakeholders at the outset of their projects, the good news is that practices that build shared vision can be started anytime in the life of a change project, as demonstrated by RED teams who did not court stakeholders before receiving the grant.

Context Matters for this Work

While engagement with stakeholders was a common feature of the RED teams we studied, the institutional context of each change project shaped how each team proceeded. Previous curricular or culture changes that have been attempted (successfully or not) can cause additional barriers for creating a shared vision for change. One team diagnosed that past efforts had failed because they did not fit the department culture well, but the failures had also led to reticence to try again. This team hoped that studying the needs and values of department stakeholders would help motivate cooperation as well as improve implementation. In addition, the use of different kinds of incentives, and building those incentives into existing department or college structures, is something that may not work at all schools, depending on organizational cultures and leadership support.

The lack of hierarchy and minimal oversight of faculty is a key context to understand when examining changes within academia. Even the best ideas may meet resistance if they are pushed down from top leadership. In academia, perhaps even more than industry, it is important to engage all stakeholders in a process to create a shared vision for change. Expansive inclusion in change-making is all the more important when these change projects are predicated on expanding educational inclusion. The values the projects promote as outcomes should be reflected in their change processes (Schoorman and Acker-Hocevar 2010). We heard from teams that they valued strategies grounded in respect, cooperation, and trust; these are good strategies to use with peers when trying to make changes from the “bottom-up.” However, at least two of the teams described using the support of top leadership to help garner support for their projects; developing a change project that respects democratic values does not require that the project be entirely grassroots-driven. Inclusion in the process of change, having a voice in what happens and why, can be facilitated by many different structures of shared governance, including endowing organizational roles with change leadership. Similar to our results, Kezar and Eckel (2002a, b) observed multiple strategies for ensuring stakeholder empowerment in higher education institutions. Change agents must be able to read their institutions’ cultures in order to develop effective strategies for empowering stakeholders within their specific contexts (Kezar and Eckel 2002b).

Inclusive Empowerment for a Collaborative Change Process

PI teams clearly wanted stakeholder cooperation, especially from faculty, but their language often belied a lack of true partnership or specific plans on how to achieve shared vision. Focus group participants named faculty, students, administration, and practicing professionals as stakeholders in the change process. However, RED team members described buy-in almost as a uniquely faculty-oriented process. Conversations isolated buy-in from the broader discussion of stakeholders, as if to categorize constituencies into whether they were involved in implementation versus generally impacted by the change processes.

As a concept, “buy-in” is limiting for PI teams. It predisposes change leaders to favor informational communication in order to get stakeholders excited about decisions, rather than involving them in decision-making. Searching for buy-in prompts leaders to think about overcoming resistance and counter-arguments, rather than accepting input and collaborating. The very language of “buy-in” implies a context or situation to which the faculty are committing, ahead of the planned activities. This logic prompts informational communication, in which change leaders provide details about plans and goals, essentially offering a proposition for faculty to join or resist. In contrast, formational communication empowers faculty or other stakeholders to contribute to the change process (Mulford 2006), offering alternative or additional ideas for goals and implementation ideas. Formational communication makes room for grassroots leadership (Kezar and Lester 2009), which is vital for the systemic change these teams hope to achieve. Several teams had engaged in formational communication, but without establishing continuing processes for formational communication, they had not quite developed shared vision. Their empowerment of stakeholders was inconsistent. At least in what they reported, teams’ empowerment of stakeholders was also uneven; students and staff were largely left out. Because their change projects included these non-democratic aspects, teams might expect future challenges and opposition from stakeholders or, equally arresting, apathy or obliviousness (Gurley et al. 2015).

Limitations

While a couple of the schools described what sounded like multi-stage shared vision processes, most of what we heard from team members was about buy-in. We do not know if we found mostly buy-in related comments because that is what the teams were focusing on, because this language has been used more often in REDPAR-facilitated professional development activities than language of shared vision, because the term is more common, or because our data are self-reported and observational of teams rather than direct

observations of their interactions with stakeholders. In our professional development curriculum we have adjusted our language to refer to “shared vision” instead of “buy-in.” Newer RED teams from the third cohort (not included in this study) do continue to use “buy-in” in our focus groups and calls, despite our language change, indicating that buy-in is a commonplace term, even if its use-meaning is inconsistent. We plan to continue to ask about shared vision to understand the depth of the engagement with stakeholders at the participating schools.

Conclusion

Higher education today faces a range of challenges that call for change from individual classrooms up to departments and institutions. To take on these challenges, change agents need strategies grounded in empirical research that will help them plan and act in ways that grow a coalition for change that is adapted to local contexts and constraints. Developing shared vision is one such strategy, and we find that change agents build shared vision by employing practices of co-orientation, formational communication, and collaboration to empower stakeholders to contribute to the goals and design of a project, and not simply to be its implementers or beneficiaries. In providing examples of the process of building shared vision, we offer other change agents ideas about what they can try in their own projects to empower stakeholders. By deriving a practice-based conception of shared vision, we fill a gap in scholarship on higher education and organizational change. We believe that shared vision can be uniquely effective for change agents in higher education because it can help incorporate a range of voices and perspectives into a project, building a more democratic, wider, and stronger base of support for change. A shared vision process encourages change agents to listen to stakeholders and respect their autonomy, and it erodes the power divide between project leaders and the people they want to engage in the work. These are all ethics of leadership expected in today’s world, particularly of institutions like colleges and universities.

Appendix

See Tables 3 and 4.

Table 3 RED Awardees

Award year	Institution	Unit	Title
2015	Arizona State University - Polytechnic	The Polytechnic School	Additive innovation: an educational ecosystem of making and risk taking
	Colorado State University - Fort Collins	Department of Electrical and Computer Engineering	Revolutionizing roles to reimagine integrated systems of engineering formation
	Oregon State University	School of Chemical, Biological, and Environmental Engineering	Shifting departmental culture to re-situate Learning and instruction
	Purdue University	Department of Mechanical Engineering	An engineering education skunkworks to spark departmental revolution
	University of North Carolina at Charlotte	College of Computing and Informatics	The connected learner: design patterns for transforming computing and informatics education
2016	University of San Diego	School of Engineering	Developing changemaking engineers
	Boise State University	Department of Computer Science	Computer science professionals hatchery (CSP Hatchery)
	Iowa State University	Department of Electrical and Computer Engineering	Reinventing the instructional and departmental enterprise (RIDE) to advance the professional formation of electrical and computer engineers
	Rowan University	Department of Civil and Environmental Engineering	Rethinking engineering diversity, transforming engineering diversity (REDTED)
	University of Illinois at Urbana-Champaign	Department of Bioengineering	Defining the frontiers of bioengineering education at Illinois and beyond
	University of New Mexico	Department of Chemical and Biological Engineering	FACETS: formation of accomplished chemical engineers for transforming society
	University of Texas - El Paso	Department of Computer Science	A model of change for preparing a new generation for professional practice in computer science
	Virginia Polytechnic Institute and State University	Department of Electrical and Computer Engineering	Radically expanding pathways in the professional formation of engineers

Table 4 NSF-prescribed RED team roles

Role	Description in NSF call for proposals
Principal investigator	Department chair/head (or equivalent) to establish institutional accountability; an innovative leader of systemic change in the department
Co-principal investigator, education researcher	Expert in engineering education or computer science education research who can ground the research plan in the literature
Co-principal investigator, social scientist	Social science expert who can advise on strategies for developing a culture of change and on strategies for creating meaningful collective ownership of the effort among faculty, students, and staff. The social scientist must have the expertise to evaluate departmental dynamics and monitor change processes

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