Building Your Dream Team for Change

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Abstract
This panel paper presents research on connecting theory to practice and the lessons learned in a change project, with a focus on team formation during the early stages of change making. An important yet often overlooked step in any change project is pulling together individuals to form a competent and efficient team. The literature has identified six key characteristics of a guiding coalition (i.e., an effective change-making team): position power, expertise, credibility, leadership, trust, and a common goal. In this qualitative study of 10 teams working on systemic change projects at their respective institutions, we examine the process of team formation through the framework of guiding coalitions. We find that the characteristics of a guiding coalition shift and evolve over time, as relationships among team members (and with their stakeholders) continue to grow. The results presented in this paper connect theory to practice, sharing practices for building effective change-making teams within higher education.

Introduction
This panel paper presents research on connecting theory to practice and the lessons learned in a change project, with a focus on team formation during the early stages of change making. An important yet often overlooked step in any change project is pulling together individuals to form a competent and efficient team. A functional change-making team requires a variety of complementary skill sets, which may come from different disciplinary backgrounds and/or different prior experiences.

Kotter uses the term "guiding coalition" to refer to an effective change-making team [1]. He originally identified four key characteristics of guiding coalitions: position power, expertise, credibility, and leadership. Kotter added to this list by examining the importance of trust and a common goal to guiding coalitions. Together, these six characteristics are defined as:
- Position power: enough key players on board so that those left out cannot block progress;
- Expertise: all relevant points of view should be represented so that informed, intelligent decisions can be made;
- Credibility: the team should be seen and respected by those in the institution so that the teams' ideas and changes will be taken seriously by other employees;
- Leadership: the team should have enough proven leaders to be able to drive the change process;
- Trust: team members must trust one another enough to engage in risk-taking and clear communication; and
- Common goal: the group must develop a well-defined vision for the change project that appeals to all stakeholders. [1]

A review of the literature on guiding coalitions found that though the concept of a guiding coalition is widely advocated in the literature, only one study showed a moderate correlation between the existence of a guiding coalition and the success of a change process [2,3]. The review concludes that while the literature provides little evidence to the value of a guiding coalition, it does provide evidence that each of Kotter's six characteristics of a guiding coalition individually have positive effects on the outcomes of a change project [2].

Context
This analysis of team building and complementary skill sets emerges from our participatory action research with the NSF REvolutionizing engineering and computer science Departments (RED) teams to investigate the change process within STEM higher education. The RED funding mechanism is designed to support awardees in creating systemic change, both to improve educational outcomes in the middle years of college and to create more inclusive environments for students. The currently funded projects range in scope from one department to a whole college. NSF requires that teams are multidisciplinary, including instructional faculty, education researchers, social scientists, and administrators (e.g., the department head or college dean).

In addition to funding the RED teams, NSF has also funded RED Participatory Action Research (REDPAR), to support the work of RED teams and to conduct research with the RED teams on the change process across project sites. Our work as REDPAR investigates research questions related to systemic change projects while also facilitating connections across teams and providing customized faculty development curriculum. In this paper, we are examining a key research question: how do individual change agents come together to form competent and efficient teams?

Methods
Data Collection
Focus group discussions are conducted with each team at two time points: within the first six months of their grant ('baseline') and approximately 28-30 months after their grant was awarded ('midpoint'). For this paper, data come from the focus group discussions at baseline and midpoint with the first two cohorts of RED teams, who received their grants in 2015 and 2016. Of the 13 RED teams in the first two cohorts, 12 completed a baseline focus group, and 11 completed a midpoint focus group, with 10 of these teams completing both. The data in this paper are restricted to the 10 teams that completed focus groups at both time points, to allow for longitudinal analysis. That is, the data in this paper are from a total of 20 focus group discussions (two per team with ten teams). The focus groups ranged in size from two to nine individuals, with a median size of six. A total of 70 individual team members participated across all 20 focus groups, including seven PIs, nine social scientists, and eleven education researchers. The focus groups were conducted in a semi-structured format; the baseline protocol was structured around eleven guiding questions while the follow-up protocol was structured around ten guiding questions. Baseline focus groups were designed to gather information on the initial stages of the change projects, including team formation, the proposal creation process, and relevant prior experiences. The midpoint focus groups probed on implementation, adaptation, context, and the skills involved in academic change-making. Focus groups are particularly useful in this research as they reveal individual and collective reasoning, allowing the researchers to gain insight into relationships among team members [4].

Data Analysis
We utilize an abductive analysis approach, a qualitative methodology that moves recursively between the data and theory-building while centering new or contradictory findings [5]. The initial emergent codes were re-calibrated through comparisons to the theoretical literature around team formation throughout the coding process. Specific attention was given to surprising and unanticipated findings, as these anomalies create space for theory building [5]. Each transcript

was read three times and coded on the second and third reads using NVivo qualitative data software. The coding scheme included parent codes such as building on prior work, team building, project formation, transparency and outreach, confidence in team, and sources of external support. Through the abductive analytic approach, analytic memos were written to draw connections between the emergent codes and Kotter's characteristics of a guiding coalition. Memo writing allows the researcher to identify patterns in the emergent codes and to investigate the implicit meanings and underlying assumptions within the data [6].

Results
Results are organized around Kotter's characteristics of a guiding coalition and how teams experienced these elements of team formation at both the baseline and midpoint.

Position power
Discussions of position power during the baseline focus groups emphasized drawing from multiple organizational roles and institutional constituencies. Teams described strategies for selecting co-leaders in ways that spread membership in the core team across different ranks, including designated faculty leaders and "run-of-the-mill" faculty. By the midpoint focus group, several teams had (or were preparing for) core team members change their organizational roles. A few of the PIs had moved into new positions at their respective institutions. When the PI made a vertical move (i.e., into an administrative position), teams were able to capitalize on the increased position power. For example, one PI noted that, "Last year because of my [new position], we were able to get institution-wide visibility and support." Other teams mentioned ramifications from Co-PIs moving out of faculty leadership roles. For one team, this drew out new, deeper participation from faculty. Another team planned to use dislocating team members' authority to shake-up a power imbalance between the team members and the rest of the faculty. Other teams experienced changes in administration at their institutions that were external to their RED team (e.g., a new president, provost, or dean). These teams were challenged with creating common goals with the new administrators without fully compromising the goals of their project. As one team member explained, "We have a new program chair this year, so he's very excited, but we also have to be careful and making sure that the agenda of our mission and our revolution, if you will, isn't just what the chair wants to happen in the programs."

Expertise
During the baseline focus groups, teams discussed expertise as a consideration when they were thinking strategically about who to invite to the core team and as key skills that were getting their projects started. Team members were selected in order to gather certain types of expertise or mixtures of expertise, including expertise in change-making and expertise in broadening participation in STEM. Team members based many of their evaluations of their own or others' expertise on how their project built upon their prior work. For example, one social scientist explained, "Organizational change within university settings has been most of my career, so it is near and dear to my heart." Teams thought they chose well and identified how their colleagues were already putting their skills and experiences to use. One PI remembered that, in early meetings, their team's education researcher said their initially ideas were "not gonna be revolutionary enough, so [the researcher] provided initial stimulus to really structure our imaginations and be as creative as possible and think about what we could do." A Co-PI assessed

their team's progress thus far by saying, "I would attribute a lot of that [the Social Scientist's] skill—she is good at engaging people and having deeper conversations."

Just as the RED grant mechanism requires a department chair/head (or equivalent) to be the PI on the grant, the mechanism also requires that each RED team includes at least one education researcher and one social science or organizational change expert. When reflecting on the different roles among team members, participants at the baseline often noted that these distinctions felt blurred. As one education researcher explained:

> I think we're figuring out exactly what our roles are—of our evaluator, our social scientist, our education specialist. It's not bad or problematic, but we realize that it needs to be done. Because those lines aren't necessarily clear, and maybe they shouldn't be all that clear, because the data collected, and the analysis, and the work of those three people is pretty intimately linked.

We found variation across the teams around how much intention was given to the types of expertise required by their respective projects when the teams were initially forming. Some teams recognized specific needs at the outset and sought out people to fill specific roles; often, this meant seeking out people they had not previously worked with and asking for referrals through their networks. Some teams highlighted that they had complementary skillsets among their team members, while a few teams noted specific areas of expertise that were shared by all team members. For example, one team member observed during the baseline focus group, "Sometimes, there is a part of the project and there is not only one person who is an expert, and I think that is something... we have expertise [that] we can share. I think that makes us a strong team." Other teams expressed that they did not know which skills they would need but felt confidence in their team regardless. For example, one team member stated during a baseline focus group, "This is another example of things we don't know how they will be implemented, but there is a capable team. We aren't worrying about whether we have an explicit skill set. We are relying on the collective power of the group."

At the midpoint focus groups, RED teams reflected that the grant mechanism requirements to have education researchers and social scientists were quite useful, including in ways they were not able to anticipate at the outset. In addition to improving their understanding of these distinct roles, participants were also likely to recognize gaps in the expertise on their teams. For example, multiple teams incorporated students on to their core team when they realized the importance of engaging with a student perspective. One team member recounted:

> [O]ne of the things that we realized is… as a project we need resources through students, and we want to support students… So that's been really helpful for us to be able to bring students on not just to serve as a resource but also to have them think about how they can structure research around the many topics that were focused on in this project.

As the RED teams progressed in their projects, they continued to improve their understandings of the types of expertise most needed by their project and adjusted their core teams accordingly.

Credibility
Discussion around the credibility of the change team during the baseline focus groups occurred less frequently than discussion about the other characteristics of a guiding coalition. When

credibility did surface in these discussions, it was around the topic of how the current project built upon work that the team members had previously engaged in. That is, their past work on change projects not only gives them expertise, as noted above, but also helps to build their credibility with others at their institution.

At the midpoint focus groups, teams discussed engaging in activities that built the credibility of the project, such as incorporating feedback from stakeholders, updating their messaging, connecting to industry partners, or realigning their goals with faculty interests. One team learned that students attached negative connotations to one of the pedagogical changes the team was implementing. This team decided to shift their messaging to focus on the bigger purpose of their change project in order to avoid students' negative perceptions. Another team had organized faculty working groups. When this team encountered a new question from the faculty about how beneficial one of their changes would be, a faculty working group assessed faculty opinions and provided recommendations about how to proceed. Both teams took action to adjust stakeholders' perceptions of the worthwhileness of their projects and alleviate concerns.

Leadership
As with position power, during the baseline focus groups the RED team members tended to look to the PI for leadership. For example, one team member expressed confidence in their PI's leadership, saying:

> [Our PI] has been a leader through fairly large administrative changes... [They]
> put a lot of emphasis on maintaining a positive culture throughout those changes.
> I think that we've benefitted having a strong leader to guide us through what has
> been a lot of changes.

Some teams, however, looked to an individual who was not the PI to provide leadership to drive the change; this was especially true when a person other than the PI organized the team or led the initiation of the project. For example, one team member commented about a non-PI leader, "I've been impressed at how [they have] been building this out and being intentional, and [they are] working brick by brick. I've been impressed at [their] leadership on the different angles we have to work." Regardless of who they were looking to, at the time of the baseline focus groups, the vast majority of RED teams looked to one individual team member as providing leadership for the change project.

By the midpoint focus groups, team members were more likely to discuss others on their team as well as themselves as serving in leadership roles in the change process. For example, in discussing the role of messaging in creating a vision to drive change, one team member stated:

> So we have a person, [a social scientist], who has constructed messaging for us so
> that we could have meetings that were productive with key players in the college,
> so we could make sure that the messaging was appropriate for the people that we
> were trying to bring on board.

As in this quote, team members used their expertise to take on leadership roles in driving change. Similarly, PIs were found to often engage in leadership tasks that were specific to their leadership position. One PI explained that recently, "I talked with department heads at the department head meetings. I've reached out to one of them. I'll be attending their faculty meeting, to hear their vision and goals."

In discussing leadership, Kotter noted that teams need both leaders and managers—he saw leaders as driving the change process while managers keep the change process under control [1]. However, at the midpoint focus group, individuals in project manager roles on their respective teams were also engaging in leadership activities and driving the change process. A project manager exemplified this:

> I've been engaging by getting out and building personal relationships. I've moved to [a new department], and that move has helped foster new relationships. Some people weren't even here until the last year. I've been talking with one faculty member about how to bring more humanities into engineering; I've been talking to another faculty member about bringing global context into engineering. They are very willing to do things like that… I've made relationship links between specific faculty.

As described in this quotation, relationship building was seen as a key element to driving the change process and thus as essential to leadership. While management responsibilities tended to fall to one or two members of a team, the vast majority of team members engaged in leadership roles by the midpoint focus group.

Trust
At the baseline, there was variation across the teams with the amount of trust that had already been established among team members. Some teams had extensive working relationships with each other prior to their RED projects and thus had trust already built-in to their work. Other teams spent time early on in their grants to build trusting relationships with one another. One of the teams that had few prior working relationships among their team members conducted team and trust building activities. They described it as:

> We had a team building pasta-making dinner at my house. [The team member who is at another institution] was here in August. And the whole team was also all at the [departmental] faculty retreat. It is important to have face time with faculty and staff… We are building our relationships as a team as the work is unfolding.

As teams continued to work together, they encountered new hurdles to trust. During the midpoint focus groups, teams discussed the transition from understanding that they each brought expertise to learning how to connect across different sources of expertise. One team member observed that "with any inter-disciplinary group, sometimes there's a bit of a learning curve, and learning how to understand each other's language and perfect it." This person thought their team had faced "challenges" with interdisciplinary communication but that the team had "learned to navigate that." A member of another team affirmed that they felt their voice was valued by team members, but they still wondered, "To what extent can I really be free to voice my full opinion on something…? Our levels of power and status are different to the point where I'm not likely to share the full extent of my feelings in this [focus group] setting." Building and maintaining trust within the guiding coalition is an ongoing process.

Common goal
At the baseline, teams varied with respect to how common goals manifested in their work. For most of the teams, the common goals were derived from prior work that was conducted by team members. However, sometimes the prior work was specific to one or two individuals rather than

the entire team. For some of the teams, the goals were set by one or two individuals, while other teams took the time to co-create their goals through a sharing vision process [7].

We also found variation in the extent to which the common goals were established with stakeholders beyond the core RED team members. In some cases, the entire department was included in the proposal writing process and thus the common goals were co-created together with many stakeholders. In other cases, the proposal was written with only a few core team members and so those outside the team were not aware of the goals when the grant was funded. Teams took different amounts of time to share the common goals with additional stakeholders (faculty, staff, students).

At the midpoint focus groups, all of the teams described a process of shifting or refocusing their goals. As additional people became involved with the project and ideas were tested out, teams found that they had to revise their goals in order to drive action around the interests of stakeholders. One of the engineering education experts shared,

> [One] of our approaches is to do things that are driven by faculty interests… But, over time we have come to realize what the faculty is interested in. So, that's a change, getting more clear around what kinds of challenges faculty care about and will want to tackle.

Teams used community building activities such as town hall meetings, campus visits, and faculty workshops to acquire feedback and input on their goals from stakeholders. Teams responded to this feedback on their goals in a variety of ways. Some teams decided to shift their goals to accommodate the feedback, whereas other teams tried to find ways to incorporate faculty into their pre-existing goals, without changing their goals at all. In these cases, it could be said that the teams had goals, but they weren't as "common" as would have been ideal.

Discussion
By comparing team experiences in the early stages of the change process with Kotter's guiding coalition characteristics, our analysis builds on the literature by examining how these characteristics manifest in real life change projects. The results presented in this paper connect Kotter's framework to practices used by RED grantees, thereby providing useful context and examples for building effective change-making teams within higher education.

We find that each of the characteristics of a guiding coalition continue to grow and evolve over time. Credibility, for example, is not simply established at the outset of the project by assembling team members with good reputations; building and maintaining credibility is an ongoing process. Similarly, power and expertise are not always equivalent to a senior position within an academic hierarchy. This finding stands in contrast to Kotter, who wrote that, "in the most successful cases, the coalition is always pretty powerful — in terms of titles, information and expertise, reputations and relationships" [8, p.62]. Our research showed how some teams brought in people whose power came through their lived experiences rather than their job title. As noted in the expertise section of the results, RED teams were increasingly likely over time to incorporate students on to their core team—students are powerful experts because they have access to other students, specific types of expertise, and unique views and experiences. While the student team members do not have traditional positional power, they were highly valued by their teams.

Interpersonal dynamics are one key item we found missing from Kotter's guiding coalition framework. In Kotter's description of guiding coalitions, he doesn't attend to the role of interpersonal dynamics among team members, beyond the importance of trust. Past and present relationships, and their corresponding interpersonal dynamics, underlie and amplify all of the characteristics of a guiding coalition. For many teams, prior working relationships allowed team members to recognize each other's expertise from the beginning and also built trust in leadership, both among team members and among stakeholders. At the beginning of a project, prior working relationships also served to build credibility for their team, as team members had already established a track record of success. For many teams, their RED project built upon their prior work and thus these prior working relationships also served as a foundation for setting common goals.

A final lesson learned is how teams came to see themselves as more of a network rather than a hierarchy. Over time, the teams have shifted from relying primarily on one individual (typically, the PI) for leadership and delegation to each team member serving as a hub for their expertise, connections, and skills. A relevant example from this research is how the project managers were undervalued at the baseline but were praised at the midpoint focus group discussions. Project managers in particular serve as central hubs for their team network and thus become increasingly important to their teams as the project progresses.

These findings are limited to the early stages of the change process, as our data was collected over the first two and a half years of the RED projects. Further research is needed to investigate how teams will continue to experience the characteristics of a guiding coalition as they shift and change throughout their change process. These findings are limited to data collected from the RED team members; it is beyond the scope of this project to collect data from individuals external to the team, though that would increase the validity of the findings. Next steps for this research include disaggregating our analysis to investigate how contextual differences across teams impact the team formation processes—while some of these differences emerged in our initial analysis, further investigation is warranted.

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