

Collective Impact in the CIRTL INCLUDES DDLP: Lessons Learned

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To learn more about the CIRTl INCLUDES pilot initiative, please visit our website:
<https://cirtlincludes.net/>



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University of Texas at Tyler

The CIRTl INCLUDES Design and Development Launch Pilot

Improving undergraduate science, technology, engineering, and mathematics (STEM) education is a national priority (PCAST, 2012). Social and structural inequities continue to plague higher education, resulting in a low proportion of first generation, underrepresented minority, low-income, and transfer students majoring in STEM disciplines as well as to the decreased likelihood of graduation (NAS, 2011; NCES, 2013). Poor teaching is often cited as a major contributor to this problem (PCAST, 2012; PKAL, 2002; Singer, Nielson, & Schweingruber, 2012). Despite decades of reform efforts, many faculty members have not adopted evidenced-based teaching practices (Austin, 2011; Kober, 2015). There is an ongoing need to prepare more graduate students (future faculty) as effective, future postsecondary teachers (Austin, Campa, Pfund, Gillian-Daniel, Mathieu, & Stoddart, 2009; Bouwma-Gearhart, Millar, Barger, & Connolly, 2007; Gillian-Daniel, 2008; Mathieu, 2013).

Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science (INCLUDES) is a comprehensive initiative from the National Science Foundation to “enhance U.S. leadership in science and engineering discovery and innovation by proactively seeking and effectively developing science, technology, engineering and mathematics (STEM) talent from all sectors and groups in our society” (NSF, 2018a). The CIRTl INCLUDES design and development launch pilot (DDLP) was formed to build the foundation for a national cross-sector alliance to increase the learning, persistence, and completion of historically underrepresented undergraduate students in STEM disciplines (i.e., women, underrepresented minorities, individuals with disabilities, and non-traditional students) across the entire higher education landscape, and thereby to increase their contribution to the U.S. STEM enterprise (CIRTl INCLUDES, 2018).

The mission of the CIRTl INCLUDES DDLP was to develop STEM faculty, for all sectors of postsecondary education, able to use and adapt evidence-based, inclusive teaching, mentoring and advising practices that yield increased success of students from underrepresented groups (URG) (see <https://cirtlincludes.net>). To build such a national STEM faculty, the pilot pursued three mutually reinforcing strategic goals:

Strategic Goal 1—Deepen the preparation of *all* future STEM faculty in evidence-based teaching, mentoring and advising practices that promote URG undergraduate success.

Strategic Goal 2—Expand and strengthen faculty preparation specifically for 2-year colleges, where many URG students have their first STEM undergraduate experience.

Strategic Goal 3—Target the preparation of future URG STEM faculty for effective teaching and mentoring, contributing to earlier success across the spectrum of their early-career responsibilities.

Introduction

Decades of higher education change initiatives have focused on isolated components of much larger and complicated systems (Henderson, Beach, & Finkelstein, 2011). Calls for improvement in undergraduate STEM instruction (e.g., PCAST, 2012; National Academy of Sciences, 2007; National Research Council, 1999, 1995; National Science Foundation, 1996) launched major efforts focused on identifying evidence-based teaching strategies, yet largely ignored the other systemic factors that support or hinder faculty members' adoption of such practices (Austin, 2011; Fairweather, 2009). In response, scholars and practitioners alike have advocated for a systems reform approach that relies on educational institutions, funders, and change-minded organizations to coordinate their efforts to produce large-scale change (e.g., Coalition for Reform of Undergraduate STEM Education, 2014). Thus, collaborative, multi-institutional and multi-sector partnerships are becoming more ubiquitous mechanisms in higher education change initiatives at local, regional, national, and even international levels.

The National Science Foundation's INCLUDES initiative is one example of an effort to develop multi-institutional and multi-sector work designed to advance collaborative and coordinated change to broaden participation in STEM majors and degree completers. Conceptually, the NSF has developed a collaborative framework to frame how such coordinated change can occur within and across 69 design and development launch pilot (DDL P) projects and now five major alliances (NSF, 2018ab). The CIRT L INCLUDES DDL P adopted the Collective Impact framework (Kania & Kramer, 2011) as the collaborative model to guide its work.

Collective Impact consists of five major components: (1) a common agenda, (2) shared measurement, (3) mutually reinforcing activities, (4) continuous communication, and (5) a backbone organization (Collective Impact Forum, 2014; Kania & Kramer, 2011). Although empirical research on Collective Impact is still emerging, there are anecdotal and case-based findings to support its efficacy in advancing change (Spark Policy Institute & ORS Impact, 2018), as well as areas of challenge (Millward, Cooper, & Shumate, 2016). Furthermore, the principles and dimensions of Collective Impact run parallel to other important social innovation and reform approaches such as those found in community psychology (Foster-Fishman, Nowell, & Yang, 2007), networked improvement communities (Bryk, Gomez, Grunow, & LeMahieu, 2015), communities of practice (Wenger, 1998), and improvement science (Lewis, 2015). Thus, in many ways, Collective Impact is a constellation of principles and practices deemed empirically necessary for engaging complex stakeholders in coordinated and successful systems change.

The ***purpose of this report*** is to discuss how Collective Impact was implemented and measured during the first two years (Preskill, Parkhurst, & Juster, 2014) of a particular change initiative, the CIRT L INCLUDES DDL P, and is not to review or dissect the multiple facets of Collective Impact. We hope the reader learns from our case study and takes away important lessons learned about implementing the early stages of Collective Impact and the implications for other complex change initiatives.

Conceptualizing Collect Impact

Drawing upon ideas from networked improvement communities (Bryk et al., 2015) and improvement science (Langley, 2009), the Collective Impact lead for the project, Bennett Goldberg (Northwestern) created a framework (See **Figure 1**) to guide Collective Impact (CI) activities in the project. CI is traditionally defined in terms of a set of goals and activities, and lacks an aligned basis in values and principles. This CI framework was created as a modified logic model with foundational principles on the far left and their potential impact in the far right of the figure below. If a project embraces the principle of *alignment*, for example, then the impact is that *Partners move forward rapidly and effectively because goals, strategies and metrics are aligned*. The CI framework bridges the principle and its impact by noting the rationale (motivation), and then listing a high-level set of actions necessary to achieve the principle and hence impact. The actions, of course, need assessment and we assessed both the action/outcome and the process. The CI framework highlights four core principles: alignment, communication, collective decisions, and continuous improvement. Each principle has a corresponding action (or actions), an assessment question determining if the action occurred, an assessment question investigating how it occurred, and a desired impact statement.

Figure 1: CI Framework

<i>Principles</i>	<i>Rationale</i>	<i>Action</i>	<i>Assessing action</i>	<i>Assessing process</i>	<i>Impact</i>
Alignment	<i>Ensure a common understanding across diverse organizations</i>	Goals	Are goals common?	How were common goals reached?	<i>Partners move forward rapidly and effectively because goals, strategies, and metrics are aligned.</i>
		Agendas	Are there single agendas?	How was the agenda created?	
		Strategies	Do strategies align with goals & metrics?	How were strategies defined and revised?	
		Indicators	Are data and indicators common?	How were metrics defined?	
Communication	<i>Ensure open dialogue, conflict resolution, participation, and collective decision making.</i>	Principles	Are there agreed upon principles?	How were the principles created?	<i>Cross-sector organizations and partners share information, leading to a shared understanding.</i>
		Mechanisms	Are the mechanisms consistent with principles?	How were the communication mechanisms created?	
		Data Sharing	Is there deliberate data sharing, with active review?	How was deliberate data sharing developed?	
Collective Decisions	<i>Collective decision making supports mutual trust, buy-in, and commitment to mission.</i>	Process	Does the decision process support open dialogue, participation, and belonging?	How was the decision making process created, revised, and agreed upon?	<i>Partners reach collective decisions, have broad participation</i>
Continuous improvement	<i>Improved programs through intentional reflection and data exploration.</i>	Improvement cycles	Do cycles reflect strategies and are based on data outcomes?	How were cycles of improvement developed?	<i>Improvement cycles are implemented, projects advance based on outcomes of metrics.</i>

As the project advanced, social equity become a greater aspect of the Collective Impact approach. Project leadership explicitly sought to create an inclusive, equitable, and multicultural organization within a Collective Impact lens. Each of the principles found in **Figure 1** grew to incorporate inclusivity and equity. For example, were decision-making processes not only collective, but were they responsive to potential power dynamics that might prevent all voices from being heard.

Implementing Collective Impact

We utilized five primary strategies to implement a Collective Impact approach in the CIRTLL DDLP project. These included: defining CI and key terms, practicing CI principles (as a whole group and within strategic goal groups), advancing social equity, communicating across strategic goal teams, and engaging in improvement cycles.

Defining CI and Key Terms

For nearly all project members, Collective Impact was a new term and approach to advancing STEM education reform. We spent considerable effort to define CI, clarifying the meaning of key terms (e.g., mutually reinforcing activities), and striving for consensus on how CI would be embedded in the project. In the beginning, members of the initiative interpreted key concepts and elements of CI differently, which prevented an immediate application of CI. We developed the CI Framework above in response to these challenges, designing it to reflect the language and mores of higher education in the US. Even after the initial consensus-making, definitional activities continued into the second year as the need arose to further clarify what we meant by terms such as diversity, equity, and inclusion. Overall, it was paramount to work as a community to build a common vocabulary and common understanding (even within different contexts) regarding key project terms and CI components.

Practicing CI Principles

During project meetings (online and in-person), activities were designed to engage project members in smaller components of CI. For instance, at our first in-person Summit meeting, each strategic goal group was tasked with exploring the development of a shared agenda, rooted in a common understanding of the problem addressed by the project. In another meeting, we focused on mechanisms for continuous communication across strategic goal groups. Project groups also worked to define potential common metrics that could be used to track progress. In short, project members incrementally worked on smaller components of CI instead of trying to address and integrate all of CI at the same time.

Advancing Social Equity

At the first Summit in-person meeting, just after the opening address framing the project by the lead PI, a participant and senior national leader stood up and challenged everyone in the project, especially its leadership, to expand and develop their individual knowledge and skills around diversity, equity and inclusion as a fundamental prerequisite to advance the project's goals. This prompted additional conversations at the first retreat within strategic goal groups, as well as follow up conversations among the leadership team. In response, we planned and implemented a social equity retreat that allowed project staff to explore their own biases, identities, and perspectives related to advancing diversity, equity and inclusion. In addition, this important realization sparked a culture shift within the project to strengthen its resolve for regular feedback from project members to project leadership and even opened up leadership

team meetings to all project staff. While there was still work left to be done to transform the CIRTLL DDLF into a multicultural organization (Cox, 1991), project leaders and member were conscientiously trying to develop an equitable and inclusive organizational structure and climate, which worked synergistically to strengthen CI principles.

Communicating Across Strategic Goal Teams

Given the size and scale of the CIRTLL DDLF project that included more than 40 organizational and institutional partners across the U.S. (<https://cirtllincludes.net>), it would have been easy for individual strategic goal groups to remain isolated in their particular work and responsibilities. In fact, one of the major challenges of the project was to develop continuous communication across these groups. To counteract this, updates across groups were built into project meeting spaces and regular attempts were made to connect different strategic goal groups on potentially parsimonious activities. For instance, in one meeting activity, a developing list of desired faculty competencies were vetted among the entire project, including community college colleagues to see how such competencies played out in different institutional contexts. Other attempts included asking (via a survey) how project members would like to learn about other strategic goal group activities and embedding strategic goal group representatives in other teams.

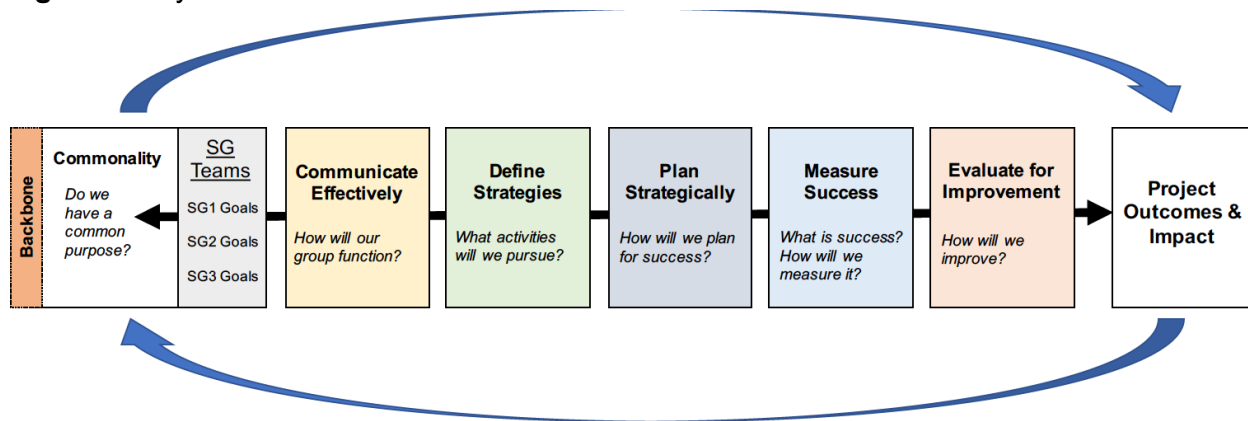
Engaging in Improvement Cycles

Lastly, we strove to use data to inform decision-making in the CIRTLL DDLF project. For instance, the research and evaluation teams collected data regarding collective impact processes at the first Summit in-person meeting and presented findings to the leadership team, which advanced and enriched decisions to strengthen the social equity aspect of the project. In addition, other project-generated data was used in improvement cycles. For example, a strategic group launched a large survey of community college STEM faculty (Savoy, J.N., & Hill, L.B., 2018) to better understand their career pathways and teaching professional development so as to inform programmatic and intervention activities. Another strategic goal group launched a needs assessment survey (Hill, Maher, Thomas, 2018) among graduate students and postdocs and likewise used the results to inform their strategies and activities. Overall, the project, and individual strategic goal groups, attempted to use data to drive project improvement.

How We Measured Collective Impact

Rooted in the project's Collective Impact Framework (See **Figure 1**), the evaluation team designed early-stage performance measures to gauge the progress of implementing Collective Impact both across the project and within each strategic goal group. Using a developmental evaluation approach (Patton, 2011) to help project members understand if the project was “on track” (Preskill, Parkhurst, & Juster, 2014), we organized our evaluation of Collective Impact into six key areas as indicated in **Figure 2**: commonality, communication, strategies, strategic planning, measuring success, and improvement.

Figure 2: Key Evaluation Questions



Survey Metrics

The following survey questions and items were created and implemented in surveys of project members of the CIRTl INCLUDES DDLP across three time points to measure progress using a collective impact approach. Surveys were administered at the end of the first in-person, CIRTl INCLUDES Summit meeting ($n = 48$), at the end of the second Summit meeting ($n = 35$), and in the fall of 2019 ($n = 39$), after the project ended.

The survey items were selected to address the six key areas found in **Figure 2**, both at the project level and among specific strategic goal groups. At the project level, we used an agreement scale to determine if particular features were believed to be present in the initiative. At the strategic goal group level, we used a scale to track the development of core CI constructs within their teams. For both levels, we framed questions and items to match the development stage of the project, rather than focusing on outcomes that would be out of the scope for a two-year project. Following the social equity retreat, an item was added to the project-wide CI question to measure project member perceptions of the project functioning as a multicultural organization. For the final survey, we altered the questions and items to capture where participants believed the implementation of CI to be at the end of the project.

Table 1: Project-Wide CI Metrics

Collective Impact Metrics for the Project as a Whole	
<u>Survey Question:</u>	<ul style="list-style-type: none"> To what extent do you agree with the following statements about the CIRTl INCLUDES project as a whole?
<u>Likert Scale:</u>	<ul style="list-style-type: none"> I don't know, strongly disagree, disagree, somewhat agree, agree, strongly agree
<u>Survey Items:</u>	<ul style="list-style-type: none"> The project is focused on a common problem. The project has shared goals. There is a clear plan on how project members will communicate and collaborate. Project decisions are made collectively. Strategic goal groups coordinate with one another. Project-wide strategies are defined. Project-wide success metrics are defined. There is a clear plan to collect and use data to drive project improvement. CIRTl INCLUDES is a multicultural organization

Table 2: Strategic Goal Group CI Metrics

Collective Impact Metrics for Strategic Goal Groups	
<u>Survey Question:</u>	<ul style="list-style-type: none"> Please indicate where you think your strategic goal group is currently at in accomplishing the following aspects of Collective Impact.
<u>Likert Scale:</u>	<ul style="list-style-type: none"> I don't know, we have not started this yet, we are beginning to discuss it, we are making progress, we are almost there, we have accomplished it
<u>Survey Items:</u>	<ul style="list-style-type: none"> We agree on a common problem. We have shared goals. We have identified how we will communicate and collaborate. We communicate effectively. We make decisions collectively. We have identified strategies to accomplish our goals. We have made action plans on how to accomplish our goals. We have defined what success will look like when we achieve our goal(s). We have identified metrics to measure our success. We have a clear plan to collect and use data to drive strategic goal team improvement.
<u>Survey Question:</u>	<ul style="list-style-type: none"> To what extent do you agree with the following statements?
<u>Likert Scale:</u>	<ul style="list-style-type: none"> I don't know, strongly disagree, disagree, somewhat agree, agree, strongly agree

Survey Items:

- We know how the goals and activities of our strategic goal group fit within the CIRTl INCLUDES project as a whole.
- We have received sufficient support from the CIRTl INCLUDES leadership team to do the work of our strategic goal group.

Additional Data Collection

In addition to closed survey items, we asked open-ended questions to gauge participants' perceptions of CI, their engagement in it, and to elicit honest feedback about its effectiveness in framing the collaborative project. **Table 3** contains examples of qualitative survey questions we used. In addition, the evaluation team observed and participated in project meetings on a regular basis and collected documents both at the project- and strategic goal group-level to triangulate findings with survey results.

Table 3: Open-ended CI survey questions

Questions
Describe an activity during the meeting when you applied a collective impact approach. What were the outcomes of that activity?
What is the most exciting aspect of the CIRTl INCLUDES project for you? How has this changed since the beginning of the project?
What are 2-3 things we can do, as a project, to move CIRTl INCLUDES towards a more inclusive organization?
What are 1-2 things that are going really well in your strategic goal group? What are 1-2 things that could be improved in your strategic goal group?
What do you want to learn about the work of other SG teams at the Summit? What would be the most productive ways learn about their work?
What do you think were 1-2 of the major accomplishments of the CIRTl INCLUDES pilot project as a whole? What do you think were 1-2 of the major challenges or <i>difficulties</i> encountered in the CIRTl INCLUDES pilot project as a whole?
What were the major strengths of using the <i>Collective Impact</i> approach for the work of the CIRTl INCLUDES pilot project? What were the major limitations of using the <i>Collective Impact</i> approach for the work of the CIRTl INCLUDES pilot project?
In what ways did the use of the <i>Collective Impact</i> approach influence how your strategic goal group accomplished its work?

Lessons Learned

Value of Collective Impact

Members of the CIRTl INCLUDES DDLP reported excitement and enthusiasm for the project, citing that it consisted of an “outstanding team of educators with diverse backgrounds [and] experiences,” that it “forged relationships across the country,” brought “together disparate groups to address a significant problem” (including a “strong community college presence”), and “refined our understanding of collective impact.” Many individuals were optimistic about the utility of the Collective Impact approach as it “help[ed] us to focus on a particular approach and group of strategies to use so we would all share a common language” and “supported transparency and accountability.” Ultimately, “using the collective impact approach identified key activities and points in the project that we needed to pay attention to in order to work together collaboratively [and] provided a roadmap and benchmarks for our work.” Project members felt that they “truly came together to discuss our collective goals and work towards collective impact.”

However, project members also reported challenges associated with building a complex change organization and utilizing a Collective Impact framework. For instance, one individual discussed how, “it was very challenging trying to build a new organization, founded in inclusivity, amidst varying organizational and stakeholder types, aspirations, goals, interests, and capacities, all within a resource scarce environment.” Others felt that Collective Impact was “at times confusing to implement,” complicated, and there was often “too much emphasis on process.”

Below, we report the lessons learned from implementing a Collective Impact approach in our INCLUDES DDLP, focusing on successes and challenges identified in the evaluation data.

CI Takes Time and Commitment

Collective Impact takes a considerable amount of time, due to the multi-faceted nature of project goals, diverse partners, and the need to “navigate and understand different perspectives.” CIRTl INCLUDES DDLP project members often mentioned the “2-year timeline, which compressed many of the [CI] processes we were trying to develop.” Many felt that there was “not enough time to dig into important issues” and that not all areas of the CI framework could be addressed with equal attention. This is congruent with the findings of the Spark Policy Institute and ORS Impact (2018) and the guidance for evaluating collective impact (Preskill, Parkhurst, & Juster, 2014).

Furthermore, as depicted in **Table 3**, perceptions of Collective Impact processes within the project varied across the two-year timespan. Generally, project members rated CI higher after the first in-person meeting, reduced their rating at the end of the second in-person meeting (over six months later), and then increased their rating again at the end of the project. This suggests that project members may over-inflate their perceptions of CI progress early on in the project, making it unlikely to see simple, linear growth curves on CI-related metrics. This

appears to indicate that projects such as our DDLP experience similar phases of “storming and norming” (Tuckman, 1965) that shape how CI develops within the project.

Lastly, we also found that strategic goal groups within the project drew on and implemented CI in different ways and at varying intensities and speeds. For instance, **Table 4** shows the internal CI metrics for Strategic Goal Group 2 at the same time intervals as the full project group. Strategic Goal Group 2 had much less pronounced ups and downs in comparison to the full group (**Table 3**) and in some cases demonstrated more incremental progression. For instance, agreeing upon a common problem at the project level started at an average of 4.33 at the first Summit meeting, went down to a 3.70 at the second Summit, and then back up to 4.16 at the end of the project. In contrast, agreeing upon a common problem in Strategic Goal Group 2 went from 4.33 to 4.22 to 4.7 respectively.

Overall, Collective Impact processes are germane to the specific context of the change initiative, each process advancing at different rates. As the complexity and number of partners increase, so does the time it takes to develop commonality and group processes to achieve collective change.

Table 3: Project Level CI (5-point agreement Likert scale).

	Summit 1	Summit 2	Project Conclusion
	<i>n</i> = 42	<i>n</i> = 27	<i>n</i> = 32
The project is focused on a common problem.	4.33	3.70	4.16
The project has shared goals.	4.12	3.89	3.94
There is a clear plan on how project members will communicate and collaborate.	3.10	3.15	3.41
Project decisions are made collectively.	3.81	3.26	3.44
Strategic goal groups coordinate with one another.	3.45	3.11	3.25
Project-wide strategies are defined.	2.93	3.78	3.50
Project-wide success metrics are defined.	2.38	2.81	2.94
There is a clear plan to collect and use data to drive project improvement.	2.74	2.96	3.28
CIRTL INCLUDES is a multicultural organization	-	3.26	3.47

Figure 4: CI Metrics from SG2 (5-point agreement Likert scale).

	Summit 1	Summit 2	Project Conclusion
	<i>n</i> = 18	<i>n</i> = 9	<i>n</i> = 10
We agreed on a common problem.	4.33	4.22	4.70
We had shared goals.	4.11	4.33	4.80
We implemented a common means for communication and collaboration	3.50	3.78	4.40
We communicated effectively.	4.11	3.89	4.20
We made decisions collectively.	4.28	4.33	4.10
We used specific strategies to accomplish our goals.	3.44	4.00	4.20
We developed action plans to accomplish our goals.	2.89	3.22	4.10
We defined what success would look like when we achieved our goal(s).	2.72	3.22	4.10
We developed metrics to measure our success.	2.78	3.33	4.00
We collected and used data to drive SG2 team improvement.	2.44	3.00	4.10
We had well-defined ways to coordinate with other SG groups.	1.78	2.33	3.50

CI Requires Resources

Sufficient resources of personnel time, effort, and funding were required to implement a Collective impact approach. Project members were pleased with what they were able to accomplish with limited fiscal resources, as elaborated in the following quote:

I think the largest and most important accomplishment was how the project was able to get diverse stakeholders together to work towards common goals with a VERY limited budget. It is something short of a miracle of what we were able to accomplish with 300K, which speaks to the dedication of pilot members, most who worked on the project for free.

This quote, and our experience in the project, demonstrates the importance of intrinsic and extrinsic (i.e. rewarded) motivation and that resources are not solely fiscal in nature. For instance, intellectual capital was seen as very important, although there were “lots of great minds that didn't get fully tapped; busy people whose time/focus was difficult to access.” Project members cited time to be another important resource since there was often “not enough time or support to do the work.” Others mentioned technologies such as Trellis, Google Drive, and listservs, all with their particular strengths and challenges in supporting the work of the project. Lastly, some discussed the need for a more “formal backbone [organization] to promote the level of cross-team communication that CI requires.” In summary, we found that implementing

Collective Impact required intrinsic and extrinsic motivators and fiscal, intellectual, technological, and organizational support resources.

CI Requires Sustained and Meaningful Interaction

Consistent group interaction, both as a full project and within strategic goal groups, was crucial to successfully implementing our Collective Impact approach. The leadership team spent considerable time and effort to bring the project together through in-person meetings and online collaborative spaces (e.g., teleconference software, Google drive), especially in attempting to make connections between strategic goal groups. Many felt “fortunate to meet colleagues with similar interests and goals” and build their professional networks. Interactions were very collegial and project members reported great satisfaction with their newfound project community. Project members were able to build a sense of community over the two years and began to discuss group norms and expectations.

However, despite considerable efforts, cross-project communication was cited as one of the largest challenges during the 2-year pilot period. Project members mentioned how the complexity and “size of the collaborative made sharing...and common understanding of goals across SGs challenging.” Even finding a time for regular meetings proved difficult, given the busy schedules of project members, especially across strategic goal groups. In addition, as most interactions occurred online, some found “communicating and revising plans over wide geographic areas through electronic media cause[d] a disconnect in the content being understood clearly by all involved.” In short, although “we worked hard to engage other teams,” there was considerable work left to do at the conclusion of the project to expand and build synergistic connections across the various complex elements.

CI Sits at the Intersection of Multiple Organizational Cultures

The project included many different types of stakeholders, representing a diverse set of organizations (research intensive universities, community colleges, national associations, etc.) with different goals, resources, priorities, and socialized practices. Each partner organization has its own institutional logics, which are “socially constructed, historical patterns of cultural symbols and material practices, including assumptions, values, and beliefs, by which individuals and organizations provide meaning to their daily activity, organize time and space, and reproduce their lives and experiences” (Thornton, Ocasio, & Lounsbury, 2012, p. 2). The individuals representing their organizations in the CIRTl INCLUDES DDLP had to recognize and navigate institutional logics from their own organization, those from partnering organizations, and the newly emerging reform-oriented organization (i.e., the DDLP). Thus, the CIRTl INCLUDES DDLP was indeed an intersection of many organizational cultures with project members trying to carve out a new organizational identity for the project.

The development of a new organizational identity was not without its challenges and difficulties. For instance, one project member stated,

[The strategic goal groups] had three very lofty goals across a large group of individuals from multiple organizations and perspectives. We struggled often with these different perspectives and didn't always get to those that we wanted to engage with. It's truly hard to 'wrangle' everyone and get people on the same sheet of music.

In addition, the project was firmly rooted within an existing large national Network (CIRTL), meaning that “newcomers to the network had a steep learning curve and found the need to dedicate considerable amounts of time to understand the intricacies of the project.” For some, the existing infrastructure and organizational culture of CIRTL at times overshadowed other perspectives and partner organizations, though project leadership of the CIRTL INCLUDES DDLP frequently tried to compensate by attempting to move the project towards a more inclusive organization (see below). Furthermore, other project members noticed that “each [strategic goal] team operated as their own organization essentially, so it was Collective Impact not only as a project but within teams, creating additional complexity of how to align and reinforce many different change activities and stakeholders.” While the project leadership team recognized this fact, they were not intentional enough about the CI approach to accommodate it fully. Project members mentioned how “trying to establish plans of action that work at the various institutions which suit the culture and practice at the institutions and yet can be measured and tracked and fed into the larger set of data is challenging,” suggesting that the implementation of project interventions are likewise complicated by diverse stakeholder engagement. Lastly, in the process of working to weave together multiple organizational cultures, some project members were unclear about their role in the project and how they were supposed to contribute. In the subsequent NSF INCLUDES Alliance ASPIRE project, we have implemented a collective decision-making framework, as well as specifically addressed individual roles and responsibilities to address this challenge.

Beyond partner organizations’ institutional logics and the formation of a new multi-sector organization, underlying assumptions and grant requirements of the National Science Foundation influenced the project. We found that the traditional NSF PI-led model was sometimes at cross-purposes with implementing the Collective Impact approach. A classical PI grant project has defined structures, deliverables, and timelines. As noted above, Collective Impact takes time, time that scales with the project’s size and complexity, a factor that did not fit within the two-year timeline of the pilot grant. This timeframe and the knowledge that the next step was to submit a proposal for an Alliance created both an emphasis on preparing for the Alliance proposal and a concern about project members’ investment of time in the work (i.e., the project could end at the end of the pilot project period). Both concerns potentially decreased the time that could have been devoted to building CI processes. While the NSF INCLUDES program seeks to increase ingenuity and creativity via Collective Impact processes, existing structures may limit progress. Thus, “to fully embrace systems change, funders must be prepared to see how their own ways of thinking and acting must change” (Kania, Kramer, & Senge, 2018).

CI Requires Careful Attention to Equity and Inclusion

During the first in-person Summit meeting, a well-respected, national leader stood up and challenged the group to not only advance equitable practices in STEM education reform but to directly confront systems of oppression through our own training as reflective and inclusive practitioners. This comment led to the development of a social equity retreat for project members to explore their own identities, biases, and beliefs to better inform their work on project activities. The retreat was pivotal in helping project members learn and discuss how diversity, equity, and inclusion could be infused into the day-to-day work of the project. In addition, the retreat helped project members and leadership reflect upon how diversity, equity, and inclusion was occurring within the project and explore ways to build the CIRTl INCLUDES DDLP into a more inclusive and multicultural organization, which is congruent with principles of Collective Impact. Project members noted that “Collective Impact forced us to continually reflect on the inclusiveness of our process” and “allowed diverse voices to be heard and then channeled towards a common goal.”

However, as indicated in **Table 3**, there was still much work to do in becoming a multicultural organization. While extremely rewarding in advancing Collective Impact in the project, we found that pursuing organizational equity and inclusivity across diverse stakeholders and institutions took a lot of time with respect to defining key terms (e.g., what do we mean when we say diversity), creating mechanisms for project members to speak their mind, and identifying and implementing processes that subvert classical hierarchical organizational structures. We made progress but acknowledge that more time and commitment would be needed to further develop an inclusive and equitable organization.

CI Requires Effective and Inclusive Leadership

Directly related to the other lessons learned above, we found that implementing Collective Impact required dynamic leadership that could respond to desires for increased inclusivity and equity while at the same time, advance the project to meet goals, deadlines, and commitments. For instance, project members talked about collective decision-making that project leadership attempted to build, despite historically engrained PI structures. One individual said,

[Collective Impact] increased the feeling of inclusivity and reduction of hierarchy. Though we know that reporting lines, PI-ships and such still exist[ed], it still felt safe and welcoming to provide suggestions, contribute ideas, etc.

Others talked about how CI “democratized some processes [and] required skill development around listening to voices and explaining activities and rationales for decision options. Individualistic leaders had to grow in patience.” In addition, project members believed that “weekly meetings established regular and open communication, collective decision-making, and a focus on the overall project’s goals.”

Yet, despite positive advancements, others on the project voiced several concerns with leadership structures and processes. Some mentioned that, at times, the project felt “hierarchical and top-driven rather than participatory,” that there was not “enough leadership by

diversity officers and experts and people of color,” and that existing leadership pathways prevented “input from others.” These challenges were strongly linked to classical organizational structures of PI-led grants that the project worked hard to address. One project member summarized such concerns,

Since we started from a typical academic hierarchical organization, we struggled to apply collective impact and to work towards an inclusive team. Voices were silenced, structures were not flat, and there was a lot of folks who felt marginalized and excluded.

Ultimately, continued work is needed to conceptualize and build a leadership structure that empowers project members to achieve collective impact.

These lessons learned are part of the continuous learning and adaptation (Preskill, Parkhurst, & Juster, 2014) that are central to CI. The data we collected during this two-year project will help us to conceptualize the future work that will move the project to improved use of CI processes. The lessons also speak to the larger development process whereby change organizations such as the CIRTl INCLUDES DDLP must grapple with existing organizational structures, processes, and perspectives and transform into something new, which requires time, resources, meaningful interaction, and the integration of an inclusive and equitable mindset and operating ethos.

Recommendations

Overall, we found Collective Impact to be an effective conceptual collaborative framework for beginning to develop a complex, multi-institutional and multi-sector higher education change project. Though we felt the need to augment the framework with other bodies of literature (e.g., networked improvement communities, improvement science), CI proved to be a strong foundation for the initial stages of this project. During the two years of our CIRTl INCLUDES DDLP project, we learned six core lessons: CI takes time and commitment, CI requires resources, CI requires sustained and meaningful interaction, CI sits at the intersection of multiple organizational cultures, CI requires careful attention to equity and inclusion, and CI requires effective and inclusive leadership.

Recommendations for Other Collective Impact Projects

1. CI Takes Time and Commitment

- a. Be strategic and realistic about the time it takes to build a common agenda, develop mutually reinforcing activities, and other CI elements.
- b. Be comfortable with the discomfort of the pace and challenges of Collective Impact processes within the change project.

2. CI Requires Resources

- a. Seek multiple types of personnel and structural resources in advancing the change goal of the project.
- b. Examine and engage the various types of resources each partner organization can offer to the project.

3. CI Requires Sustained and Meaningful Interaction

- a. Provide regular opportunities for project members to come together to network, work on project tasks, and build synergies.
- b. Build clear and concrete ways for sub-groups to coordinate and collaborate.

4. CI Sits at the Intersection of Multiple Organizational Cultures

- a. Examine the underlying institutional logics and assumptions of partners to inform organizational functioning of the change project.
- b. Develop “new” organizational norms and structures for the change project.

5. CI Requires Attention to Equity and Inclusion

- a. Provide mechanisms for open and transparent communication around social equity issues.
- b. Identify hierarchical and non-inclusive organizational structures and work to “flatten” them to involve more project members.

6. CI Requires Effective and Inclusive Leadership

- a. Recruit diverse leaders with complimentary backgrounds.
- b. Regularly examine leadership structures and processes for ways to grow and improve.

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Collective Impact Metrics

The following survey items were created and implemented in surveys of project members of the CIRTl INCLUDES DDLP across several timepoints to measure progress using a collective impact approach. Survey items were developed by Lucas Hill (University of Wisconsin-Madison) and Judy Milton (University of Georgia).

Project-Level

Survey Question:

To what extent do you agree with the following statements about the CIRTl INCLUDES project as a whole?

Likert Scale: I don't know, strongly disagree, disagree, somewhat agree, agree, strongly agree

Items:

- The project is focused on a common problem.
- The project has shared goals.
- There is a clear plan on how project members will communicate and collaborate.
- Project decisions are made collectively.
- Strategic goal groups coordinate with one another.
- Project-wide strategies are defined.
- Project-wide success metrics are defined.
- There is a clear plan to collect and use data to drive project improvement.
- CIRTl INCLUDES is a multicultural organization

Strategic Goal Groups

Survey Question:

Please indicate where you think your strategic goal group is currently at in accomplishing the following aspects of Collective Impact.

Likert Scale: I don't know, we have not started this yet, we are beginning to discuss it, we are making progress, we are almost there, we have accomplished it

Items:

- We agree on a common problem.
- We have shared goals.
- We have identified how we will communicate and collaborate.
- We communicate effectively.
- We make decisions collectively.
- We have identified strategies to accomplish our goals.
- We have made action plans on how to accomplish our goals.
- We have defined what success will look like when we achieve our goal(s).
- We have identified metrics to measure our success.
- We have a clear plan to collect and use data to drive strategic goal team improvement.

Survey Question:

To what extent do you agree with the following statements?

Likert Scale: I don't know, strongly disagree, disagree, somewhat agree, agree, strongly agree

Items:

- We know how the goals and activities of our strategic goal group fit within the CIRTl INCLUDES project as a whole.
- We have received sufficient support from the CIRTl INCLUDES leadership team to do the work of our strategic goal group.

Collective Impact Survey Metrics

Evaluation Component	Project-Level Survey Item	SG-Level Survey Item
<i>Common Purpose</i>	I think the project is focused on a common problem	We agree on a common problem
<i>Common Purpose</i>	I think the project has shared goals	We have shared goals
<i>Common Purpose</i>		We know how the goals and activities of our SG fit within the CIRTl INCLUDES project as a whole
<i>Communicate Effectively</i>	I think there is a clear plan on how project members will communicate and collaborate	We have identified how we will communicate and collaborate
<i>Communicate Effectively</i>		We communicate effectively
<i>Communicate Effectively</i>	I think strategic goal groups coordinate with one another	We have established ways to coordinate with other SG groups
<i>Communicate Effectively</i>	I think project decisions are made collectively	We make decisions collectively
<i>Define Strategies</i>	I think project-wide strategies are defined	We have identified strategies to accomplish our goals
<i>Plan Strategically</i>		We have defined what success will look like when we achieve our goal(s)
<i>Plan Strategically</i>		We have made action plans on how to accomplish our goals
<i>Measure Success</i>	I think project-wide success metrics are defined	We have identified metrics to measure our success
<i>Evaluate for Improvement</i>	I think there is a clear plan to collect and use data to drive project improvement	We have a clear plan to collect and use data to drive SG team improvement
<i>Backbone</i>		We receive sufficient support from the CIRTl INCLUDES leadership team to do the work of our SG.

