An Examination of Social Capital in the Elevate Project Using Social Network Analysis
INTRODUCTION

From the time the Elevate project was conceived, its success was always understood to be dependent on many factors. Some of these factors were within the realm of control of Essential Skills Ontario (project design, project management etc.) while many others were outside its control (the economy, capacity of employment/skills development agencies, number of food processing plants etc.). The ability of the contracted local training organizations to connect to people and resources in their local communities was a key factor in the success of the project. The local training organizations were expected to execute the work of the project through a combination of staff involvement and, to a large extent, by tapping into other resources outside their organization.

The local training organizations were responsible to execute many aspects of the project; recruiting participants, delivering training /wrap around supports and finding food processing partners. Their ability to connect to local resources external to their organization was understood as central to the success of Elevate from the outset. The request for proposals (RFP) clearly asked applying organizations to provide details of their connections to local employment and social service agencies and local food processing companies. The presence or absence of these connections in the proposals was an important factor in selecting the successful training delivery organizations; arguably the most important in deciding who would do this work.

If local resources beyond the contracted training delivery organizations were important to the success of the project, then can visualizations and analysis of the various organizations and individuals who participated in the project help us understand the role of networks in the success of the project? Each group of local people and organizations that worked on local cohort can be understood as a network (the people and organizations involved in the project through direct connection with the training delivery organization or someone connected to it.) By applying the methods of social network analysis (SNA), we hope to learn something about the nature of the networks at play in two of the training cohorts.

NOTES ON METHOD

The decision to use social network analysis (SNA) to evaluate the role of social capital in Elevate came late in the project. As a result we were limited in the kinds of data we could collect and use. Had SNA been a component of evaluation from the outset we would have likely employed a number of surveys throughout the period of the project, focussed on the relationships between those involved in the work. This would have allowed us to understand the whole network from multiple points of view and also to track the changes to the network over the period of the project (longitudinal analysis). Due to timing, this kind of surveying wasn’t feasible and we had to look at other options.

We explored using email records (to and from) as a data source to perform SNA. Email records detail the connections between the members of a network and they are an accepted data source for SNA. We quickly discovered that we only had access to small subset (only those emails sent to ESO) of the total emails, resulting in skewed data – this process might have worked had we done this from the beginning and instructed those involved to save all correspondence. Again timing prevented us from perusing this method.

Our chosen method to gather data was to interview project leads responsible for two of the cohorts. We chose these two organizations based on the following criteria:
1. They are very similar organizations in both structure and mandate: both are publicly funded colleges.

2. The individuals we interviewed were both at the centre of the work, providing the leadership and coordination for their organization’s Elevate efforts.

3. Both individuals work for a similar part of their organizations (contract training).

4. Both organizations were involved in the project from the earliest stages, having been selected during the original RFP process.

The two organizations (cohorts) differed in that they are geographically distant from one another, one in Woodstock Ontario and the other in the Quinte Region of Ontario.

The data gathering process was a two-step one; an interview followed by the project leads to provide additional information electronically.

In the interviews we asked the respondents to list all the people and organizations that were involved in their local efforts. We prompted them to think about all phases of the work and to include people that even had peripheral involvement. Their answers were recorded by the interviewers and the rough draft was sent back to the respondent to edit or add names. In addition to the names of the people and organizations we asked them to provide the following information:

- Name of organization (for individuals)
- Type or Phase of Involvement (Recruitment of Participants, Food Processor Relations, Training Delivery, Wrap Around Support, Job Placement)
- Level of Involvement (Low, Medium, High)
- Nature of Relationship to the Respondent (Knows Very Well, Knows Moderately Well, Knows Somewhat, Met in the Context of the Project)

Once we had the complete list of all of the names we asked the respondent to identify the relationships between the people they identified. We instructed them with the following:

*To your knowledge, prior to the Elevate project, these two people:*

1. work or worked for the same company, government agency or not for profit organization

2. You are aware that they have worked together on other projects (as partners, or collaborators, or as hired consultants etc.)

3. These people have a close personal relationship - family members, close friends.

In asking them to identify relationships in this way we were looking to get data that would reflect the network that existed prior to the Elevate project allowing us to examine the network that each lead organization brought to the project.
LIMITATIONS OF POSSIBLE ANALYSIS

Because our data has been collected from one individual from each lead training organization we are limited in the kinds of visualizations and analysis we can perform. Had we been able to gather data about the network from multiple people we would have been able to create much larger visualizations and done different types of analysis. Data collected from all network members (or a high percentage) gives us a view of the whole network from multiple viewpoints. The data we have in this case is from the viewpoint of one person and we can assume that their knowledge of the relationships between the other people in the network may not be complete. We also don’t have data about whom else that the respondent wasn’t aware of who may have participated in the project.

WHAT WE HOPE TO BETTER UNDERSTAND

In order to begin the work on the local Elevate cohorts, both project leads contacted people internally (other employees of their respective colleges) and externally (in their communities). By sending email, making phone calls and having meetings, each project lead was in fact leveraging their personal social capital in order to get the work done.

Through SNA can we shed light on the social capital that was present in each cohort. There are many different definitions of social capital but they generally fall into two groups, binding and bridging. Binding social capital is roughly understood to be the social forces that hold groups together such as ethnic or religious communities. Bridging social capital are the social connections to people different from an individual who may have access to other resources. A good definition of social capital for our purposes is:

‘the process by which social actors create and mobilize their network connections within and between organizations to gain access to other social actors’ resources’ (Knoke 1999, p. 18) ¹

We should note that this is not an analysis of the individual respondent’s personal social capital. Clearly both respondents have many relationships that are not identified here (friends, family, etc.). What we are attempting to understand is how they used their available social capital in the execution of the work.

The specific networks are analyzed by examining the following:

- Its size (number of people involved)
- Diversity (Homophily or Sameness and Heterogeneity) of the network
- The make-up of those at the core of the network / project
- The brokerage roles of both respondents in order to understand the degree to which they connected parts of the network to get the work done.
SOCIAL NETWORK GRAPHS (MAPS) AND ANALYSIS

There are two main ways that SNA can transform raw relationship data into information useful for evaluating social capital; graphs (maps) and metrics.

Maps are visual representations of networks. Maps help us to get an overall picture of the relationships present in a group of people. They are useful to identify clusters (subgroups) within a network and they give us a sense of the network’s cohesion (density of relationships). By layering non-relational information into the maps such as the age, gender, location or organizational affiliation, we begin to understand the diversity of the network and how well different types of people are integrated.

Metrics deepen our understanding of the network and the individuals inside it. Metrics can provide us with network characteristics such as density (the percentage of possible ties that exist) for example. Statistics can also focus on individuals to explain their position and role in the network.

BASIC NETWORK MAPS

The following two maps show the networks as defined by the project leads from both contracted training organizations. The project lead is represented by the square at the centre of the map. Each of the coloured boxes represents a person (node) identified by the project lead as either having a medium or high level of involvement in the work of the project. The colour of the node indicates the type of organization that node works for.

Figure 1: Woodstock Cohort, High and Medium Level of Involvement by Organization Type

- Lead Organization
- Social Services
- Food Processing Company
- Other Industry
In the Woodstock cohort, the lead organization and social services each make up roughly 39% of those that are involved at either a medium or high level. Food processors make up an additional 16.5%. The Woodstock cohort is heavily weighted toward the lead organization and those from the social services subsector.

Figure 2: Quinte Cohort – Ego Network, High and Medium Level of Involvement by Organization Type

In the Quinte cohort those working for food processing companies represent 35.5% of the network, and are the largest group, followed by the lead organization at roughly 21% and social services at 14.5%. The number of people identified as having a medium or high involvement in Quinte is 48 versus 18 in Woodstock. In addition to the much higher involvement of the food processing industry in Quinte, roughly 29% of the network is comprised of those from economic development, government, police and other non-profit (these groups are not present in Woodstock). Hence, organizational diversity in terms of subsectors within the network in Quinte cohort is much greater than the network in Woodstock.
NETWORK COMPARISON SUMMARY

<table>
<thead>
<tr>
<th></th>
<th>Size of Network</th>
<th># of Subsectors</th>
<th>Most Represented Subsector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quinte</td>
<td>48</td>
<td>4</td>
<td>Lead Org / Social Service</td>
</tr>
<tr>
<td>Woodstock</td>
<td>18</td>
<td>7</td>
<td>Food Processors</td>
</tr>
</tbody>
</table>

NETWORK CONNECTIONS PRIOR TO ELEVATE PROJECT - UNDERSTANDING THE ROLE OF THE PROJECT LEADS

The next two maps represent the same subset of people (those with high and medium involvement) with the additional variable of the perceived relationships between them prior to the work of the Elevate project. These maps represent the networks in each cohort as they are understood by the project leads.

Figure 3: Woodstock Cohort – Network with Relationships (Perceived), Medium and High Involvement

In the Woodstock network there are two distinct clusters, one being the lead organization and the other those from the social services subsector. The social services cluster is highly dense (most of the possible relationships between people in the cluster are present). Generally
information flows are fast and efficient in dense clusters and people inside them are aware of what is happening. The lead organization cluster is somewhat less dense and the project lead acted as a connector to people within the organization. The remaining nodes have either single point of contact into the network or none at all.

In addition to the network map a statistical measure was also performed. This measure or metric is called betweenness centrality and it measures the number of times a given person (node) appears on the shortest path between two other nodes in the network. Imagine if you were walking the network went from every node to every other node along the shortest path possible. The number of times each node appears along that shortest path is what gives us the betweenness centrality score.

A highly “between” individual within a network can also be understood as having the potential to act as a broker within the network, that is connecting people that otherwise would not be in contact in order to move the work forward.

As suspected the project lead has the highest betweenness centrality score at more than 6 times the mean score for the whole network. This tells us that the project lead connected many people within the network that otherwise would not have been connected.

Figure 4: Quinte Cohort - Network with Relationships (Perceived), Medium and High Involvement
The Quinte map above looks quite a bit different than the equivalent Woodstock map. Here we see at least 4 distinct clusters. The two clusters of light blue nodes each represent a food processing company and all the people within those clusters are co-workers, which explains the density of connections present in each. The cluster of pink nodes represent the social service subsector and include some people from the same organization along with a few other working similar organizations.

The central cluster is diverse. It is dominated by people employed by the lead organization, but also contains those working in the police, government and economic development subsectors. The same betweenness centrality metric was run on the Quinte network and again the project lead had the highest score. In Quinte the project lead’s score is nearly 18 times higher than the mean score for the whole network. The high betweenness centrality score suggests that the project lead from Quinte also held a key role in the network by bridging many people in the network that otherwise wouldn’t have had a connection.

While both project leads played brokerage roles in their networks, the relatively higher score of the Quinte project lead had a greater potential to connect disparate parts of their network by introducing people or sharing information between clusters.

VIEWS OF THE SOCIAL CAPITAL PROJECT LEADS BROUGHT TO THE PROJECT

In order to better understand the social capital that each project lead brought to the work of the Elevate project another set of maps were created. These maps show all nodes involved in the cohort, regardless of their level of involvement (high, medium and low). They are coloured based on the project lead’s characterization of their relationship to that individual; close connection, moderately close connection, weak connection or met during the project. In asking the project leads to characterize the nature of their relationships, we hoped to better understand the relationship between closeness to the project lead and level of involvement. Additionally we hoped that these maps might tell us which type of relationships were responsible for connections to others, (for example were those people closest to the project lead making connections with people unknown to the project lead).
In the above map, the project lead is coloured green. Those people identified as either having a high, or medium level of involvement were either close contacts of the project lead or people she met during the project. It should also be noted that none of the people identified by the project lead were characterized as weak connections (this was an option) and that all those that were characterized as moderately close connections had a low project involvement.

The absence of weak connections and the fact that those people characterized as moderately close had neither strong project involvement nor were able to provide connections to people of use on the project, suggest that the project lead’s closest connections played an important role.

This map tells us that the project lead relied heavily on close connections to both work on the project and also connect her with others. It shows that the project lead leveraged her own close relationships to expand the network in order to meet the needs of the project.

On the edge of the Woodstock cohort are 3 nodes without a previous connection to the network (met during the project) but a high level of involvement, suggesting that the project lead sought...
out project partners outside her own network and did not rely on her own personal social capital or the connections of those in her network.

Figure 6: Quinte Cohort = Network Map – All Levels of Project Involvement by Relationship Type to Project Lead

In the Quinte cohort map we see a wide variety of connection types in the network. Unlike Woodstock, we now find people identified as moderately close connections with medium levels of project involvement. Also unlike Woodstock, the Quinte map has two nodes identified as weak connections to the project lead. In the above map those connections are coloured pink, while moderately close connections are black.

One of the foundational and best known theories in social networks analysis is “the Strength of Weak Ties”. First proposed by Mark Granovetter in the early 1970’s the theory states that the people in our network who are the closest to us are highly likely to know each other and have access to similar knowledge and resources or “run in the same circles”. Granovetter then
proposes that it is the weak ties, or people with whom we have few interactions and may not know well, that have the highest potential to provide important information or resources.²

The Quinte map (figure 6) suggests that Granovetter’s theory is at play in this network. The cluster at the bottom of the map shows a group of highly involved people, in this case a food processing company that participated in the Elevate project. This cluster of people is connected to the project lead by two of its members that are characterized as weak connections (red arrows indicate the weak connections). This important group of people who ended up having a high level of involvement in the project became involved through a weak connection with the project lead.

The cluster to the right of the map shows something similar. This cluster is another food processing company that was highly involved with the project. In this case the project lead is connected to this group through a connection characterized as moderately close. It is through weak (or moderate) ties that the project lead made important connections to vital organizations (food processing companies).

COMPOSITION OF THE NETWORK CORE

The following two charts illustrate the size and composition of the cores of each of the two networks. We define the core as those people that have a high level of project involvement and were identified as close contacts of the project lead.

Chart 1: Woodstock Network - Number of people identified as highly involved in the project and a close connection of the project lead by subsector
There are some strong similarities between the network cores of Woodstock and Quinte. They are similar in size (9 nodes for Woodstock and 12 nodes for Quinte) and both are skewed toward people from inside their own organizations. The Woodstock core is comprised of two thirds internal members and one third from the social services sector. The network core for Quinte is half internal half from 4 other subsectors.

If we compare the core composition in both networks to their whole network maps (charts 1 and 2) we see that what is happening in the core, in terms of diversity, is reflected in the whole network. Both the core and the whole network in Woodstock are dominated by the project lead’s organization and social services. In Quinte the diversity present in the core is reflected in the whole network map, with 5 of the 8 total subgroups represented in the core.

It is also useful to note that in Woodstock 25% of the total network is defined as core while in Quinte it is only 17%. This tells us that on a relative scale, the periphery of the network is considerably larger in Quinte than in Woodstock.

Finally it should be noted that neither network identified anyone from a food processing company as being part of the core (both highly involved and a close connection). This tells us that the project leads have to either leverage weaker connections (Quinte) or acquire brand new
ones (Woodstock). The project lead from Quinte was able to involve a large number of people from food processing; they are the largest group present in the whole network.

**SUMMARY COMPARISON AND CONCLUSION**

Social capital as understood through examining the networks surrounding the project leads in the two cohorts has revealed some key differences.

First is the **size of the network**. The Quinte network has more than two and half times the number of members compared to the Woodstock network. Although larger networks are not necessarily better or more effective, they are more apt to contain redundant skills and resources (multiple people with similar abilities and knowledge). This can be a factor in the success of a project that extends over a long period of time as the need to renew roles within the project arises (people changing jobs, moving away, losing interest). The notion that “many hands make light work” is also a factor in network size; more can be accomplished by more people.

**Diversity of network membership** is another key difference in the two networks. At nearly twice the number of subsectors represented in their network, the Quinte project lead has the potential to tap into the skill, knowledge, resources and connections of a wider variety of people than the lead from Woodstock. Large community focussed projects such as Elevate, with distinct phases of work will benefit from having a diverse base of support that is involved directly (direct actions such as recruiting participants) or act as champions in the community (making connections, providing credibility etc.)

A **diversity of connection strengths within an individual’s network** is also an advantage. As we noted earlier, the presence of weaker connections can sometimes provide access to needed resources that would be unattainable by only working with those closest to the project core. By involving both those who are close and those who are less so, the project lead from Quinte was able to secure the participation of food processing companies, an essential part of the Elevate project.

Finally the **role of the project lead** within the network is different in the two cohorts. Highly between individuals in a network who are aware of the skills and resources of those they are connected to have an opportunity to connect people when the project requires it and move the work forward. Although both project leads were clearly at the centre of their respective networks, the Quinte lead has the opportunity to broker important relationships within the large and diverse network of individuals involved in the project.

Using social network analysis (SNA) we have explored the social capital (the process by which social actors create and mobilize their network connections within and between organizations to gain access to other social actors’ resources) leveraged in two Elevate cohorts. We have examined some of the qualities of the networks in Quinte and Woodstock; the size, the diversity of both the people and the connections and the role of the project lead as a broker connecting others. Through this analysis we have explored the role of social capital in the Elevate project.