UC Santa Barbara

UC Santa Barbara Electronic Theses and Dissertations

Title

An Ethnographic Study of a Developing Virtual Organization in Education

Permalink

https://escholarship.org/uc/item/0rh4d56f

Author

Couch, Stephanie R.

Publication Date

2012-03-01

Peer reviewed|Thesis/dissertation

eScholarship.org Powered by the California Digital Library
University of California

UNIVERSITY OF CALIFORNIA

Santa Barbara

An Ethnographic Study of a Developing Virtual Organization in Education

A Dissertation submitted in partial satisfaction of the

requirements for the degree Doctor of Philosophy

in Education

by

Stephanie R. Couch

Committee in charge:

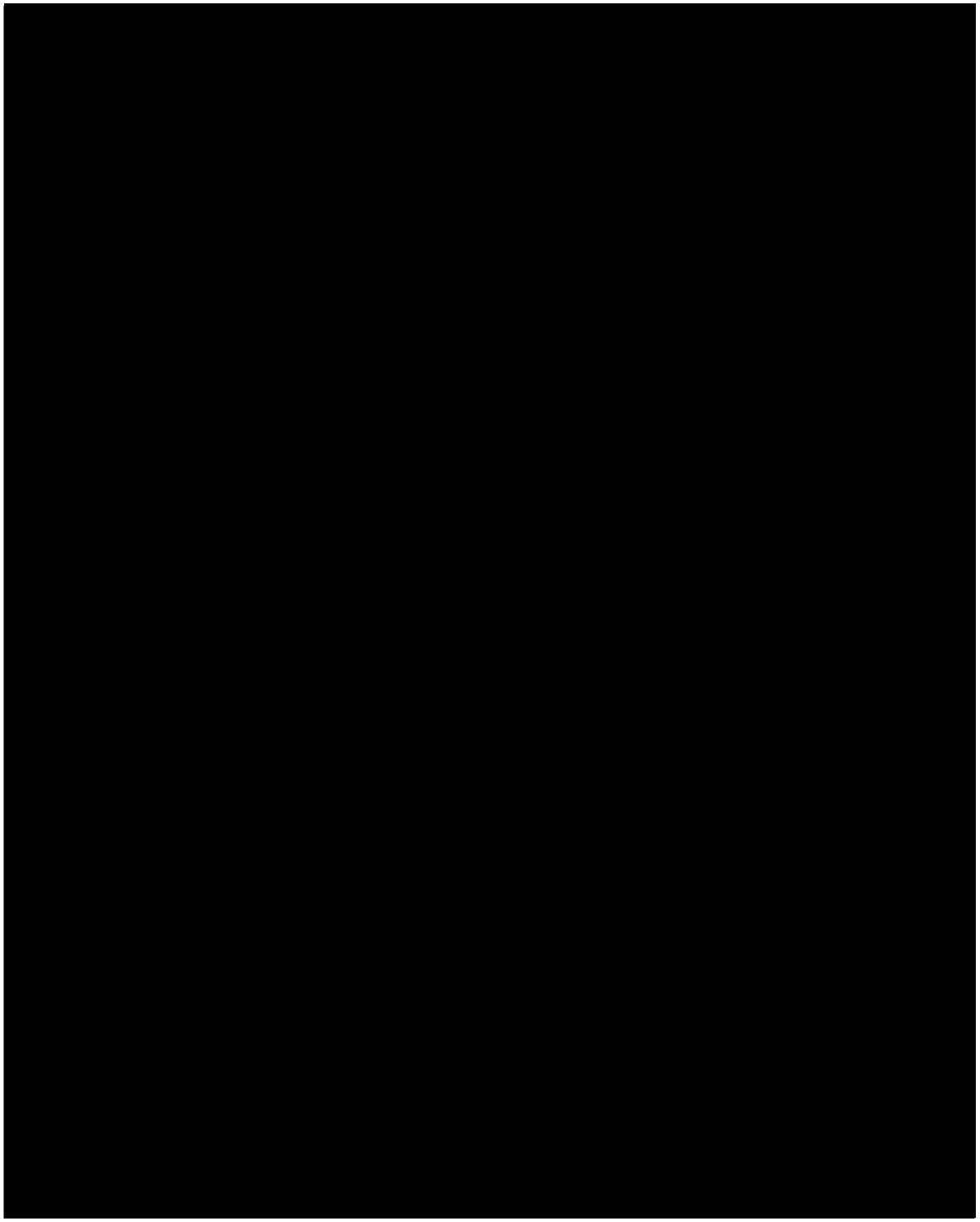
Professor Judith L. Green, Chair

Professor Richard Duran

Professor Michael Gerber

March, 2012

UMI Number: 3507038



An Ethnographic Study of a Developing Virtual Organization in Education

Copyright © 2011

by

Stephanie R. Couch

DEDICATION

To Scott, Jeremy, Benjamin, Jacob, and Valerie for all

of the support you have provided during this journey.

ACKNOWLEDGEMENTS

Innovative work being done by Dr. Judith Green and Dr. Beth Yeager to explore new approaches to teaching and learning enabled by web based collaboration tools originally attracted me to the Gevirtz Graduate School of Education. After being encouraged by these two digital 'pioneers', I enrolled in graduate school with the goal of gaining new insights into ways to assess and talk about the value of such new approaches to teaching and learning. I did not realize at the time how transformative graduate school would be. The opportunity to study with colleagues at the Gevirtz Graduate School of Education has changed nearly every aspect of my life, including the ways in which I now think about personal and professional interactions with others. While the ideas and perspectives that faculty shared during the course of the program helped me think about technologies and their role in education, that singular outcome does not do justice to the wealth of knowledge and insights that I now take with me on my next journey.

Faculty members' willingness to integrate the use of new technologies into the courses they taught so that I could gain first-hand knowledge of the many issues involved in the use of technologies in education was invaluable to the development of my new perspectives on teaching and learning with technologies. I am eternally grateful to professors Danielle Harlow, Michael Gerber, Richard Duran, Judith Green, Carol Dixon, John Yun, and Patricia

Marin for working with me in ways that allowed for the exploration of hybrid learning models. The extra time and effort dedicated to this new way of teaching in order to support my development in a way that aligned with my research interests went well beyond the call of duty.

I am also very grateful to my fellow students who volunteered to support my needs as a distant learner, and to share insights as we reflected on the experience(s) as co-participants in hybrid learning environments. The support and collaboration in both classroom and non-classroom settings, and personal relationships forged along the way, have been amazing. I am especially grateful to colleagues Azure Stewart, Anissa Stewart, Jackie Reid, Anne Emerson, Brianna Aguilar, Katie Nygard, Adam Truxler, Susannah McGowan, Levi Maaia, Kirk Sturm and many others.

During the last phase of the doctoral program, the guidance and support for exploring innovative teams in education provided by Committee Members Richard Duran, Michael Gerber and Judith Green has been of great assistance. Each committee member has offered different yet complementary perspectives on potential directions for such research, and has helped to expand my thinking about the ways to approach research on innovative teams as well as research in other areas of focus.

During this entire process, countless hours of conversations and mentoring sessions by Dr. Judith Green, both my advisor and Committee

Chair, have allowed me to explore a wide range of ideas and possibilities for future work. The time invested by Dr. Green in sharing knowledge, histories, and ways of thinking, knowing and being in the research world is more than an institution could ever expect of its faculty, and more than a student could ever expect of their mentor. It is yet one of many examples of Dr. Green's dedication and commitment to the field of ethnography and education. Moving forward, I am grateful to be carrying a part of Dr. Green's words and ideas with me.

VITA OF STEPHANIE R. COUCH
December, 2011

EDUCATION

2011 Ph.D. University of California, Santa Barbara
Gevirtz Graduate School of Education
Emphasis: Learning, Culture and Technology

2011 M.A. University of California, Santa Barbara
Education

1986 B.A. University of California, Davis
Political Science

PROFESSIONAL EMPLOYMENT

2011 Interim Executive Director, Institute for STEM Education
California State University, East Bay

2009 Deputy Director, Policy, Programs, and Research
California STEM Learning Network

2007 Director, K20 California Educational Technology Collaborative
Butte-Glenn Community College District

2002 Director of Statewide Initiatives, School of Education
University of California, Davis

PUBLICATIONS

2011 Primary author for California's digital literacy policy/plan
See http://esirisrise.appspot.com/www.cio.ca.gov/digitalliteracy

HONORS

2009 Western Interstate Commission on Higher Education's Outstanding Work Award for CAHSEE: *Stepping into Your Future* Team Work

2008 Recognition by the Governor's Broadband Task Force for contributions to the education sections of their report.

2008 CENIC Innovations in Networking Award for CAHSEE: *Stepping into Your Future* Team Work

2008 Technology Focus Award from the CA Community College Board of Governors for CAHSEE: *Stepping into Your Future* Team Work

MEMBERSHIPS

American Educational Research Association (AERA)
International Society for Technology in Education (ISTE)

ABSTRACT

An Ethnographic Study of a Developing Virtual Organization in Education

by

Stephanie R. Couch

This ethnographic study answers calls for research into the ways that virtual organizations (or innovation-driven collaborative teams) form and develop, what supports and constraints their development, and the leadership models that support the organizations' work. The study examines how a virtual organization emerged from an intersegmental and interdisciplinary team in education brought together to conceptualize, develop and implement a statewide hybrid online English language arts and mathematics program for young adults in need of a high school diploma. Participants were dispersed geographically, but they functioned as a coherent unit with the aid of new technologies (or cyber infrastructure) in order to accomplish what no single participant could have accomplished in isolation.

The ethnographic philosophy of inquiry and research methods adopted allowed for the discourse and interactions among participants to serve as a primary 'lens' for examining the organization's development. As empirical data emerged from the study of who was doing/proposing what, with whom, for what purposes, under what conditions, and with what outcomes, theoretical frameworks were drawn upon from research traditions addressing culture

within social groups (such as anthropology, sociology) and traditions examining organizational development, leadership, and the social construction of knowledge.

The study of this telling case revealed that a leader's prior histories with participants allowed an innovative team to form in a short period of time, suggesting that there can be a lasting benefit to collaborative endeavors that end. The person who brought people together (one of many forms of leadership) to discuss the potential collaboration represented one of many leaders. The diverse knowledge and expertise participants brought to the team contributed to the team's work. Research and time invested early on to build common knowledge of the students to be served, the students' challenges, and to co-construct the program's design helped bring the diverse backgrounds and ways of working together to create common knowledge. The dynamic nature of emerging virtual organizations was made visible when factors that supported the team in its first six weeks later constrained the team.

TABLE OF CONTENTS

	Page
List of Figures	xx
List of Tables	xxi
CHAPTER 1: INTRODUCTION AND FOCUS OF THE STUDY	1
Introduction	1
Focus of the Study	2
A Brief Review of Literature on Studies of Virtual Organizations and Innovative Teams	6
Overview of Research Design	14
Questions Guiding My Research on the Origination Phase of an Emerging Virtual Organization	14
Background to the Site for the Study: Contextualizing the Problem Being Addressed by the Emerging Organization	15
The Stepping Program as a Telling Case	20
From Initiator to Ethnographer	23
Overview of Methodology of the Study in Relation to Research Questions	26
Overview of Chapters	30
CHAPTER 2: THE CONCEPTUAL FRAMEWORK INFORMING THE STUDY OF VIRTUAL ORGANIZATIONS AND INNOVATIVE TEAMS	34
Introduction	34

Leaders and Forms of Leadership 34

Organizations and Their Stages of Development 36

The Social Construction of Knowledge,
Prior Knowledge, and Common Knowledge 41

Conclusion 45

CHAPTER 3: ETHNOGRAPHY AS A PHILOSOPHY OF INQUIRY AND AS A RESEARCH METHODOLOGY 47

Introduction 47

Why Ethnography? 47

A Non-Linear Abductive Approach 49

Design of the Study of the Stepping Team's
Formation and Development 52

Participants 52

Team Characteristics 54

Timeframe 57

Three Phases of the Research Undertaken..... 60

- Phase One: The First Team Meeting..... 60

- Phase Two: The Origins of the Project
and Early Development Phase 61

- Phase Three: The Grant Preparation
Phase 62

Logic-In-Use 62

Data Collection..... 66

Corpus of Data 66

Field Notes 69
Head Notes 69

Artifacts 71

Data Analysis..... 72

Methods for Recreating a Day in the Life of a Team: Data Analysis 72

Development of Scripts Of Verbal And Textual Interactions and Analysis 76

Conclusion 95

CHAPTER 4: THE FIRST TEAM MEETING: AN "ORIGINATING EVENT" 96

Introduction 96

"Groupness" and Culture Developing Within the Team 97

Discourse, Intertextuality and the Development of Common Knowledge 105

Non-Linear, Recursive Nature of the Discussions Contributing to the Developing Culture 108

Words of Actors Grounding the Identification and Descriptions of Discursive Acts 116

The Team's Diversity and the Roles of Prior Knowledge and Experiences 121

Team Members And Virtual Participation 123
Conclusion 126

CHAPTER 5: TEAM ORIGINS AND EARLY DEVELOPMENT 130

Introduction 130

Ms. C's Profile and Ways Her "Knowledge Of" and "Knowledge As" Supported the Developing Team 134

Ways Converging Policy Interests Shaped the Work of the Organization 137

The State's New High School Exit Exam Policy 138

The Non-Profit's K20 Telecommunications Network 141

The University's Work with K12 Programs 143

Chains of Actions and Ways Prior Relationships Supported the Developing Team and Virtual Organization 144

Chain of Action #1: Locating a Qualified Grant Applicant..... 145

Chain of Action #2: Ms. C and David Shipman's Recruitment of a Team..... 147

Pattern or Practice of Framing Opportunities with Concept Papers 154

"Bridging" Of Relationships Among Team Members and Evolving Roles 155

Factors Constraining the Recruitment of a Team 160

Key Events, "Leaders" and Forms of Leadership 160

Conclusion 165

CHAPTER 6: THE GRANT DEVELOPMENT PHASE 169

Introduction 169

The Impact of the Face-To-Face Meeting on the Team's Development 172

Factors Supporting the Team's Work 176

Factors Constraining the Team's Work 179

Evidence of the Dynamic Nature of the Emerging Organization 184

Leadership Models, Roles, and Forms of Leadership..... 187

Conclusion 194

CHAPTER 7: IMPLICATIONS OF THE STUDY 197

Introduction 197

Confirmation of Existing Research 197

Confirmation of a New Type of Innovative Team and Virtual Organization that Requires Diverse Knowledge and Expertise..... 197

Confirming Research on Leadership in Innovative Teams and Virtual Organizations..... 201

Contradictions with Existing Research 202

The Spontaneous Emergence of Virtual Organizations 203

What is Left Behind as Virtual Organizations Rise and Fall 204

Grey Areas: Confirmations and Contradictions 206

Stages of Organizational Development and the Dynamic Nature of Emerging Virtual Organizations 206

The Emerging Culture or "Groupness" in a Developing Team 209

Leaders and Forms of Leadership 212

New Findings 213

Diverse Project Oriented Teams Capable of Designing and Launching New Virtual Organizations are Not Built Overnight..... 213

New Forms of Leadership and Leadership Models..... 215

Setting the Stage for the Construction of Common Knowledge and Informed Design Work in Diverse Teams..... 216

Implications for Education Policy, Research and Practice 217

Future Research Directions 219

Limits to the Generalizability of the Findings 220

REFERENCES 222

APPENDICES 231

A. Glossary of Participants Backgrounds, Affiliations and Pseudonyms 231

B. Comparison of PowerPoint and Center Handout 233

C. Chain of Actions During Dr. Beckwith Presentation 235

D. Analysis of Intertextuality During Group Discussion Event #2 237

E. Comparison of Dr. Beckwith's Actions/Sub-Actions to Participants' Actions 240

F. Discussion Topics and Prior Knowledge & Experiences Event #2 242

G. Actions and Roles From January Meeting to Grant Submittal 245

H. Early Participants' Roles (Based On Actions) and Forms of Leadership (Jan.-March) 247

I. Role Comparison First Thirteen Weeks to Last Seven Weeks 248

J. Actions And Sub-Actions of Speakers in Event #2 250

K. Comparison Of Actions During Event #5 to Events #2-4 251

L. Discussion Topics and Prior Knowledge and Experiences Event #3 253

M. Consolidated Profiles of Participants and Their Contributions..... 256

N. Order and Topics of Discussion Event #2 267

O. Order and Topics of Discussion Event #3 269

P. Order and Topics of Discussion Event #4 270

Q. Order and Topics of Discussion Event #5 271

R. Ms. C's History with Inter-Segmental Projects and Project Participants 272

S. Excerpts from Email Records of Ms. C's "Framing" of Opportunities 275

T. Ms. C's Prior Knowledge and Experiences Relevant to the Exit Exam Grant 277

U. Rationale Given for Declining Involvement by Non-Participants 279

V. Key Events in Team Formation (December, 2006 – January 12, 2007) 281

List of Figures

Page

Figure 1 Timeline of the Stepping Program: Relationship of the First Meeting to the Timeline for the Virtual Organization Supporting the Stepping Program 4

Figure 2 Timeline And Event Map of First Team Meeting 59

Figure 3 Graphic Representation of the Non-Linear Flow of Discursive Actions in Events #1-5.....110

Figure 4 Flow Diagram of a Proposed Systems Model 175

Figure 5 Organizational Chart from the Math Grant 189

Figure 6 Organizational Chart from the English Language Arts Grant 190

List of Tables

Page

Table 1 Definitions and Characteristics of Virtual Organizations and New Teams 11

Table 2 Characteristics of the Stepping Program Team 55

Table 3 Logic-In-Use and Relationship Between Theories and Methods 63

Table 4 Summary of Research Data and Methods of Analysis 67

Table 5 Example of Integrated Field Notes, Head Notes, and Documents: Re-Creation of the First Team Meeting (Integrated Notes and Agenda) 70

Table 6 Example of Event Map: Excerpted from event map of first face-to-face team meeting.....75

Table 7 Sample of Scripts Developed from Artifacts and Records of Events 77

Table 8 Sample of Contrastive Analysis of Documents from a Discursive Perspective: Comparison of YB power point and center handout.....79

Table 9 Re-representing Chains of Actions: Listing of chains of actions during Dr. Beckwith presentation.....82

Table 10 Sample of Contrastive Analysis of Referential Choices: Excerpt of analysis of intertextuality during group discussion.....83

Table 11 Sample of Contrastive Analysis of Discursive Actions Across Texts and Participants: Contrastive analysis of Dr. Beckwith's actions/sub-actions to participants' actions.....86

Table 12 Sample of Contrastive Analysis by Topic of Discursive Events.....87

Table 13 Sample of topic and discursive analysis.....88

Table 14 Sample of Analytical Re-presentation: Analyzing roles through analysis of actions.....90

Table 15 Sample of Analysis of Roles and Leadership.....92

Table 16 Sample of Contrastive Analysis of Roles Over Time (leadership roles).....94

Table 17 Event Map of First Face-To-Face Team Meeting 99

Table 18 Semantic Analysis of Discussion of Beliefs During Event #4 101

Table 19 Semantic Analysis of Discussion of Goals for the Grant During Event #4 104

Table 20 Sample of Analysis of Intertextuality During Event #4 106

Table 21 Semantic Analysis of the Diverse Audience 117

Table 22 Semantic Analysis of the Conditions Impacting the Diverse Audience 118

Table 23 Semantic Relationship Analysis of Challenges Facing Learners Based on Dr. Beckwith Presentation. 120

Table 24 Meeting Participants Who Did Not Join the Team 125

Table 25 Identifying an Initial Chain of Action: Analysis of the Initial Discussions About the Grant 146

Table 26 January 12, 2007 Meeting Participant Recruitment and Recruitment of Other Supporters 148

Table 27 Sample of Ms. C's History with Intersegmental Projects & Project Participants 153

Table 28 Relationships and Occurrences of 'Bridging' Efforts 157

Table 29 Early Participants' Roles (Based On Actions) and Forms of Leadership (Jan. – March) 162

Table 30 Early Participants' Roles (Based On Actions) and Forms of Management (Jan. – March) 162

Table 31 Profile for Dr. Beckwith 171

Table 32 Contrastive Analysis of Factors Supporting and Constraining the Work of the Team 177

Table 33 Contrastive Analysis of Roles by Entity in Final Math and ELA Grants 185

CHAPTER ONE
INTRODUCTION AND FOCUS OF THE STUDY

During the last decade roughly two-thirds of the states in the United States have built robust fiber based networks with the dual purpose of supporting researchers in colleges and universities as well as educators' and students' use of online resources and web enabled collaboration tools in college, university and school-based settings. The technical infrastructures that have been built, and examples of how these infrastructures enable collaborative research projects, are the focus of presentations at annual conferences of organizations like Internet2 (http://www.internet2.edu) and the Corporation for Education Network Initiatives in California (CENIC) (http://www.cenic.org).

As someone who has worked for the last decade at the intersection of the cyber infrastructure development, research, and education, what I find at such conferences is a dialogue about the technical aspects of projects (what equipment was used, who installed what, how many bits and bytes moved across a fiber network, strands of fiber and optics) and what the project demonstrated with respect to new technologies. Rarely do I find sessions that describe what the National Science Foundation (NSF) in its recent call for research on virtual organizations as sociotechnical systems calls the "social aspects" of people within virtual organizations.

This new NSF call cites the need to develop understandings of the work of the individuals, organizations, leaders, and others whose collaborative performances and interactions with the technologies bring about the new ways of working in the sciences, in engineering, and in the case of this study, in education. It suggests that our understandings of the social and technical aspects of the work can be enhanced by research into "the life cycles of virtual organizations, including their initial formation, stages of development, and continuous evolution across time and events" (NSF, 2011a).

Focus of the Study

This study examined the early days of a virtual organization (known as the Stepping Program Team, discussed on page 20) formed by educators and individuals with technical expertise to address the educational needs of a particular group of students across a large state. Specifically, as shown in Figure 1 below, the study focused on the first three months of work by a group that was ultimately successful in obtaining funding (i.e. grants 1 and 2) to develop and operate a virtual organization. The success of subsequent grant development work (grants 3 - 6) provided additional resources which enabled the virtual organization to continue to grow and develop over nearly a four-year period. Given the focus of this study on how virtual organizations form and develop, and the desire to look in-depth at who was doing what, for what

purposes, with whom, and with what outcomes during the organization's early stages of development, the study is limited to the team's first three months.

By examining the early days of the virtual organization, this study makes visible the complex work of assembling a group of actors. In this particular case, the actors included representatives from all four segments of education in the state, including K12, community colleges, state colleges, and the university system. Intersegmental teamwork that involves representatives from all four segments of education is somewhat rare in the large state in which the virtual organization formed and developed. The study showed how the unusual team, the grant proposals the team developed, and the roots of the virtual organization that subsequently emerged were socially constructed across a thirteen-week period.

In doing so, the study examined the prior histories and prior knowledge of the individuals, how the different types of knowledge and histories contributed to the developing team, and the ways in which the group conceptualized its work. It explored the roles and relationships of the individuals, the ways in which the roles and relationships changed across time and events, and the factors that supported and constrained the work of the team. By following the threads of the virtual organization prior to the organization's emergence in two written grant proposals, this study informed

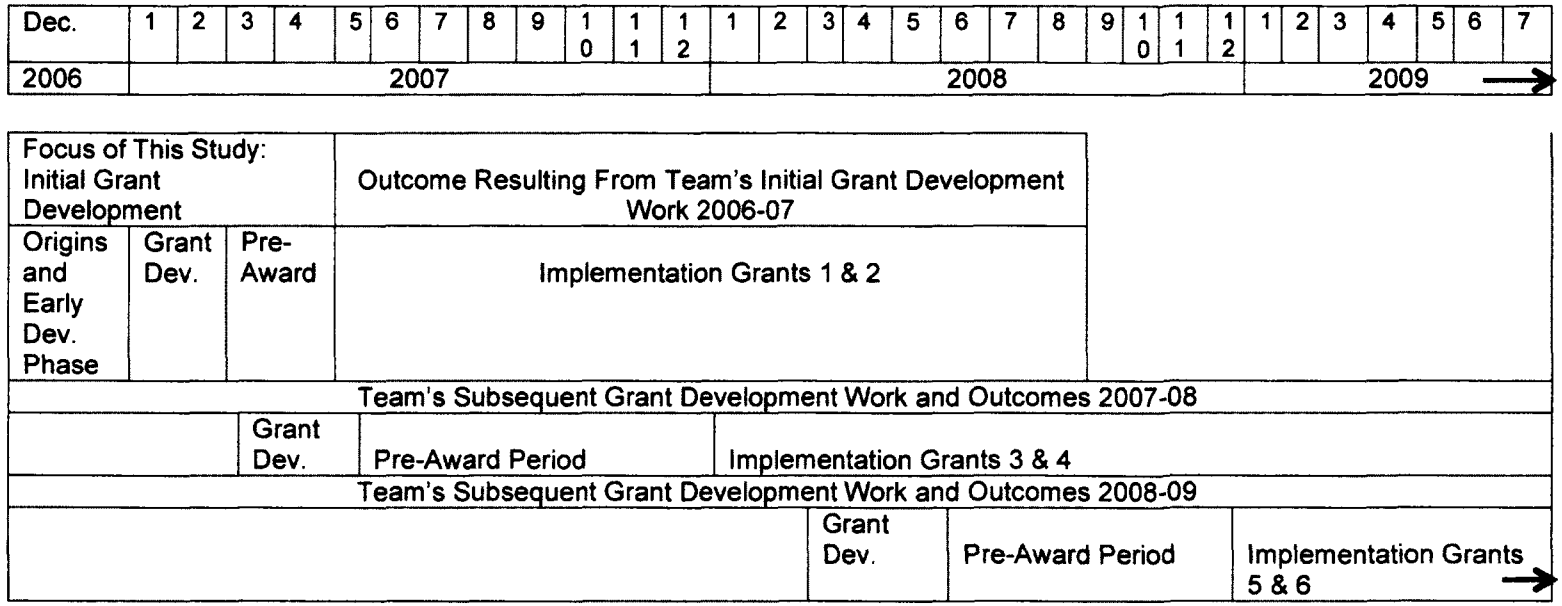


Figure 1. Timeline of the Stepping Program: Relationship of the first meeting to the timeline for the virtual organization supporting the stepping program

understandings of how one group of actors socially constructed a common vision for how the technical dimensions of the new organization would come together with the remaining parts (i.e. the social and academic components).

The study used an ethnographic approach to examine who participated in the new and developing virtual organization, how and in what ways the diverse knowledge and experience of participants contributed to both the organization and its goals, and what the members of the organization accomplished collectively. As part of this approach, the study also examined factors that supported and constrained the recruitment of team members, the types of expertise that needed to be present in a newly forming virtual organization, and how and in what ways the diversity in the knowledge and experiences of team members was drawn upon to create common knowledge that shaped the work of the team. Furthermore, to understand the developing nature of the work of the organization, the study examined the stages of development that the newly forming entity went through, and the leaders, and forms of leadership that supported and constrained the work at different stages of development.

The ethnographic approach employed in this study, therefore, traced developments across actors, tasks, and processes undertaken as part of the work of an award winning project team. In doing so, it identified who counted as part of a virtual organization, how the organization was structured in terms

of the flow of work within and across time and events, and when, how, and in what ways people became members of and participated in the actions of the organization. By framing this study through the use of an ethnographic perspective, the developing virtual organization was conceptualized as a purposefully assembled group of people who engaged with each other to accomplish a particular task or range of tasks.

A Brief Review of Literature on Studies of Virtual Organizations and Innovative Teams

In order to understand how the current study of the initiation and development of a virtual organization was situated in work in the field, I first present a brief review of literature on existing research on virtual organizations and innovative teams. Three bodies of work reviewed for this study provided insights into what is currently known (and not known) with respect to the work of virtual organizations and innovation-driven collaborative teams (Coburn & Stein, 2010; Engeström, 2008; NSF, 2011a; NSF, 2011b;). They also lay a foundation for the need for this study. The findings suggest that there is growing awareness among researchers whose work focuses upon science and engineering, the social sciences, issues of organizational development in business and industry, and education of a new form of collaborative teamwork being enabled by new technologies. However, the ways in which virtual

organizations and collaborative teams form and develop constitutes an unknown (Engeström, 2008; NSF, 2011a; NSF, 2011b;).

The first body of work on virtual organizations that made visible what was known (and not known) about these organizations is represented by publications produced by the National Science Foundation. The NSF publications reviewed describe virtual organizations in relationship to the changing nature of scientists' and engineers' interactions with colleagues around the globe (NSF, 2011a, NSF, 2011b). Like others, NSF's Office of Cyber Infrastructure (NSF, 2011a) attributes the growth of virtual organizations and the related forms of collaborative teamwork to the ubiquity of the Internet and the increasing availability of web based resources and tools. However, the NSF also acknowledges that access to new technology resources and tools is a necessary, yet not sufficient, condition for transforming the day-to-day practices of researchers and educators on a large-scale basis. There is a human or social element which impacts individuals' willingness and/or ability to work in this new way that must also be attended to. To begin addressing "the intertwined social and technical issues" (NSF, 2011a) that impact the development of virtual organizations, the NSF calls for further research.

A second body of work, that of activity theorist Yrö Engeström (2008), provides a historical overview of the forces at work in society at different points in time (starting with the pre-Industrial period) that have

shaped the evolution of the work of teams in business and industry. Engeström's contrastive analysis offers evidence of the rise of new knowledge and innovation-driven collaborative teams. In these new types of teams, product development and production are integrated, and customers are involved in production and product development. Engeström argues that this new approach to teamwork requires collaborative ways of working, especially in knowledge-intensive environments like education. He uses the term "co-configuration" to describe the work of such teams. Co-configuration "relies on adaptive 'customer intelligent' product-service combinations; continuous relationships of mutual exchange between customers, producers, and the product-service combinations; ongoing configuration and customization of the product-service combinations over lengthy periods of time; and active customer input into the configuration" (Engeström, 2008, p. 19).

Speaking metaphorically, Engeström suggests that the ways in which innovation-driven collaboration teams form and develop is analogous to mycorrhizae, or the symbiotic association between a fungus and the roots of a plant. In this metaphor, the fungus provides water and nutrients to the plant, and the plant provides nutrients to the fungus through and within the substrate on which they feed. The potential for growth at any time lies in the substrate. While his description suggests that virtual organizations or collaborative teamwork simply emerges, he calls for further research to uncover additional

details regarding the ways such teams emerge and develop, acknowledging that much more may actually be involved.

In a third body of work, education researchers have also studied the changing nature of the work of teams in education environments enabled by new technologies. They describe, for example, new cross-institutional partnerships and research-practice collaborations in which researchers "working shoulder to shoulder with practitioners ... build, test, and refine interventions in an effort to both improve practice and test and elaborate theoretical principles" (Coburn and Stein, 2010, p. 16; Collins, Joseph, and Bielaczyc, 2004). The work of such teams takes place in an interactive space. Coburn & Stein's research (2010) followed several teams from their original formation, shedding light on issues and dynamics that arise in this new form of collaborative teamwork. However, the published version of their research fails to make transparent the decisions surrounding who was brought together, how actors were brought together, why, under what conditions, and how the joint work was conceptualized and brought into being.

To explore what was common or what differed in the conceptual arguments and research across the three bodies of work, I engaged in a contrastive analysis of the characteristics of virtual organizations found in science and engineering as described by the NSF, innovation-driven collaborative teams identified in business and industry described by Engeström

(2008), and teams in education identified by Coburn & Stein (2010). After contrasting these bodies of work, I compared the common characteristics to the characteristics of the Stepping Program team (the focus of this study), drawn from a review of six evaluation reports (Yeager, 2008a; Yeager, 2008b; Yeager, Hough, et al., 2009a; Yeager, Hough, et al., 2009b; Yeager, Hough, et al., 2010a; Yeager, Hough, et al., 2010b).

To frame this contrastive analysis, I drew upon NSF's (2011a) description of the following common characteristics across the work of virtual organizations: (1) participants are distributed and work across different spaces with participants from different localities and institutions, (2) interactions that are distributed across time (synchronous and asynchronous), (3) dynamic structures and processes at every stage (including use of information and computing technologies), and (4) engagements with technology enabled resources (such as databases, simulations, instrumentation, and analytic tools and services). Table 1 presents this contrastive analysis of definitions and characteristics of virtual organizations as represented by the three bodies of work reviewed.

Table 1

Definitions and Characteristics of Virtual Organizations and New Teams

Name and Definition	Location and Participation	Real Time & Any Time	Dynamic Configuration	ICT Enabled	Engagement with Technology Resources and Tools
Virtual organizations in science and engineering (NSF, 2011a)	Distributed across space, with participants spanning localities and institutions	Distributed across time, allowing synchronous and asynchronous	Dynamic structures and processes at every stage of the organizational lifecycle	Information and communication technology enabled	Engaged with simulations, databases, instrumentation, analytic tools, and services which require interaction among organizational members.
Knowledge and innovation driven teams in business and industry (Engeström, 2008)	Challenges cannot be met through teamwork in the usual sense of small, heterogeneous and informal groups. Product development and	Continuous relationships of mutual exchange between customers, producers, and the product-service combinations	Coordinated interactions spanning a range of competencies and knowledge bases, and that shift constantly accommodating the evolving nature of knowledge projects. Ongoing	Implied	Implied

	production are integrated, and customers are involved in production and development.		configuration/ customization.		
Research design teams in education (Coburn & Stein, 2010)	Researchers, working shoulder to shoulder with practitioners (figuratively).	Evidenced in specific examples.	Building, testing and refining interventions in an effort to improve practice and test and elaborate theoretical principles.	Researchers and practitioners work together in an interactive space to create innovations.	Evidenced in specific examples.
The Stepping Program team in education (Yeager et al., 2008a, 2008b, 2009a, 2009b, 2010a, 2010b)	Distributed across space. Intersegmental. Interdisciplinary. Researchers and practitioners with varying years of experience and levels of technical expertise.	Communication among team members and the program designed relied on asynchronous and synchronous communications	Work adjusted dynamically across time, and the program offerings were revised to reflect users' input (co-configuration).	Work was enabled by a range of technologies.	The program design included databases, simulations of math and ELA in real world contexts, web enabled collaboration tools, etc.

As indicated in the analysis presented in Table 1, my literature review confirmed that the research on teams described in the three bodies of work contrasted above had used different names or labels to describe a similar form of emerging teamwork and/or type of virtual organization increasingly common across business and academia. The contrastive analysis confirmed the existence of a new form of virtual organization or team. However, although shared characteristics across the teams identified in the studies could be identified and described, the studies reviewed did not provide in-depth insights into how the virtual organizations came into being or the work of the actors involved in bringing the organizations into being; that is, these studies tended to begin once a team or an organization had been constructed, and focused on how work was undertaken within the organization, and did not include information on how these organizations came into being.

Given the missing information on how virtual organizations are formed, the work involved, and the many intertwined social and technical issues impacting their formation, this study was undertaken to trace the roots of a virtual organization that developed, how it came together, who the actors were, and what work actors undertook. The questions raised in and through this contrastive analysis informed the overarching questions that guided my specific study of the origin of one virtual organization and the research design approach taken to addressing those questions.

Overview of Research Design

In the following sections I present a brief overview of the research design for this study of the formation of virtual organizations, including a discussion of the overarching questions guiding it and of the context and background for the study, the Stepping Program. I also situate myself as both a researcher and a participant in the study (as initiator of the team) and the implications for what could be seen and understood in that context.

Questions Guiding My Research on the Origination Phase of an Emerging Virtual Organization

Given that virtual organizations are not physical entities that can be observed by watching their construction in a physical sense, one approach to studying the formation of such entities is to identify the actors involved, the ways in which work is organized, when, where, purposes for which people come together, how they come together, why (to accomplish what work or meet what goals), and what they propose to one another through their discursive acts. While uncovering patterns of activity in this study, I examined who lead what component or dimension of the emerging organization, in what ways, for what purpose, and with what outcomes. By tracing the actions of those leading within and across times and events, the ways in which different configurations of actors were brought together, and by examining who brought actors together, in what ways, for what purposes, and what was accomplished

at such points, I explored how this virtual organization functioned to construct a hybrid online education program that it offered to students and educators across a large state.

In the study of this particular virtual organization as it was being formed (i.e. an organization in its origination phase), I addressed three overarching questions. These questions provided a basis for exploring how the organization was socially constructed across three points in time:

1) How did the virtual organization and its different teams develop, who supported the development, when, where, in what ways, for what purposes, under what conditions?
2) What supported and constrained the work of teams and the developing virtual organization across the different phases of development?
3) What model of leadership emerged from the study of this virtual organization?

Background to the Site for the Study: Contextualizing the Problem Being Addressed by the Emerging Organization

In order to understand the context for the decisions I made in selecting the particular virtual organization as the site to be examined in this study, and to contextualize the problem being addressed, I turn to a description of the background for what I have referred to previously as the Stepping Program

Team. In April of 2007, state funded grant awards in the amount of five hundred thousand dollars (one million dollars total) were made to two community college districts, the Rural North (RN College) and Snow Bird (SB College) Community College Districts. The purpose of these grant awards was to provide an online English language arts and an online mathematics program to eighteen and nineteen year old students denied a high school diploma due to their need to pass the state's high school exit exam (Yeager, 2008). Two additional awards were made to the two colleges in subsequent years (six grants totaling $2.4 million), enabling the programs to operate officially for a total of two and one-half years.

The two colleges implemented the grant funded programs in a highly collaborative manner with partners from K12, all three of the state's higher education segments (community colleges, state colleges, and state universities), and others. The people, who were part of the two project teams funded by each grant, worked closely together from the outset of the projects, and continued to collaborate throughout the entire project period.

The online English Language Arts and Mathematics programs, which came to be named, collectively, by the project team as the Stepping Program, were made available to educators and students across the state at no charge. Online instructors were available to enhance the online learning materials (i.e. to go beyond what could be learned solely from the use of interactive lessons

and archived video of instructors' lessons made available online). The instruction was offered at a distance through web based collaboration tools that allowed the instructors to engage with students in real-time through video exchanges, an electronic whiteboard and an online chat room. Barriers to technology use were lowered by programming that allowed students to reach the online collaboration space from within the course materials and the learning management system (i.e. Moodle) that housed them by a touch of a button (e.g., no need to go through another log-in process, or to remember additional passwords).

Within five months of the initial grant award, the Mathematics program was far enough along in its development cycle that it could begin serving students. The Mathematics course was first piloted in September 2007, in a 3-week session in a school district and was used in its first full cohort in a second pilot at a community college in February 2008. Active enrollments in the course steadily increased to 1,876 students (as of January 31, 2010). The English Language Arts course was first piloted in February 2008, at a community college. Active enrollment in the course steadily increased to 1,694 students (as of January 31, 2010).

Project evaluations demonstrated that in only two years of simultaneous development and implementation, the number of sites using the math program grew from 1 site at the end of January 2008, to 36 sites on

January 31, 2009, and then to 73 on January 31, 2010. ELA enrollment more than doubled between December, 2008 and December, 2009. It is important to note that, according to notes maintained by the Project Manager, several of these identified sites might have represented multiple physical sites falling within one district.

In addition to documenting the program's use, researchers documented information about the capacity of the program's resources to support students' success in passing the high school exit exam. The average combined passing rates for students using the program who took the exam and reported results were 38% for English Language Arts and 48% for mathematics (Green, J.L., Yeager & Green, L., 2010). This number includes students served that had previously failed the exam multiple times (up to six times) as well as first time test takers.

Since each site offered the program under different conditions, results from individual schools may be more meaningful. For example, the average passage rate for all first time test takers (exit exam) in the state is 79 percent. One hundred percent of all first time test takers enrolled in a math lab across two class cohorts (semesters) at a continuation high school who only used the Stepping program passed the exam. Students in the same math lab had more than one online program available to them in cohort one (unlike cohort 2 and subsequent cohorts in this course, when Stepping was the primary curriculum).

When pass rates for this cohort were contrasted across programs, it was found that students who had attempted to pass the exam multiple times had a 25 percent passage rate using another instructional product. In contrast, over 50% of those who had attempted the exam multiple times passed when they used the Stepping program (Green et al., 2010; Yeager, et al., 2010b).

According to researchers, in just two years, the multiple award-winning programs generated 4,700 users (those enrolled in both mathematics and English Language Arts were counted twice) through partnerships with over 78 sites (high schools, adult and alternative schools, charter schools, community colleges, county offices of education, libraries and community based organizations) in more than two-thirds of the state's counties. Over fifty percent of these students served reported speaking English as a second language.

My participation in the Stepping program, first as initiator, and later as researcher more distanced from the site (discussed in subsequent sub-sections), along with a wealth of potential data sources available, made the Stepping program and its virtual project team an appropriate site for addressing questions about how virtual organizations are formed, by whom, when, where, for what purposes, under what conditions. However, it was the access to the patterns of action visible in the work of the virtual Stepping team that guided

my decisions in selecting the Stepping Program as a telling case for examining the origination phase of a virtual organization.

The Stepping Program as a Telling Case

As described in the sections above, this ethnographic study systematically examined the origination phase of the development of this virtual organization (the Stepping Team) that undertook a three year project. This project was developed by inter-institutional, interdisciplinary teams of individuals with literacy, mathematics, and technology expertise. These teams were purposefully brought together to conceptualize, build and implement an innovative and comprehensive approach to the teaching of reading and writing (English Language Arts) and mathematics.

Building on Mitchell's (1984) distinction between illustrative representations and a telling case, this in-depth study systematically examined the early formation and development of a single team. The team's goal, as defined by documents and records of initial events (i.e. email trails, field notes of the first meeting) and discussed briefly in the previous sub-section, was to design an innovative program to support young adults (eighteen and nineteen year olds), who had matriculated high school but had not received a high school diploma given that they had failed the state required high school exit exam, many up to six times. Documents from the project indicated that the need for innovative programs was recognized by the legislature, given that in

2006-2007 nearly 40,000 high school students failed to graduate with a high school diploma (HumRRO, 2007) due to their failure to pass one or both (math and/or English Language Arts) portions of the exam. Organizations receiving funding through a competitive grant process to serve this group pledged to prepare young adults for the exam in selected areas of the state, leaving students in many communities without access to support.

Given the scope of this challenge in reaching nearly 40,000 students each year and the needs of this group of eighteen and nineteen year olds, I began a series of conversations about potential directions for offering support via the research and education community's cyber infrastructure. As Director of Statewide Initiatives for a non-profit supporting networking for the K20 research and education community, and also as an employee in the School of Education on a University campus near the State Capitol, I was aware of the extent of the need. I was also aware of the possibilities that new technologies offered for addressing students' needs across an entire state, and the gaps in meeting needs that would be perpetuated by the funding of traditional test preparation instruction in selected colleges fortunate enough to obtain grant funds for their local communities. From this position and my work in building the K20 collaborative community, I could see the possibilities of constructing a collaborative team that could take advantage of the statewide technology infrastructure and the diverse expertise of colleagues in order to address the

needs of the diverse populations who had not been able to pass the state's high school exit exam on a statewide basis.

Through my role as the initiator of the project, and then as an ethnographer, I had access to the archived records needed to study (i.e. reconstruct and examine) how this idea or possibility resulted in the establishment of a virtual organization, and how a statewide program offering developed. However, as the study showed, although I initiated the project and worked to construct the 'team' or social group of actors during the project's origination phase, how individuals became a member, how they undertook their work, how they were organized for work, and what was accomplished was not solely my decision. As the analysis of the data will show (i.e., make visible), the organization was formed through dynamic and developing processes constructed in and through the actions of its participants. The study, therefore, will show how a series of decisions made by different actors or groups of participants to address the needs of the project drove who participated, in what ways, and for what purposes. Thus, by focusing on the first collective products, two successful grants, I created the boundaries of this telling case – a case that makes visible theoretical issues and addresses research questions surrounding the early formation and development of virtual organizations that are currently being explored by NSF (NSF, 2011a).

From Initiator to Ethnographer

In order to better understand the ways in which my dual identities in relation to the Stepping Team and the study presented in this dissertation informed my research and its design, I now turn to a description of a series of shifts in my roles from initiator of the team to ethnographer. After the team brought together to write two successful grant proposals was awarded funding, I became the Development Director in both the Mathematics and the English Language Arts projects. This part-time participant role allowed for ongoing involvement with the project and participating as ethnographer, while providing the time needed to continue my work with other collaborative projects not related to this developing team.

Workload demands on other projects limited my ability to engage in direct documentation of the different groups in real time. However, in my role as a member of this developing project group, I was able to interact with different members of the team and was able to record notes, collect emails, and obtain documents that formed an archive of the developing project. I also had the opportunity to interact with the researchers/evaluators who studied the team and its accomplishments once the two grants were funded. Work undertaken by the researchers/evaluators was central to the development of the documentation and ethnographic evaluation plan. Documents and records they created, as described in the following Methodology section, provided

additional resources for the archive from which data were constructed for the present study.

To construct the data set for this study of the developing virtual organization in its early stages of formation, I revisited the archived documents related to the formation of the team four years later. Through this process, I took on the role of ethnographic researcher, a role that required me to set aside what I 'knew' as the initiator and Development Director, and to look again from a new angle of vision (Yeager, 2003; Yeager, 2006). This shift in roles involved tracing the social construction of the roots and participants in the routes of developing the virtual organization. This process allowed me to be surprised by what I saw. "So *that's* what happened!" or "I didn't remember this part!", were responses that became frequent refrains as I analyzed the reconstruction of the virtual organization's path to existence.

Given my former roles, I was conscious that the existence of emic (or insider) knowledge of the project had the potential to bias my current research. This challenge is faced regularly by ethnographers who must go into 'the field' to work as a participant observer (Agar, 2006; Ellen, 1984; Spradley, 1980) in order to study the culture (Agar, 1994) under construction. Many ethnographers assert that objectivity is an illusion in the sense that all researchers bring background knowledge, assumptions and points of view to their work (Ellen, 1984; Erickson, 1984). According to Walford (2008, p.10),

"a balance must be struck between suspending preconceptions and using one's present understandings and beliefs to enquire intelligently". One approach to striking such a balance, which I employed in this study, was to constantly review the evolution of the ideas, processes and outcomes being identified, to reflect on why I made particular decisions about data to analyze, why certain questions were asked or not, and then to articulate the assumptions and values implicit in the work (Walford, 2008).

My emic knowledge of the project and access to archived emails and documents offered an opportunity to supplement the records of the ethnographers who had studied the work of the team over its three and one-half years of funding. By reconstructing written records pertaining to the formation of the team and team members' work to construct the first two grant proposals, I was able to trace the roots of the organization, and routes to participation, and then to assemble a data set seldom available to researchers external to the members of the developing organization. These records, as the analysis will show, provided a basis of support for examining the origination phase of virtual organizations.

While the existence of the prior histories among those assembled for this project, the existence of the archived records of the project, and access to the processes involved in the developing program contributed to the selection of the Stepping Program as a telling case, the selection was also based on the

program's success following this phase in serving close to 4000 young adults as of January, 2010 in 170 physical sites (schools, community centers, and libraries within 78 larger sites with multiple individual sites) in 44 of the 58 counties in California. One additional factor supporting the selection of the Stepping Program as a telling case was the fact that the program received formal recognition from three state and national entities. The Stepping Program received a technology award by leaders in the community college system, an Innovations in Networking award by the non-profit entity operating the K20 telecommunications network for the research and education community, and the Western Interstate Commission on Higher Education's (WICHE's) Outstanding Work Award (WOW Award). These awards, therefore, provide independent assessment of the success of this program.

Overview of Methodology of the Study in Relation to Research Questions

Building on the work of ethnographers who have studied classrooms-as-cultures (Collins and Green, 1990; Collins and Green, 1992), I have conceptualized the virtual organization as a culture-in-the-making, or a new social group in which each member has certain roles, rights, and obligations; and life as holistic and experienced as a continuous and intertextual system (Collins and Green, 1992). To uncover the nature of this culture-in-the-

making, I selected the first the first team meeting in physical space as an anchor for the study.

To examine what occurred in this meeting and how the interactions among participants contributed to the team's development, I used archived emails, documents and handouts to recreate the team's first face-to-face meeting. I then used email records to trace (backward map) the ongoing exchanges among participants in the six weeks prior to the first meeting, and then examined the documents and emails relating to the work of the project teams (ELA and Math) in the seven weeks after the meeting (forward map). By backward and forward mapping (Green & Meyer, 1991) the actions and talk during this origination phase (i.e. the first thirteen weeks of the team), I examined the ways in which participants "talk and act into being" (Dixon, Green, & Brandts, 2005; Green & Dixon, 2007; Yeager, 2003) a new organization and a design for a program they intended to develop and implement statewide. Archived emails also served as anchors for the tracing of personal histories associated with team participation and the ways the team members were brought together. The personal histories, in combination with the study of the first thirteen weeks, provided the data set for the tracing of the roots of the virtual organization and the routes to participation by key individuals within the organization.

The contributions of each actor, who chose to participate, to the range

of possibilities and ideas (both intellectually and technically) available within the group provided a basis for examining how these actors helped to shape the project (Kelly & Green, 1997; Rex, Green & Dixon, 1998). This analysis examined the discourse represented in notes of meetings that made visible what team members proposed to one another, and what got taken up by others within the group across time and events (i.e. intertextuality). The study of the discourse and intertextual ties (Bloome & Egan-Robertson, 1993; Fairclough, 1992) inscribed in the texts (oral and written) provided a basis for identifying common knowledge developed among participants across time and events. Unlike studies that simply report characteristics or accomplishments of teams, the analysis of the discourse and interactions across time provided a means of analyzing and identifying the contributions of particular individuals to the group, contributions of sub-groups to the full group, and the emerging social system(s) within the full group through which a virtual organization was constructed.

Through the analysis of discursive acts, interactions, and actions of the participants in the team, or "continuous flow of conduct" (Giddens, 1979 p.55), I was able to trace the ways participants structured their work within the team (Giddens, 1979). The study of such actions over time illuminated the recursive nature of the dialogue and the actions, and their collective impact on structuring the new social system (Giddens, 1979) arising within the group.

The notion that the structuring of the social system within a group is a product of, and seen through, discursive acts, other forms of actions, and in people's interactions, is consistent with organizational theories surrounding the dynamic nature or evolution of teams/organizations. The detailed examination of the words spoken and written in the context of particular times, spaces and events, made visible the ways in which the evolution of this virtual organization occurred (not simply that it occurred).

The examination of the words and actions of individual team members, and what got taken up by the group, made visible how an intertextual web was constructed (Bloome & Egan-Robertson, 1993), in and through the contributions of individuals to the group, while at the same time teasing apart these contributions from the accomplishments of the group as a whole. This process of examining intertextual ties, in turn, provides a grounded approach to uncovering what can be gained by bringing individuals with diverse backgrounds and knowledge (or intellectual ecologies) together to conduct innovative work. It also allows for the study of how individuals within the group acquire new language, new ideas, and/or new ways of participating. This notion builds on work by Castanheira (2000) in which she argues:

> As an individual participates in different social groups, s/he "acquires" a variety of ways to participate and speak that are characteristic to those groups. The individual also acquires different kinds of knowledge that are available and produced within these different groups. As an individual moves across social settings, s/he draws, unconsciously or

> consciously, on the knowledge s/he has acquired in the different social situations in which s/he has participated. (p. 20)

Overview of Chapters

In this chapter, I presented a description of the ethnographic approach or philosophy of inquiry (both a theory and method) guiding the study, a brief review of literature framing this study, and the conceptual framework for the analysis of the data generated for the study from archived records of the Stepping Program. In the remaining chapters of this dissertation, I present a conceptual review of the research literature, the methods of data collection and data analyses, research findings, and final conclusions surrounding the educational and research implications generated by the study.

In Chapter Two --The Conceptual Framework Informing the Study of Virtual Organization and Innovative Teams– I describe a conceptual framework for studying virtual organizations and interpreting data that includes three strands: 1) the dynamic nature or evolution of teams, groups, or organizations across time and events, 2) leaders and forms of leadership, and 3) work within and by innovative teams as social constructions that draw upon diverse intellectual ecosystems. To analyze data surrounding the dynamic nature of teams, I drew upon existing research that described the stages that groups go through as they form and develop. To examine the work of participants in the program team, I drew upon the ways scholars have defined

leadership and the many different forms that leadership can take. To understand data generated by my analysis of participants' interactions and co-productions, I drew upon theoretical arguments surrounding knowledge, the nature of knowing, and knowledge development as a social construction. I also drew upon research describing what an individual has come to know based on his/her prior interactions in the world as an intellectual ecology or resource that is drawn upon during the course of the social construction of new knowledge by participants in new teams.

In Chapter Three -- Ethnography as a Philosophy of Inquiry And As A Research Methodology -- I discuss the reasons for selecting ethnography (or at least an ethnographic perspective) as the philosophy of inquiry and method for this study. I describe the non-linear abductive approach to such research, and what this approach allowed me to uncover with respect to the origins, formation, and ongoing development of the virtual organization selected as a telling case.

In Chapters Four through Six I present the analyses and findings of the study. In Chapter Four -- The First Team Meeting: An "Originating Event" -- I present an analysis of the first face-to-face meeting of nearly all of the individuals who ultimately formed the program team identified in the final grant proposal. By analyzing a day in the life of the group, I uncovered how the group developed common knowledge, underlying assumptions, and created

an initial program design and plan that all could support. I also examined the prior knowledge and experiences participants brought to such work, and what this might have contributed to the team and its development.

In Chapter Five -- Team Origins and Early Development -- I traced backwards from the first meeting to make information visible through my analysis with respect to how the meeting participants came to be in the room with one another. This allowed me to make the origins of the team and the ways in which the team was developing prior to its first face-to-face meeting visible. It provided evidence for understanding the actors, their prior histories, ways such prior histories contributed to the team's development, the roles of actors (including but not limited to an analysis of leadership and leadership roles), and individuals' involvement in key events.

In Chapter Six -- The Grant Development Phase -- I traced forward from the first face-to-face meeting to the final grant submittal to once again examine the actors, their roles (including the role of leaders and leadership), and emerging conceptions of a formal organizational structure within the team. The unfolding events made visible in the analysis provided for an examination of ways in which the roles of actors were evolving during this seven week period when compared to the previous six weeks.

In Chapter Seven, the final chapter, Implications of the Study, I discuss ways my research confirmed the findings of others, grey areas in which the

findings of others were both confirmed and contradicted, areas in which my findings contradict existing research, and areas in which this study provides new findings that may inform the work of future research. The implications of this research for education and future research directions are also discussed, along with a cautionary note about the limits on the generalizability of the findings in this study.

CHAPTER TWO
THE CONCEPTUAL FRAMEWORK INFORMING THE STUDY OF VIRTUAL ORGANIZATIONS AND INNOVATIVE TEAMS

Researchers working from an ethnographic perspective enter the field with the intent of understanding the everyday lives of those whom they are studying and 'what counts' from insiders' perspectives. The data that emerges from the research and the patterns that are found cannot be known at the outset of the research project. Instead, as patterns are developed in the ethnographer's data, he or she must return to conceptual frameworks contained in research literature in order to understand and explain the patterns (Heath & Street, 2008). The focus of this study and the data that were constructed required the review of research literature in three areas: 1) leaders and forms of leadership, 2) organizations and their stages of development, and 3) the social construction of knowledge, prior knowledge, and common knowledge. Findings from a literature review in these three areas are brought together in the analysis below in order to build a conceptual framework for my current and future studies of the emergence of virtual organizations.

Leaders and Forms of Leadership

To remain consistent with the theories underlying my examination of

the work of the team as a whole, I approach the study of leadership from a constructionist stance by viewing leadership as "the process of communication" (Fairhurst, 2007; Sigman, 1992) whereby leadership is achieved or 'brought off' in discourse (Fairhurst, 2007; Northouse, 2010; Shotter, 1993). The study of leadership discourse, as opposed to leader discourse, provided a basis for the examination of who was leading and in what ways as opposed to trying to identify one or even a small handful of people, who have identified as having more agency (or possibly exaggerated agency) when compared to others. Fairhurst notes:

> It builds on the more general ethnomethodological argument of Garfinkel (1967) that action is organized from within – meaning that leadership actors are knowledgeable agents, who reflexively monitor the ongoing character of social life as they continuously orient to and position themselves vis-à-vis specific norms, rules, procedures, and values in interaction with others. (p. 14)

When identifying leadership in the discourse, I held constant a definition of leadership as "ideas expressed in talk or action which are recognized by others as capable of progressing tasks or problems which are important to them" (Fairhurst, 2007; Robinson, 2001, p. 93).

The literature reviewed to inform understandings of developing organizations emphasized the importance of the initial leader or founder in initiating the culture of newly formed teams or organizations. Schein (2010) argues that "culture and leadership are two sides of the same coin" (p. 22). He

argues that the initial leader who had the original idea of forming an organization typically has strong notions of how to fulfill the idea based on his or her cultural history and personality, and these strong assumptions are brought to the work thereby influencing the group's culture-in-the-making . The work of the leader is articulated by Rosen (2010) who writes:

> Cross-institutional alliances are heavily dependent on four interrelated supports: (1) relational trust, (2) shared understandings (not only of the work the partners are undertaking but also of the partnership itself), (3) structures or mechanisms for regular, ongoing communication (particularly individuals who can act as 'boundary spanners' and convey information between organizations'), and (4) leadership to keep the partnership on track ad ensure the effectiveness of these mechanisms. (Rosen, 2010, p. 56)

These notions of leadership will be revisited in the final chapter of this study in light of the research findings.

Organizations and Their Stages of Development

Taylor and Every (2000) describe two versions of organizational theory that are key to conceptualizing the work of a virtual organization. One view of organizations uses the analogy of information networks linked to a central decision system. The organization may have parts with specialized functions, but all are linked together and together create the whole. An alternative view (Weick & Roberts, 1993) of organizations holds that decision-making and

information functions are distributed properties of a network. Change in the network is not the exception but the rule. In this view of organizations, there is no autonomous central decision maker. Organizational theorists call this a sub symbolic or distributed cognition view of organizations. This second way of conceptualizing organizations has given rise to the notion of connectionism and socially distributed cognition (Hutchins, 1995) in which information is constructed not in the brain, but through a collaborative social process, and the result transcends the bounds of individual knowledge (Cole, 1991; Resnick, 1991; Taylor and Every, 2000). In other words, to use computer terms, "information is not stored in the nodes of the network but in their interconnections" (p.199). Taylor and Every (2000) note, "this theory holds that people put their ideas together summatively to produce a common pool of knowledge, but also that, out of the interconnections, there emerges a representation of the world that none of those involved individually possessed or could possess (p. 207)." It is this latter theory of connectionism and socially distributed cognition (and distributed leadership for that matter) that I will be working from as I explore the formation and dynamic development of the Stepping Program team.

Stages of group evolution described in the research literature on corporate entities (Schein, 2010) and in education-oriented teams (Coburn & Stein, 2010) do not align. The number of stages identified and descriptions of

what transpires in each stage of development differ significantly. In this section I summarize the stages described by two different sets of authors to illustrate the different representations. Schein (2010) outlined the following four stages of organizational development in corporate settings in which a known entity already exists:

Stage 1: Group Formation

This stage begins with an "originating event" with a small group of 10-15 people. The individual actors enter such meetings with questions about their identity (What am I here for?), authority (Will I have a role to play?), and intimacy. Throughout the event, individuals initiate various actions and the group responds. As members begin to understand each other's needs, goals, values, and talents and integrate them into a shared mission, the group begins to define its own authority and intimacy system. Groupness arises through successive dealings with marker events that arouse strong feelings and then are dealt with effectively. The staff member or leader plays a central role at this stage. As the meeting progresses, members begin taking on greater leadership roles and participants' sense of ownership of group outcomes arises.

In an innovation-driven, collaborative team of the type studied in my research, Schein points out that the leaders often find themselves bringing different macro cultures (representatives from different nations and/or occupations) together. At the outset, Schein argues:

> The group must undergo some experiences that enable the members to discover essential cultural characteristics of the other members, to overcome the rituals of deference and demeanor that curtail open communication across status levels, to develop some level of understanding and empathy, and to find some common ground" (Schein, 2010, p. 386)

Finally, participants in initial groups quickly develop distinct micro cultures that are key to group formation. The operating assumptions of the micro cultures are important for a leader to pay attention to.

Stage 2: Group Building

As group members begin to share authority, leadership, and accomplish tasks successfully, the group begins to operate in terms of another unconscious assumption that "we are the best group, and "we all like each other". Members experience a need to feel merged with the group and to deny internal differences (Schein, 2010, p. 211).

Stage 3: Group Work

Further development of groupness occurs as more realistic norms about intimacy evolve. In other words, group members come to an acceptance that liking each other is not the goal. Members just need to like each other enough to enable learning and joint task performance (i.e. get to a point of mutual acceptance) (Schein, 2010, p. 216).

Stage 4: Group Maturity

Over time, the set of shared assumptions becomes common knowledge and the culture determines much of the group's behavior. Members appear to know who the group is, what its role in the world is, how to accomplish its mission, and how to conduct its affairs. Socialization processes reflecting the culture enable newcomers to learn the rules and norms. Evolution takes place over time through incremental changes (Schein, 2010, p. 217). In essence, in this stage Schein describes a culture-in-the-making in which members have developed roles and relationships, norms and expectations, and rights and obligations.

In their study of innovative research design teams forming in education circles, the focus of this study, Coburn & Stein (2010) described three phases of development that differ from Schein's:

1) A one year "Alpha Stage" in which partners were conceptualizing the partnership, developing a prototype, and securing funding.
2) A three year "Beta Stage" in which a professional development curriculum was developed and the program/services were implemented.
3) A "Gamma Stage" in which an initial use model emerges.

The identification of stages or phases suggests that both authors see newly developing teams and organizations as being dynamic. However, it also shows that the authors have different conceptions of the number of phases or

stages that the different types of groups (business settings as opposed to academia) go through and what is transpiring at each stage of development.

The Social Construction of Knowledge, Prior Knowledge, and Common Knowledge

Theories of learning offered by social constructionists provide a different lens for studying the Stepping team's actions. Seymour Papert (a mathematician specializing in technologies for education) and Idit Harel (an educational psychologist and epistemologist) argue that social constructionism can be thought of as "learning by making" (Harel & Papert, 1991). Papert writes:

> Constructio*n*ism-the N word as opposed to the V word-shares constructivism's connotation of learning as 'building knowledge structures' irrespective of the circumstances of the learning. It then adds the idea that this happens especially felicitously in a context where the learner is consciously engaged in constructing a public entity, whether it's a sand castle on the beach or a theory of the universe. (Harel & Papert, 1991, p. 1)

For social constructionists, learners, bringing what they know and the meanings of signs and symbols, co-construct and negotiate new meanings through social interactions with others (Wink & Putney, 2002).

In this instance, Stepping Program team members were teaching and learning as they interacted with each other, and as their pre-existing and new

knowledge was used to construct the program and services that were ultimately offered to other educators and students across the state. As part of this study I explored how team participants brought what they know to the work of the team, what such prior knowledge (or experiences) contributed to the team, and the ways in which new knowledge and social practices developed within the project. I provide evidence that new understandings or "common knowledge" developed over time as a result of the interactions that took place (Green & Dixon, 2007), and provide evidence to support claims surrounding how such common knowledge developed.

This study demonstrated how the words and ideas of individuals (both physically present in a meeting and present through text in a meeting handout) became a resource that was taken up by others. Berger and Luckmann (1966) offer a way of thinking about actors as environments for the other. They argue that "reality" and "knowledge" are socially constructed. Knowledge is "developed, transmitted and maintained in social situations (p. 15)." Using this logic, when I examine the interactions of participants in the Stepping team, I am actually analyzing the social construction of reality for the individual as well as for the team as a whole.

Building on Berger and Luckman's ideas, this study conceptualizes the development of virtual organizations as a social construction in which 'reality'

for participants and the group as a whole is developing as a result of the exchanges among actors. The individual actors enter the collaborative endeavor with differential knowledge, skills, experiences, expectations, and ways of thinking, knowing and being when engaging in collaborative work. The individuals are drawn from different macro-cultures (Schein, 2010), and enter with very different intellectual ecosystems. Schein argues that the diversity presents initial challenges that must be addressed in the early stages of team formation. The diversity also brings certain strengths. Individual actors may bring different types of subject matter or content expertise, different types of cultural knowledge, credibility with different audiences based on prior experiences and reputation, and may have the ability to make decisions on behalf of the entity formally represented (such as the ability to commit funds or personnel).

When selecting an individual to participate as a member of a team, the leader(s) or person(s) assembling the team may deliberately choose the person for one or more strengths in various areas such as those listed above. Regardless of why the person is chosen, the leader(s) gets a person who cannot separate a single desired characteristic from his/her broader range of knowledge, skills, experiences, and identities.

Building on Schein's work and the work of others (Bateson, 2000), I would argue that each individual studied as part of the Stepping Program team had an

intellectual ecosystem that shaped what he or she knew, could comprehend in the moment, could write about, do, etc. While one component of the person's intellectual ecology might be foregrounded when a leader or leaders were recruiting for participation in a team, such as recruiting a person because they possessed the desired mathematics content knowledge, the remainder of the individual's intellectual ecology came along for the ride and ultimately influenced what was available within the work of the team. Thus, when innovation-driven teams bring individuals with diverse strengths and cultural backgrounds together, the diversity actually present in the work as a result of each individual's intellectual ecosystem is far greater than is often acknowledged. Conscious or unconscious interactions occur between individuals interacting in the team that tap into the larger resource base.

The ongoing exchanges and uptake of relevant bits of knowledge, relevant skills and relevant capabilities among individuals in a team like the Stepping Program, in which the individuals are drawn from different education segments and different disciplines, provides unique opportunities for the development of innovative approaches to teaching and learning. Drawing upon the evolutionary model posited by British philosopher Stephen Toulmin (1972), innovation can occur when professionals in a particular discipline come to view things differently than their predecessors. He wrote, "Selection subjects the innovative concepts to a process of debate and inquiry (a forum of

competitions). The soundest concepts survive as replacements or revisions of the traditional conceptions" (Toulmin, 1972). The expansion of the intellectual ecosystems of participants in innovation-driven collaborative teams, regardless of how long the teams survive, provides a venue for acquiring such new perspectives. In short, intersegmental, interdisciplinary teams have the potential to be evolutionary change agents by fostering connections between individuals purposefully brought together for collaborative endeavors based upon their diverse intellectual ecosystems.

Conclusion

The conceptual literature reviewed provided a three-part framework for analyzing the data generated by my research on the work of the Stepping Program team and the emergence of the virtual organization. It suggested that the leaders within emerging virtual organizations could be identified by looking at what individual actors proposed in the discourse or communications, and by looking at who responded and how individuals responded to communications. It suggested that the organization developing would go through different stages and would evolve over time, and that the dynamic nature of the emerging organization needed to be factored into the analysis by looking at who was doing what, with whom, and with what outcomes, etc. at

different points in time. A single snapshot would not be sufficient. It also suggested that the structure of the organization might not follow traditional notions in which there is a central coordinating body or person.

An alternate view of organizations envisions a more distributed model in which leadership may be distributed (thereby making it hard for one entity to "know" all there is to "know" at any single point in time). It emphasized the importance of looking at the prior knowledge of participants or intellectual ecologies that were brought to the work of the team, and at the common knowledge being constructed as individuals worked together to build the new program.

CHAPTER THREE
ETHNOGRAPHY AS A PHILOSOPHY OF INQUIRY AND AS A RESEARCH METHODOLOGY

In this chapter I present a conceptual review of ethnography which constitutes the 'lens' or a philosophy of inquiry (Agar, 2006; Anderson-Levitt, 2006; Green, Skukauskaite & Baker, 2011) guiding this study. After a brief review of the theories guiding the research, I describe the methods employed and the relationship between the theories and methods used.

Why Ethnography?

Ethnographers include researchers whose backgrounds reflect traditions in anthropology, linguistics, sociology and education. These traditions are foundational to ethnography's application in educational contexts (Agar, 1994; Green & Bloome, 1997; Heath & Street, 2008; Rex, Steadman & Graciano, 2006). For nearly two decades, its growing use has aided education researchers from the fields and disciplines noted above (Eisenhart, 2001), teacher researchers and other educators (Green and Bloome, 1997).

An ethnographic perspective (Green & Bloome, 1997; Green, Dixon, and Zaharlick, 2003) or philosophy of inquiry (Anderson-Levitt, 2006) allows the researcher to investigate the processes of interaction between people, to

understand how such processes came into being, and to analyze how individuals' own cultures and dispositions play a role in shaping those processes (Erickson, 1984). It enables researchers to develop understandings of people in everyday life, their culture(s) and the making of meaning through social interactions in different contexts and under different conditions (Anderson-Levitt, 2006; Erickson & Shultz, 1981; Gee & Green, 1988; McDermott, 1976).

In this study, adopting an ethnographic approach enabled me to focus on the actions and interactional accomplishments of a group of actors and on the specific ways in which these actors drew upon the resources of different organizations to create new systems of work. The in-depth look inherent in the application of theories and methodologies of ethnographers allowed me to get beyond descriptions of the characteristics of the new virtual organization, allowing for understandings of how an organization that transcended the boundaries of any single organization was constructed in and through the work of the people.

The contributions of individuals and the accomplishments of the group as a whole were located in archived records of the team's meetings and email exchanges, by analyzing the interactions between and among participants in both face-to-face and virtual contexts as the team formed and developed. By documenting and tracing Stepping Program team members' interactions in the

historical records through their use of narrative systems (Evertson & Green, 1986), I was able to show how team members used "the linguistic tools they had available and the material resources at hand to adopt and adapt extant discourse practices as they defined their social relationships, social identities, knowledge, and the acquisition of knowledge" (Bloome & Clark, 2006 p. 227). The contributions of the actors to the range of possibilities and ideas (both intellectually and technically) that were available within the group, and how individuals' intellectual ecologies shaped the project (Kelly & Green, 1997; Rex, Green & Dixon, 1998) were documented by analyzing discursive acts and examining intertextual ties (Fairclough, 1992) in the words and ideas expressed across time and events.

A Non-Linear Abductive Approach

In subsequent chapters of this study, I describe the non-linear and abductive approach I have taken to the research. This approach is characteristic of ethnographic studies. If one is truly wedded to inquiry, and tracing the roots of and routes to what is uncovered in order to develop new understandings, determining in advance how the research will unfold with a high degree of specificity is somewhat problematic (Green, Dixon & Zaharlick, 2003). Heath and Street (2008) note:

> the zigzag nature of going back and forth from fieldwork to literature and back again may distinguish the ethnographers' work from that of most other social scientists.... Ethnographers do not begin their research with a clearly defined research question or delineating hypothesis. Taking their cue from anthropologists, ethnographers have field sites and areas of core interest in front of them as they begin their research, but they do not enter their work with a single fixed question (p. 50).

During a research study, the ethnographer makes decisions about ways of archiving, analyzing, and reporting accounts of the phenomena studied. Agar's (2006) conceptualization of ethnography as a non-linear system guided by abductive, recursive, and iterative logic-in-use (Green, Skukauskaite & Baker, 2011) acknowledges the many twists and turns that an ethnographic research study will take. As this research study unfolded, I found it necessary to go back to the initial research questions to add sub-topics that would allow for the collection and analysis of data that could inform topics raised in the research literature examined to help interpret the initial set of data. The subtopics developed to refine my research questions were as follows:

1) How did the virtual organization and its different teams develop, who aided the development, when, where, in what ways, for what purposes, under what conditions?

   Subtopics explored included:

   a) How were participants identified and assembled?

   b) How did individuals who had never worked together as a team before, drawn from different disciplines and institutions, develop common knowledge and a plan of action?

   c) What role did the team's first face-to-face meeting play in the development process?

2) What supported and constrained the work of teams and the developing virtual organization across the different phases of development?

   Subtopics explored included:

   a) Who supported team members' work across time and events in the developing project? How?

   b) How did participants' prior knowledge and experiences contribute to the team?

   c) Who or what constrained the formation and/or development of the team?

3) What model of leadership emerges from the study of the virtual organizations as social constructions?

Subtopics explored included:

a) What forms did leadership take?

(1) Who were the leaders?

(2) What roles did they play in the formation of the team?

(3) How did they work together?

b) What organizational structure and participant roles emerge from the study of the team in the early stages?

c) What were the ideas and working assumptions underlying the actions of the leader(s) who brought participants together to form the team? How were they communicated?

Design of the Study of the Stepping Program Team's Formation and Development

Participants

To address the research questions outlined above, the study traced the contributions of twenty-three individuals to the development of the Stepping Program including:

- Two directors of system-wide technology initiatives serving

community colleges

- A technology director (and former physics teacher) for a very large urban K12 school district
- A director of an instructional technology group and three additional members of that group from a university, all based in a Physics department.
- Two Math faculty members from a community college and a state university
- A community college faculty member who taught ELA
- Two education researchers from a university with backgrounds in ELA
- An individual from a community college who specialized in partnership development
- A director of secondary education, an administrator, and a director of instructional technology applications from a large urban K12 school district
- A coordinator from a community college that operated a tutoring center for students
- An emeritus professor of Mathematics who had just stepped down from a system wide position in a university in which he was responsible for education partnerships
- A representative of the state librarian

- A project manager and a project director hired to support the program
- A director of statewide initiatives employed by a university
- A Vice-Chancellor of Research from a university.

The twenty-three individuals were drawn from five entities within the community college system, three universities, one state college, one large urban school district, and a state entity.

Team Characteristics

Table 2 summarizes the characteristics of the Stepping Program team as made visible in my reading of the six evaluation reports of the team's work (Yeager, 2008a; Yeager, 2008b; Yeager, Hough, et. al., 2009a; Yeager, Hough, et.al., 2009b; Yeager, Hough, et.al., 2010a; Yeager, Hough, et.al., 2010b). Actors comprising the team were drawn from a cross section of education institutions (intersegmental) and a variety of disciplines (interdisciplinary). In addition, as shown in the table in Row 3, some had not worked in education before, whereas others had devoted their entire careers to education. Selected members of the team had extensive backgrounds in the use of technology and programming, whereas others had limited experience with technology (Row 4).

Further, analysis of the team membership showed that members had *differential access to students* (Row 5). While some members were teachers or instructors and had regular contact with students (or had had regular contact at some point in time), others had no experience with teaching. Finally,

Table 2

Characteristics of the Stepping Program Team

Characteristics of Team Members	Evidence/Description
1. Intersegmental	Represented K-12 schools, district offices, community colleges, the California State University and the University of California
2. Interdisciplinary	Included ducation researchers, literacy experts, mathematicians, math educators, teachers, school administrators, experts in physics, technology experts, individual with expertise in public policy, school finance, and the use of technology in teaching/learning, and experienced project manager.
3. Varying years of experience in education	Some were new or fairly new to the work in education whereas other members had spent more than 25 years in education.
4. Varying levels of technical expertise	Some were recognized leaders in education technology whereas others were new to use of technologies for teaching/learning or had limited experience working with technologies.
5. Differential access to students	Some interacted with students directly, or had prior experiences working with students, whereas others had no day-to-day contact.
6. Distributed	Team members worked and resided in geographically distant locations.
7. Committed for a limited time period	Team members knew that their joint work would likely end at the end of grant period.
8. Differing time commitments and remuneration for participation	Some members were devoted to the project full-time whereas others spent as little as 5% of their time on project.
9. Willingness to explore new approaches to teaching/learning enabled by technologies	"The project application envisions the use of technologies to support the program's development and implementation at sites across the state."
10. Supportive of defined organizational activities; committed to specific individual roles in such activities in order to address jointly established goals and objectives	Co-development of project application by all team members.
11. Committed to producing a product and delivering a service	Grant application obligated team members to produce product (i.e. Stepping Into Your Future program) and a service (i.e. instruction to students).
12. Research orientation	Willingness to allow their individual participation to be part of ongoing ethnographic study. Large share of grant resources dedicated to research.

members' residence in different geographic locations including northern, southern, and central portions of the state reflected the *distributed* nature of the team.

In addition, as Table 2 shows in rows 7-12, the team members initially could be differentiated according to the kinds of commitments, degree of participation or support, or particular roles they agreed to take up in the project, while at the same time sharing some characteristics of participation in common. For example, all participants signed on to the project team knowing that the project would exist for a limited time period (Row 7).

The group was brought together by formal and informal invitation, largely extended by two of the many leaders in the project. Some participants were recruited to assist on a temporary basis to meet a defined need. In contrast, others were recruited and filled roles across all phases or stages of the project. Few members were employed full-time by the project or the virtual organization the members created. Analyses in later chapters of this study will further trace and make visible both how participants entered the project and how they took up particular roles and relationships.

As shown in Row 9 of Table 2, by agreeing to participate, participants were expressing a willingness to explore new approaches to teaching/learning enabled by technologies. Team members agreed to carry out defined organizational activities to produce a product (i.e. the Stepping program) and a

service (instruction to students), and committed to specific roles in such activities in order to address jointly constructed goals and objectives. In addition, team members' orientation towards research is evidenced by their agreement to participate in an ongoing study of their own work in the project (Row 12) and the significant grant resources devoted to doing so. As presented in later chapters, a systems approach was envisioned by the team whereby information and data from the use of the team's hybrid online program would be available to the team to redesign the programmatic resources in ways that would enhance their effectiveness in addressing students' needs. (i.e., co-configuration was part of the design).

Timeframe

In order to understand how the virtual organization, the Stepping Team, was initiated and developed, the time frame of this study (December, 2006 through March, 2007) is limited to the initial conception of the program and the thirteen weeks leading up to the submission of two grant proposals. Based on analysis of what occurred during this period, I have called it the 'origination phase'. The title builds on Schein's (2010) notion that organizations go through different stages of development, but differs from Schein's arguments by focusing on a timeframe involving several weeks as opposed to a single originating event that takes place in a single day. The team was ultimately successful in receiving six grants over three grant cycles. Therefore, when the

origination phase is taken into consideration, participants engaged with one another for nearly a four-year period.

The position of the origination phase, the time frame for this study, within the virtual organization's life cycle covering four years is shown in Figure 1 in Chapter One (p. 4). Exploring the unfolding of events at multiple levels of scale led to the selection of a key event, the team's first face-to-face meeting on January 12, 2007, as the beginning point for this study. Figure 2 below shows the positioning of this meeting in relation to the origination phase as a whole, as well as how the event itself broadly unfolded on the day it occurred (discussion topics and approximate length of time of each phase of the meeting).

Timeline for This Study: Origination Phase of the Stepping Program Project Team				
	January, 2007		February, 2007	March, 2007
December, 2006	1/10	1/12	Post-Meeting	
• Recruiting participants • Preparing for face-to-face meeting	* Preparing for face-to-face meeting	* First face-to-face meeting	* Finalizing participants * Preparing grant proposals	* Grant Submittal

Event Map of the January 12, 2007 Face-to-Face Meeting of the Stepping Program Project Team										
Welcome & Goals (15 min.)	Self Introduc-tions (45 min)	Digital Teaching & Learning Presentation (60 min.)	Break (15 min.)	Breakout Groups (30 min.)	Lunch (45 min.)	Debrief (30 min.)	Beliefs & Theories (36 min.)	Student Incentives, Motivation, Etc. (69 min.)	Tutoring & Libraries (45 min.)	Next Steps (15 min.)

Figure 2. Study Time Frame and Event Map of First Team Meeting: Relationship of the unfolding of one key event, the first face-to-face team meeting, to the origination phase of the team

Three Phases of the Research Undertaken

Having presented this broad view of the origination phase of the Stepping team/program, and the relationship of one key event to that phase, I turn to a description of the three phases of the research that comprise my study of the initiation and development of a virtual organization. These three phases make visible the ways in which, having adopted a non-linear, abductive approach to this ethnographic study, I examined the Origination Phase of the Stepping virtual organization, presented in Chapters 4, 5, and 6.

Phase One: The First Team Meeting

The study begins with an examination of the first face-to-face meeting in which the individuals listed in the final submitted proposal gathered for the first time to discuss the development of two grant proposals that would support the formation of the virtual organization. As I began to interrogate the written records, I found that there were five key events within that meeting that would need to be analyzed: (1) a welcome and introduction period, (2) an initial presentation to the full group, (3) a break-out session (or smaller group discussion) to focus on mathematics and/or English Language Arts (ELA), (4) a key exchange after the lunch break, and (5) the afternoon discussion with the full group. Event one could not be recreated or analyzed given an absence of records that could be used to analyze what had transpired during this period of time. Artifacts that supported the analysis of the second event, the initial

presentation, contained evidence that there were three parts to that presentation: (1) a description of students and the challenges they faced with the Exit Exam, (2) suggestions by the presenter regarding what the group could develop, and (3) a discussion among all participants.

While information that pertained to my research questions about the ways in which the team developed was uncovered, it became apparent that significant work had taken place before the meeting by an unknown set of actors. The actions and actors were not visible within the records of the meeting. To understand how team members were identified and came to be assembled, by whom, and how, I would need to engage in a process of backward mapping in order to look at events that occurred before the first face-to-face meeting.

Phase Two: The Origins of the Project and Early Development Phase

In the second phase of the study I examined artifacts and digital records (emails) of exchanges among individuals in order to re-create the events that led to the first face-to-face meeting. The records demonstrated that team development had begun on December 4, 2006, and that the meeting occurred six weeks later on January 12, 2007. During the course of this analysis, a need arose to trace the histories of the participants, which I did through examination of digital records for the prior year. It also became necessary to uncover the

context in which the grant was being developed, which I was able to do through an examination of various policy documents and other information that existed in digital formats. This work revealed the origins of the grant concept, made early participants and their interactions visible, and allowed for an analysis that contributed to findings relevant to my research questions.

Phase Three: The Grant Preparation Period

To explore the ways in which the team may have changed as it emerged across time and events, I also needed to trace the interactions of the team from the first face-to-face meeting on January 12, 2007, to the date on which the two grants were submitted (March 1, 2007) – a seven-week period. When compared to the work in Phase Two above, the examination of the team's work and the roles, relationships (Floriani, 1993) and organizational structure that emerged afforded an opportunity to explore the dynamic and evolutionary nature of the organization's development.

Logic-in-Use

The relationship between the theories and methods used within this study, or logic-in-use (Green & Bloome, 1997; Howe & Eisenhart, 1990), in order to examine the three phases of work is represented in Table 3 below.

Table 3

Logic-In-Use And Relationship Between Theories and Methods

Theories	Methods* (Initial)	Methods* (Intermediate)	Methods* (Advanced)	Results Informed by Data
Culture as a verb (Street, 1993) – the team is a culture in the making. Languaculture that emerges from participant observation in the day to day actions of the people	Creating scripts of the interactions across three phases.	Reading ethnographically	Ethnographic reading of script of rich point – first mtg. part #3	Common (insider knowledge) knowledge conveyed to newcomer (outsider) reflecting developing underlying theoretical assumptions and goals of the team
reflects new understandings and negotiated meanings developed as people with diverse languages and cultures interact	Identification of "rich point" to begin exploration of the developing culture	Semantic analysis	Semantic analysis	
Developing culture is visible in the discourse and actions of the people	Tracing of interactions and data analysis across time and events (Parts 1-4 in first meeting, prior 6 weeks, next 7 weeks)	Intertextuality across events to identify how words used and ideas of participants proposed were taken up and used by others.	Tracing "roots" of words used to respond to questioning (intertextuality)	
People interactionally construct linguistic and social practices, meanings and accomplishments.	Collection of written and oral texts and graphics.	Reading ethnographically		"Routes" to participation.
In the process, they create new social relationships,	Additional data collection – head notes.	Semantic analysis to clarify ideas.	Over time comparisons.	"Roots" of the org. and development of common

identities, and knowledge.				knowledge developing through participants' interactions.
	Integration of records to reconstruct events.	Categories and patterns of actions and interactions across time and events.	Making warranted claims Leadership and forms of leadership across time.	How common theoretical assumptions, goals, program design and organizational design emerged.
	Script development.	Categories for roles. Across time comparisons.	Individual participant profiles.	
		Types of prior knowledge, experiences, and team contributions.	Ways common knowledge is constructed across time & events.	
		Analysis of intertextuality in speakers' words. Over time comparisons	Role of prior relationships.	
		Tracing historical roots and routes to participation.		
	Additional research to situate program/team development in larger policy context through policy tracing and to i.d. forces converging.		Converging policy interests. sss Identification of supporting and constraining factors.	What supported and constrained the work of the developing team. Roles, organizational structures, leaders and leadership

Table 3 demonstrates that, to uncover the ways in which the Stepping Program was designed, built and implemented in and through virtual and face-to-face interactions between members of a purposefully assembled group, and ways the team and program changed over time to meet goals for the project, I needed to trace the processes and chains of actions inscribed in archived records. By tracing the flow of work inscribed in the interactions, I came to understand who proposed what, who responded to what, who lead what aspect of this project through their words and/or actions, how the work of one group was developed through interactions with others (both face-to-face and virtually) and what was accomplished in and across distributed work, time, and expertise.

I brought together interactive discourse analysis (i.e. the study of talk and text in social practices) (Fairhurst, 2007) with sociolinguistic and sociocultural theories to explore how discourse processes and practices and language use among participants supported and constrained the construction of common knowledge, new practices and products, and the development of roles and relationships among actors within a developing virtual organization. The study of the "language-in-use" among participants recognizes discourse as a situated phenomenon in which participants draw from linguistic, contextual and social presuppositions that they bring into the project as they participate in and interpret the words of others (Cook-Gumperz, 1986; Gumperz, 1982; Rex

and Green, 2007). Moment-to-moment interactions and interaction that takes place across time, and intertextually tied contexts (Bloome & Egan-Robertson, 1993; Rex & Green, 2007), make visible how what is known, and ways of being and doing are developed within the emerging team.

Such microethnographic work (Erickson, 2006) provides "new understandings of discourse as both a process and a product of local interactions and as intertextually tied to past and future events constituting human activity" (Rex & Green, 2007, p. 576). The employment of discourse analysis approaches provide insights into the social order and social relationships being interactively constructed among participants in their talk.

Data Collection

Corpus of Data

The decision to study the virtual organization's development four years after it had occurred presented challenges. The history would need to be reconstructed since it was not documented in real time for research purposes. Data collected to support the reconstruction of the work of the twenty-three individuals and the analysis herein across three phases of work is summarized in Table 4.

Table 4

Summary of Research Data and Methods of Analysis

Type of Data	Amount of Data	Analysis of Data
Field Notes	3 sets of typed notes for the flow of activity during the first face-to-face meeting.	Located the records of the interactions in relation to the agenda in order to identify who spoke, the order of the speakers, the flow of topics across speakers, and the words and ideas reflected in the representation of each speaker's comments. Analyzed frequency of participation across events.
	1 set of hand written notes from the project initiator	Developed a "script" in which the text from the meeting notes is identifiable by a line number.
		Identified four key events.
	1 meeting summary from project staff	Read script for each event ethnographically asking questions such as who, what, why. Findings used to develop semantic analysis (X is a type of Y).
		Analyzed each speaker's comments for intertextual ties.
		Analyzed each speaker's comments for references to prior knowledge "as an X" or "of X" and what the comments or ideas contributed to the team. Aggregated such information across events to develop a personal profile for each speaker.
Artifacts	1 meeting agenda	Contrasted planned agenda with actual events in order to identify what actually took place among participants and how participants structured their interactions.
		Developed an event map of the day as it developed.
	1 meeting handout	Developed a 'script' in which the text from the handout is identifiable by a line number.
		Identified intertextual references as evidence of take-up of proposed understandings of the audience, challenges, and potential program design by

	participants.
1 PowerPoint presentation	Developed a "script" in which the text from the presentation is identifiable by a line number. Compared the text of the PowerPoint to the meeting handout to identify intertextual references and words that BY may have used in her verbal presentation of the slides. Identified discursive acts for each line of text. Identified intertextual references as evidence of take-up of proposed understandings of the audience, challenges, and potential program design by participants.
	Traced types of actions across time and events. Identifying when and under what conditions it occurred, and for what purpose.
1 research article	Not used
1 flow diagram	Located diagram in relation to discursive acts in Event #2.
180 email records	Identified actions of Ms. C. and other Stepping Program participants represented in the email chain. Identification of prior histories between Couch and participants.
6 grant proposals	Analysis of portion of text in first 2 grant proposals to answer research questions about who became part of the organization, the organizational model that emerged, and what supported and constrained the organization's development.
6 evaluation reports for the 6 grants	
State policy reports online	Trace of state policies

As shown in Table 4, data collected included observation field notes, as well as reconstructed head notes as a form of field notes. Additional records that served as potential data sources were artifacts such as public documents, email correspondence and other documents produced by participants through the activities of the virtual organization, as well as published articles.

Field Notes

Field notes from the team's first meeting were available in the form of typed notes by Dr. Black, a highly regarded researcher in the field of ethnography and editor of a handbook on research methods. Handwritten notes of the first meeting were available from the project initiator. Finally, a written meeting summary was produced by project team staff.

Head Notes

In a few instances, ambiguities in the field notes required clarifications. Where such needs arose, the head notes are bracketed and attributed to the individual who provided them (either Dr. Beckwith or Ms. C). 'Head notes' can be seen as a form of field notes that can be produced as written text through a process of re-constructing from memory. An example of the ways in which head notes were incorporated and noted appears in Table 5, an excerpt taken from the script in which the first meeting of the team was re-created. As shown in Table 5, drawing on documents (e.g., agenda) enabled me to identify what was intended to occur at a particular time (Col. 2). Using a script

Table 5

Example of Integrated Field Notes, Head Notes, and Documents: Re-Creation of the First Team Meeting (Integrated Notes and Agenda) (Partial table used as example)

Time on Planned Agenda	Section of Planned Agenda	Speakers on Agenda	What Speakers on Agenda Said/Did	Other Speakers	What Other Speakers Said	Head Notes From Ethnographer #2	Head Notes From Event Organizer & Participant
08:30 (actual 8:45) (15 min)	Welcome and Introductions -Project Overview -Goals	Doug Cremer, Project Director, CVC			Record #3 The goal is identified as a measurable scope of work with verbal commitments and expertise, 'student focused in the student's environment' with member to peer tutoring that recognizes accomplishments. Sustainability built in with intelligent design (partner with Google Docs?). It is recognized that the goals of this project will not fit on a linear timeline due to the board scope of work: determining curriculum	I believe we started a little bit later than anticipated.	Event Organizer: Meeting location (UCLA) was chosen to reinforce the intersegmental nature of the project and intent to build from a research base. Faculty club, as opposed to a room in a building on campus, was chosen to honor the participation of attendees in ways that would be experienced by other

constructed from written observation field notes, it was then possible to re-construct, from the perspective of the particular observer, what speakers actually said in the meeting (Col. 6). Drawing on re-constructed head notes from additional observers (e.g., Col. 7), as well as my own re-constructed head notes as a participant-observer (Spradley, 1980) (Col. 8), I was further able to examine what was intended and what actually occurred from multiple angles of vision (e.g., that the meeting actually began later than intended; that the space for the meeting was selected for particular purposes), thus potentially adding to the breadth and depth of the analysis.

Artifacts

As discussed earlier, a range of written and graphic artifacts, as shown in Table 5, was drawn on in order to fully understand the initiation, formation, and development of the Stepping virtual organization. While collecting the records, care was taken to collect, analyze and report data across all phases in a manner that rendered and preserved the intrinsic formal properties of the culture or social actions identified (Atkinson, Delamont & Housley, 2008). I worked to retrieve information that provided a thick description (Walford, 2008) that would allow those who read the research study to determine the applicability and transferability of the findings to their own or other situations (Lincoln and Guba, 1985).

Data Analysis

Methods for Re-Creating a Day in the Life of a Team

To ensure a comprehensive approach, this study attempts to capture the complexity of social action, order, and culture, through the use of multiple forms of data, analysis and methods (Atkinson, Delamont & Housley, 2008; Heath & Street, 2008). These include an investigation of discourse and narratives, and investigation in different spaces (both full group and small group meeting spaces and "virtual" space), places (a University as a physical setting), and time (interactions during a full day and across time).

Recreating the interactions among actors was complicated by the lack of video or audio recordings. Given this, I had to recreate the exchanges during the first face-to-face meeting of the team through a variety of data sources, including: a) email records; b) a hard copy version of a meeting handout; c) a Power Point presentation (by Dr. Beckwith) uncovered in the email records, and a different version of the handout (from Dr. Beckwith); d) a handwritten set of meeting notes that were not a complete account (by Ms. C); e) three sets of meeting notes in three different documents for different portions of the day recovered through emails (from Dr. Black); and f) a high level meeting summary from Sheila North.

The ethnographic (re)construction and analysis of the 'organization' through the records described above and the trail of work (or chains of activity) inscribed in them (and thus documented and constructed through these texts), shed light on how the innovative team came into being. This approach to analysis is grounded in an understanding that people inscribe worlds (Lakoff & Johnson, 1980) as well as identities (Ivanic, 1994) for self and others as they talk and write to others and as they report on the work that they are doing together.

As discussed in the sub-section on head notes and above, a theoretical/methodological approach to engaging in analysis from multiple angles of vision lead me to draw on multiple data sources (artifacts). By aggregating data (see Table 5 as example), rather than simply examining each piece in isolation, I was able to draw on the multiple angles of vision represented by the narratives and documents to re-construct a particular day in the life of the virtual organization.

By examining the flow of activity across time within the group, I identified key events constructed by members. Through a process of engaging in analyses of these events at multiple levels of scale, re-presenting them in the form of event maps (Green & Wallat, 1979), I was able to identify chains of activity both within and across events. A sample event map is presented in

Table 6, excerpted from the full event map of the first face-to-face meeting (see Chapter 4). As seen in the table, Event #2 on the initial meeting day was comprised of multiple parts, or phases, which are unfolded vertically in Column 3 of the event map. The second event consisted of two breakout sessions, but notes were only available for one of the two. In the third event, participants' beliefs and underlying theories were questioned as an outsider came into the group after lunch having missed the morning session. This event created an opportunity to explore the "groupness" (Schein, 2010) that had developed by that point in time. However, to understand the meanings behind the words recorded for event three, I would have to examine the events chronologically and the socially constructed understandings that had developed before the exchange with the newcomer. Thus, I needed to engage in new levels of analysis that included examination of verbal and textual interactions within events and parts of events.

Table 6

Example of Event Map: Excerpted from event map of first face-to-face team meeting

Event #1	Event #2	Event #3	Event #4	Event #5
Welcome & Intro.	Dr. Beckwith Presentation	Mathematics Breakout Group	Outsider/ Insider Discussion of Beliefs and Assumptions	Full Group Discussion
	Part A: Audience, Gaps, Missing Links, and Guiding Principles Part B: Materials, Learning Approaches and Models			Student Incentives, Motivation, Recruitment Strategies, and Services

Development of Scripts of Verbal and Textual Interactions and Analysis

In order to make visible the analytic approaches at multiple levels of scale used in this study, I continue to focus on my analyses of the events of the first face-to-face meeting (used to construct a day in the life of the development of the virtual organization). In this section, I describe the approaches taken to analyze chains of activity and interaction in and through the analysis of multiple artifacts both individually and in relation to one another (e.g, contrastive analysis, semantic analysis, domain analysis [Spradley, 1980]).

For example, to support the analysis of the events and parts, or phases, of events of the first face-to-face meeting of the team, I began with Event #2 (see Table 6), Dr. Beckwith's presentation. I converted the text of a Power Point presentation that had been given by Dr. Beckwith, the handout that Dr. Beckwith distributed in tandem with her presentation, and the integrated notes of the meeting into scripts in which each line of text had a number, as re-presented by the sample shown in Table 7. This allowed for specific references to lines of text during the analysis.

Table7

Sample of Scripts Developed From Artifacts and Records of Events (Excerpt From Script of Yeager Presentation During Event #2 Parts A & B)

Row	Slide Number and Text
1.	Slide 1
2.	Digital Teaching and Learning Communities: CAHSEE Preparation Initiatives Audience, Existing Resources, Learning Approaches and Methods
3.	Slide 2
4.	Audience
5.	Did not pass 1 or both sections of CAHSEE
6.	by May, 2006
7.	Out of HS for year or more
8.	Young adults – 18-20 years old
9.	May be working &/or enrolled in CC courses

Forms of analysis and methods for creating tables and figures during the analysis are described in subsequent chapters. However, to ensure that the methods followed are also fully described in this chapter, I will briefly review methods used to analyze events two and three of the meeting.

To analyze what had taken place during event two, I interrogated the script prepared from the integrated meeting notes (see Table 5 sample above), reading it from an ethnographic perspective to understand who was doing or proposing what, where and when. Then I took the following steps:

1) To determine the extent to which Dr. Beckwith's Power Point followed the ideas contained in the document that accompanied it, which was given in real time to the participants (on the letterhead of the Center represented by Dr. Beck.), I contrasted the discourse of the Power Point with that of the handout. This enabled me to determine to what degree I could infer

what ideas were being made available to participants in the moment and the extent to which what was being made available through the power point aligned with the written document (since the document was a lengthy one that participants had not had available to them prior to the meeting). Table 8 represents an example of this approach to contrastive analysis using a discursive perspective to examine text (a longer excerpt is available in Appendix B). The Power Point text appears in column 1 of the table. The text of the Center handout appears in column 2 (adjacent to the Power Point). As shown, I identified particular words in the Center handout that aligned with the language of the power point presentation (see words in italics in Table 8).

This analysis suggested that the handout could be used as a more detailed source for the words that Dr. Beckwith may actually have used and ideas that may have surfaced during this portion of the agenda since both were in alignment in most areas.

Table 8

Sample of Comparison of Dr. Beckwith Power Point and Center Handout

BECKWITH POWER POINT PRESENTATION	CENTER HANDOUT
Slide 1 *Digital Teaching and Learning Communities:* *High School Exit Exam Preparation Initiatives* Audience, Existing Resources, Learning Approaches and Methods	*Digital Teaching and Learning Communities: High School Exit Exam Preparation Initiative* Audience, Student Incentives, Materials and Learning Approaches (Analysis completed by Center Team Members) GOALS we have and that we took into account: • To assist members of the Class of 2006 to prepare in order to pass the exit exam and receive their high school diplomas • To afford participants opportunities to balance conceptual understanding with test taking understanding – to grow conceptually while having specific opportunities targeted toward passing specific High School Exit Exam test items SOURCES FOR ANALYSIS AND RECOMMENDATIONS *XYZ Department of Education Exit Exam website* *Study Guides, Teacher Guides, and other Program Resources* *Test Blueprints and Released Items* *Independent Evaluations (HUMRRO) – particularly Year 7 evaluation* *Exit Exam On Target materials* *Website* *Online access to materials for examination* *Conference call with developer (SS)* *Sample interactive materials (using Exit Exam On Target and Exit Exam as resource)* *Examination of materials online (Number Sense Strand)* *Conference call with developer – JS who worked with developer while obtaining her Masters Degree in Education and Technology at*

2) The multi-layered analytic approach used in this study enabled me to revisit more macro and/or more micro layers in a recursive/reflexive/responsive way as new questions about what was occurring arose. For example, drawing on both the contrastive analysis of texts as well as returning to my initial analysis of the unfolding events of the face-to-face meeting enabled me to, in turn, focus on particular phases of the presentation event. For example, I began by focusing on Part A of the discussion in Event 2 (the presentation event), that pertained to audience, existing resources and learning approaches – topics also identified and reflected in my contrastive analysis of both the power point presentation and the Center handout. I developed a chart with cells for words and sections that could be drawn from the script to answer questions that could inform my understanding of what was happening during Dr. Beckwith's presentation (questions like who, what when...).

3) Once I had examined Dr. Beckwith's words and ideas in this new chart format, I used a domain analysis approach to semantic relationships proposed by Spradley (1980) (such as the "X is a kind of Y"). This approach generated empirical evidence or data that could be used to support warranted claims about what Dr. Beckwith was attempting to do and what she was conveying to inform the group's next steps. This approach to analysis allowed the claims of discursive actions that were generated to be grounded in the

words actually used by Dr. Beckwith.

4) The categories from the semantic analysis revealed actions and sub-actions that Dr. Beckwith had accomplished through her talk. Once this was visible, I returned to the script of what had been discussed during the presentation and, drawing upon the categories from the semantic analysis, recorded the chain of actions and sub-actions by Dr. Beckwith next to the portions of the script in which the text in the chart had appeared. This approach to identifying chains of actions in relation to semantic analyses is shown in the sample re-presented in Table 9 (see Appendix C for a longer excerpt). Listing actions and sub-actions adjacent to the script of the PowerPoint presentation made visible the unfolding chain of actions that had taken place as Dr. Beckwith was using the words in her talk.

Table 9

Re-representing Chains of Actions: Listing of chains of actions during Dr. Beckwith presentation

PowerPoint Presentation by Dr. Beckwith		Chain of Actions and Sub-Actions
1.	Slide 1	Slide 1
2.	Digital Teaching and Learning Communities: High School Exit Exam Preparation Initiatives Audience, Existing Resources, Learning Approaches and Methods	Signaling what she will cover in her presentation
3.		
4.	Slide 2	Slides 2-4
5.	Audience	Describing the students to be served
6.	Did not pass 1 or both sections of Exam	*Describing challenges facing learners*
7.	by May, 2006	
8.	Out of HS for year or more	*Conditions impacting diverse audience*
9.	Young adults – 18-20 years old	*Describing characteristics of diverse audience*
10.	May be working &/or enrolled in CC courses	*Conditions impacting diverse audience*
11.	Probably have fairly sophisticated experience	*Describing characteristics of diverse audience* *Conditions impacting diverse audience*
12.	with video gaming & online social interaction	
13.	(e.g., MySpace)	
14.		

5) In the next step, I adopted an analytical approach that enabled me to contrast what was discursively re-presented in Dr. Beckwith's presentation and handout and the moment-to-moment interactions of participants in response to that presentation (as represented in field and head notes). That approach to contrastive analysis is re-presented in the sample shown in Table 10 (see

Table 10

Sample of Contrastive Analysis of Referential Choices: Excerpt of analysis of intertextuality during group discussion

Column	1.	2.	3.	4.	5.	6.	7.
	Speaker	Comment	Reference to Presentation	Re-Creation in Notes	Reference to Handout	References to Other Participants' Comments	Actions
1.	SH, XX University	Recounts his experience with PD program and mathematics. What percentage of students do it correctly? What did students do?	Ways of determining content focus	Content focus - Standards tested - # of items...focus energy on most tested areas – concept clusters – correlated with dependent concepts	Areas of test are weighted in terms of the number of items (there may only be 1 item reflecting a particular area tested, while there would be several items in other areas)		Affirming use of assessment data to inform program design. Providing example that supports.
2.	YB, University	PISA is a literacy test, not a reading or writing test. Need info for type of readers and ways they are approaching the test.				Adding to SH's comment.	Raising need for assessment data to understand participating students.

		Number of items and types passed.					
3.	Unattributed	Student choice of practices. Can practices. Have choice.					
4.	GJ, University	We need to work with a subgroup so we know how kids approach the test.	Approaches to developing content	Moving from materials that build conceptual understanding to test	Analysis of materials and approaches, as well as the need to recruit and engage	Adding to YB and to SH' comments, referencing suggestions in the	Suggesting work with subgroup to understand students' approach

Appendix D for larger excerpt). In this case, I focused on identifying the referential choices made by participants in relationship to what was presented. I created a chart of the comments made by participants in response to Dr. Beckwith's presentation, and noted what the speakers' comments were in reference to when there was a clear link based on similarities in language and/or ideas. Options included the words Dr. Beckwith used (i.e. the words on the Power Point), the words in the Center handout, the actions of those who commented previously, and participants' prior knowledge/experiences. This analytical approach, therefore, enabled me to identify proposed intertextual links (Bloome & Egan-Robertson, 1993) based on what participants brought with them to the meeting and what was available to them in and through what occurred during the meeting.

6) In the next layer of analysis, I analyzed the talk/actions of participants in the full group discussion as they discussed Dr. Beckwith's Power Point presentation. I compared participants' words to the words that had been part of the slides in Dr. Beckwith's presentation to see what portion of her remarks participants were engaging with. I determined that all but one of the discussions and affiliated actions related to the program's design, as shown in Table 11 (Appendix E for larger excerpt).

Table 11

Sample of Contrastive Analysis of Discursive Actions Across Texts and Participants: Contrastive analysis of Dr. Beckwith's actions/sub-actions to participants' actions

	Chain of Actions and Sub-Actions During Dr. Beckwith Presentation	Corresponding Actions of Participants In Response to Presentation
Slide 1	Signaling what she will cover in her presentation	
Slides 2-4	Describing the students to be served *Describing challenges facing learners* *Conditions impacting diverse audience* *Describing characteristics of diverse audience* *Conditions impacting diverse audience*	Discussing challenges of reaching students.

7) To graphically depict the major ideas covered by Dr. Beckwith's presentation and handout, I developed Figure 3 (Chapter 4, p. 110). This figure provided a mental image of the rationale and framework for potential joint action that Dr. Beckwith had covered in her talk.

8) In the next step, I examined patterns of interactions among the full group in the form of topics commented on, or, as previously discussed, their referential choices (see excerpt in Tables 12 and 13 and larger excerpt in Appendix F). In the layer of analysis represented by Table 12, however, I

Table 12

Sample of Contrastive Analysis by Topic of Discursive Events

Order of Participation	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Participants In Event 1																								A= Assessment
Unattributed (4)				A			A								T					T				T = Technology & program
YB (3)	P		A											G										G = Guiding Principles
ML (3)										T	T		T											N/A = Not Applicable
Ms. C. (2)												T					N/A							P = Presentation
ST (2)								T													T			
PM (2)						A													T					

Table 13

Sample of topic and discursive analysis

				Drawing on.....		
Speaker	Comment	Discussion Topics	Topic Categories	Knowledge of and Experiences with.....	Knowledge of and experience as....	Contribution to the project
Carey Brown (CB), State University	Recounts his experience with PD program and mathematics. What percentage of students do it correctly? What did students do?	Assessment and program design.	Assessment	A similar project that built online exit exam math resources for teachers.		Provided insights into ways assessment data can inform program developers' understanding of students strengths (and weaknesses) in relation to the test.
Dr. Beckwith Central City University	PISA is a literacy test, not a reading or writing test. Need info for type of readers and ways they are approaching the test. Number of items and types passed.	Assessments.		Assessment		Expanded notion of use of testing to include use by students to support their decisions surrounding their learning.
Unattributed	Student choice of practices. Can					

added a dimension - whether members were affirming or opposing a comment by a previous speaker (or speakers), expanding upon a comment, etc. (e.g., column 6 of Table 10 above).

9) I used a similar approach to contrastive analysis that I used to identify topic choices (Table 12), in order to examine the role of prior knowledge and experiences in the full group discussion, and what those may have contributed to the team's work. A sample of this approach is seen in Table 13 (see Appendix F for a larger excerpt). I examined the data for evidence that participants' comments were drawing on knowledge and experience from other experiences, and evidence suggesting that they were speaking from knowledge and experience in a particular role (as a ...). This same multi-layered approach to analysis of the events of the first meeting, beginning with reflexive/responsive revisiting of the script re-presenting the analysis of the integrated meeting notes, was repeated for subsequent events (e.g, events three through five).

10) To analyze participants' roles during the six weeks leading to the face-to-face meeting and the seven weeks after the January 12th meeting, I analyzed each email record and identified the action being taken. A sample of this analytical approach is shown in Table 14 (see Appendix H for a larger excerpt). I also analyzed the action taken and identified the role in the project that the action fulfilled.

Table 14

Sample of Analytical Re-presentation: Analyzing roles through analysis of actions

Team Member	Action	Role
AM	Thanking DC and Ms. C for great meeting	Thanking
ST	Connecting Ms. C (effort) to Apple	Connecting to people who can be a resource
GJ	Thanking group for meeting. Sharing her notes.	Thanking Sharing notes and resources
Ms. C	Thanking YB for her work	Thanking
YB (To University group)	Filling group in on 1/12 meeting.	Informing and Updating
YB (To TA)	Noting Ms. C and TA's office move	
DC (To TP cc to Ms. C)	Forwarding PT's plan of action	Informing and Updating Co-managing
DC (To RM and TP)	Information about SharePoint site	Resourcing
AM (To CD and Ms. C)	Asking about next steps	
TP (To CD and Ms. C)	Coordinating a call to discuss AM's email	Co-managing
Ms. C (To TP, CD, RM)	Requesting call to discuss AM's email	Co-managing
Ms. C (To TP)	Inquiring about meeting notes	Co-managing
Ms. C (To ST and work colleague)	Note regarding possibilities for partnership with Apple	Connecting to people who can be a resource
Ms. C (To AM)	Letting her know that a meeting is scheduled to discuss the contract	Informing and Updating Co-managing
Ms. C (To AM)	Email re: contract	Informing and Updating Co-managing

Finally, I also used an approach used previously to examine referential choices within and across email exchanges. Through this process I was able to identify references to particular actors. Table 15 is an example of how I chose to re-present this analysis, identifying the actors who were most prominent in the email exchanges across the top and recording the roles each had fulfilled during the period of January 13, 2007 through March 1, 2007. This analysis indicated that David Shipman, Ms. C, and Dr. Beckwith and Dr. Black continued to provide leadership to the effort, while Sheila North emerged as a new leader.

The analysis suggested that many leaders had contributed to the project and its development through different forms of leadership. Therefore, I determined that I would need to examine leaders and leadership by identifying who was leading which component of the work, and in what ways. Through this new analytical layer of this this period of time, I found that some of the roles taken up by David Shipman, Ms. C, Dr. Beckwith and Dr. Black, and Sheila North overlapped (such as building the budget). Others were unique to the individual.

Table 15

Sample of Analysis of Roles and Leadership

Roles	Ms. C	CD	YB & GJ	TP
Thanking	X		X	X
Connecting to and with people who could be a resource	X			X
Recruiting partners	X	X		X
Identifying Resources		X		
Building a fiscal plan	X	X		X
Sharing notes and resources			X	X
Co-creating			X	X
Organizing opportunities for collaboration				X
Informing and updating	X	X	X	X
Raising concerns			X	
Asking questions			X	
Securing support of bosses		X		X
Building technical capacity		X		
Co-managing	X (Overall project)	X (Overall project)	X (Work of team at University)	X (Overall project)

11) I then contrasted the roles David Shipman, Ms. C, and Dr. Beckwith and Dr. Black had taken on during the first six weeks to the seven weeks following the meeting (see excerpt in Table 16 and larger excerpt in Appendix I). Some roles had disappeared and seemed to no longer be needed. For example, there were no longer instances where Ms. C was sending documents to 'frame' the project. These kinds of analyses of roles over time showed that this might have been a role that helped guide what was discussed in the January 12th meeting, but was a role that was no longer needed after the meeting since all had come to common understandings of what the project would entail. In addition, a role such as "Connecting with people who could be a resource" was no longer visible. By contrasting roles taken up over time, I was able to identify where roles shifted, in what ways, when, under what conditions, etc. – when roles seemed to disappear and at what points actors took up new roles, including Ms. C.

Table 16

Sample of Contrastive Analysis of Roles Over Time (leadership roles)

Roles	Ms. C 1st 6 weeks	Ms. C 2nd 7 weeks	David Shipman 1st 6 weeks	David Shipman 2nd 7 weeks	Dr. Beckwith & Dr. Black 1st 6 weeks	Dr. Beckwith & Dr. Black 2nd 7 weeks	Cate McGregor 1st 6 weeks	Sheila North 2nd 7 weeks
Partnering	X		X					
Facilitating partnering by others							X	
Connecting to and with people who could be a resource	X	X						X
Recruiting partners	X	X	X	X	X			X
Identifying Resources	X		X	X	X		X	
Framing the project	X							
Collaborating	X				X			
Co-creating			X		X	X		X
Organizing opportunities for collaboration	X				X			X
Informing and updating	X	X	X	X	X	X		X
Problem solving	X		X		X		X	
Connecting with people who could be a resource	X				X			
Encouraging	X				X			

Conclusion

To summarize, the ethnographic philosophy of inquiry and ethnographic methods employed in this study, drawn from research traditions in anthropology, linguistics, sociology and education, were particularly useful when studying the social and technical aspects of virtual organizations and sociotechnical systems. The philosophy of inquiry and methods of inquiry make visible who is doing what, with whom, under what conditions, and with what outcomes. The approach is based on the notion that virtual organizations are cultures-in-the-making in which the individuals forming the organization have particular expertise, make contributions, and develop roles and relationships across time and events. The emerging culture created through such interactions can be seen by analyzing empirical evidence in grounded ways, at multiple levels of scale, that shows what actors are proposing, doing, and what and how they are accomplishing their work.

CHAPTER FOUR
THE FIRST TEAM MEETING: AN "ORIGINATING EVENT"

In this chapter I examine the first face-to-face meeting of potential partners in the initial two Stepping Program grant proposals. The analysis of this first event informs understandings of how the virtual organization emerged, and the ways in which individual team members, who had never worked together as a team, drawn from different disciplines and institutions, constructed common knowledge. Drawing on Schein's (2010) conceptions of "groupness" and culture within organizations, I explored instances in which individuals conveyed beliefs and ideas in ways that attributed the beliefs to the group as a whole (i.e. collective beliefs).

The findings demonstrated that prior work by actors not physically present in the meeting supported the work of the team through research and the conveyance of findings and ideas inscribed in text (i.e. a meeting handout). Through this process, I make visible how ideas of the individuals, who were not physically present, were talked into being by a representative who was present (i.e. Dr. Beckwith presentation), and how these ideas were then taken up by the developing group. This indicated that the team included both those present and those with whom they worked in inter-related contexts. The analysis showed how prior knowledge of participants also supported team

members' work, and ways that the diversity of prior knowledge within the team contributed to what the group could do.

"Groupness" and Culture Developing Within the Team

The first meeting of the potential Stepping Program team members took place slightly more than one month from the date on which the idea to form a team first surfaced. Representatives from eleven different institutions gathered together on January 12, 2007 to discuss the potential for two grant applications. The initial reading and analysis of the script developed to reconstruct the day from archived records (see Chapter 3) revealed that five distinct events had taken place, and that the second event had consisted of three different parts. While archived data did not allow for the re(creation) and analysis of the welcome and introduction period (event one), they were sufficient to re(create) and analyze events two through five.

The timeline for the day and the chronology of these events of the first face-to-face meeting are re-presented in Table 17 below. As shown in the table, in the second event, one participant (Dr. Beckwith) made a presentation about the students to be served by the grants, if awarded, and the challenges such students might face (Part A). Mid-way through her presentation (Part B), Dr. Beckwith began a discussion about guiding principles, the resources the

group might want to create, and the program design. The final part of the session (Part C) involved a discussion with meeting attendees around the information Dr. Beckwith presented. The third event consisted of a breakout session in which smaller groups were formed to focus on either the development of the mathematics and/or the English Language Arts program. In the fourth event, the full group came back together after a lunch break and a newcomer to the group, who entered the meeting late, questioned the group about their goals and beliefs. The fifth and final event was a full group discussion about the students and the program being created.

Table 17

Event Map of the First Face-to-Face Team Meeting

Event #1	Event #2	Event #3		Event #4	Event #5
Welcome & Intro.	**Dr. Beckwith Presentation**	**Mathematics Breakout Group ELA Breakout Group**	Lunch (45 min.)	**Outsider/ Insider Discussion of Beliefs and Assumptions**	**Full Group Discussion**
	Part A: Audience, Gaps, Missing Links, and Guiding Principles **Part B:** Materials, Learning Approaches and Models **Part C:** Full Group Discussion				Student Incentives, Motivation, Recruitment Strategies, and Services

During the analysis of the script generated from written accounts of the exchanges that had taken place across all four events, the exchanges in Event #4 emerged as a "rich point", a place, as Agar argues, where culture happens (Agar, 2006). A rich point can be viewed as both a physical (a point in time) and discursive place where a person has an opportunity to learn about the other's viewpoint or cultural practices, and a place to learn through contrasting personal expectations with observed actions of others (Green, Skukauskaite, Dixon & Córdova, 2007). In this case, through the analysis of the written discourse of accounts of the meeting, a beginning indication of groupness and a glimpse into the team's developing culture was evidenced in Event #4.

The event took place among the full group as they returned from a working lunch. Having missed the morning discussion, Dr. West (an "outsider" from a Big Metro University) came into the developing team consisting of members who now possessed 'insider' knowledge. His first act as a participant in the developing team was to question the group about the beliefs underlying the group's work.

The script revealed that Dr. West began by questioning the group's beliefs and assumptions. The semantic analysis of this section of the script that recreated the day, as re-presented in Table 18, indicated that speakers described beliefs that related to seven areas.

Table 18

Semantic Analysis of Discussion of Beliefs During Event #4

	Column 1 **Beliefs related to .....**	**Column 2** **Which enable the team to .....**	**Column 3** **and/or enable the student to .....**
1.	Technology - Net 2.0 - advances in online curriculum - system	Reach critical mass Facilitate net links Help students not helped previously Make teaching and learning more engaging and effective Learns faster than individuals and gets more students through the system	
2.	Changes in pedagogy		
3.	Expertise of people in the room	Create a powerful, responsive system	
4.	Research - From NRC - Project or problem based approach	Build upon what is known about how people learn Offer rich learning experiences	
5.	Data		Engage with and be interactive with... analysis of test data and evaluative data.
6.	Combination of what test prep programs do and concept development and clusters		Build conceptual understanding of the difference between the test setting and other settings.
7.	Times for social interactions between teens and adults		To get support for self-directed learning.

1. Technology

As shown in the table, analysis of reconstructed exchanges among participants in response to questions about their beliefs and assumptions revealed that multiple references were made to technology and what it might enable either the team or students to accomplish. Net 2.0 technologies (Row 3), for example, according to various team members, would enable the team to reach critical mass, facilitate net links, and allow the team to help students not helped previously. Advances in online curriculum would enable the team to make teaching and learning more engaging and effective. The system (referencing the technologies, flow diagram and discussion in event 2 – see Table 17) would learn faster than individuals and would get more students through the system.

2. Changes in pedagogy

Analysis indicated that participants believed that changes in pedagogy and project or problem based approaches to instruction would enable the team to offer rich learning experiences.

3. Expertise of the people in the room

Participants indicated their belief or assumption that the expertise in the room (referring to the 23 meeting participants) would enable the team to create a powerful and responsive system.

4. Research

Research from the National Research Council and the project or problem based approach would enable the team to build upon what was known about how people learn, and to offer rich learning experiences.

5. Data

Data would enable students to engage with and interact with the analysis of test data and evaluative data.

6. Combining what test preparation programs do with concept development

Analysis of exchanges also indicated that participants believed that by combining what test preparation programs do with concept development, students would be able to build conceptual understandings of the difference between the test setting and other settings.

7. Social interactions

Finally, participants believed that times for social interactions between teens and adults would enable students to get support for self-directed learning.

Following this initial referencing of beliefs and assumptions, Dr. West continued, asking questions about the group's theoretical assumptions and why the group's approach would change outcomes for students. By asking, "Is this only about the exit exam or longer term goals?" Dr. West also probed the group's scope (how broad?), length of commitment (for the grant or long-term?), and goals.

As presented in Table 19 below, a semantic analysis of the responses to Dr. West documented in the script revealed that participants described the grant effort as being about the creation of a larger resource in order to grow students. Table 19 makes visible the ways in which participants discussed the grants in terms of what they would or would not do or be, thus discursively establishing potential parameters for the group's goals. For example, the grant would be only the beginning to ensure students would have the opportunity to meet the standards, get them ready for the test, help students in the workforce, and to help students learn about learning. It would be a pathway to students

Table 19

Semantic Analysis of Discussion of Goals for the Grant During Event #4

	Column 1 **Grant (or goal) is .....**	**Column 2** **In order to ....**	**Column 3** **Grant is not...**
1.	Creating a larger resource	To grow students	About passing the test - test is just the first step
2.	Only the beginning	Help students in the workforce	Just for those not passing the exit exam
		Pathway to students not successful on the exit exam	
		Address fundamental challenge facing state	
		Ensure students have the opportunity to meet the standards	
		Get them ready	
		Learn about learning	

not successful on the Exit Exam. At the same time, the grant would not be about passing the test ("the test is just the first step"). It also was not just for those not passing the Exit Exam.

While respondents seemed to be offering answers to Dr. West's questions on behalf of the entire group, the possibility existed that they were merely expressing personal points of view. This seemed especially likely given the fact that at this point in time team members had only been together for approximately four hours (see Table 17 above).

Discourse, Intertextuality and the Development of Common Knowledge

To determine whether the speakers were referring to their own views or to their re-interpretation of common views and common knowledge that had been constructed within the group, I examined the potential intertextual ties (Bloome & Egan-Robertson, 1993) between the ideas and comments of speakers and the ideas and comments of others in the group expressed during events one and two. Bloome & Egan-Robertson (1993) argue that intertextuality is a social construction that must be proposed, interactionally recognized, acknowledged by, and be socially significant to, the members of the group. Drawing on this perspective, I created a new analysis, which is re-presented and excerpted in Table 20 below. I listed each speaker in Event #4

Table 20

Sample of Analysis of Intertextuality During Event #4

Line #s	Speaker	Message Units Event 4 (See Appendix J)	References to Event 2 (See Appendix E)	References to Event 3 (See Appendix I)	Actions
1	Dr. West	What are your underlying beliefs?			Questioning Beliefs
2		Record #3: The exit exam is a fundamental challenge to California.			
3		Key Question: What is the underlying belief system that makes you			
4		think this project will work where others have failed? Critical mass			
5	David Shipman				Describing underlying belief system
6		Critical mass with technology Net 2.0 can facilitate net links to help	Comment: Ms. C: As we think about this location or grant, think about where students would go to – could be a high school site, could be a community college site, a community based organization.... Dr. Beckwith Presentation *May have online instructor, tutors, small group (virtual) or 1 on 1, opportunities for collaboration. Virtual or live. Some opportunity for face2face contact.*	Add library David Shipman: Statewide. Where he lives, they have a lot of tutors who could be used for the online piece. Who could supplement XXUSD tutors direct funded. XX has more students. Together, more resources and richer understanding.	

(column 2) and the text of their comment(s) (column 3) in the order in which they unfolded across the event. I then re-examined written artifacts and field note records (integrated notes) of the discussion and presentation from Events 2 and 3 of the first meeting. In and through this re-examination, I was able to identify references related to what was said in Event 4. Those references are shown in Column 4 of Table 20 (event two) and Column 5 (event three). The evidence suggested that comments made by speakers during the exchange with Dr. West in Event #4 contained numerous intertextual references (viewed across columns) to the ideas and words used by others during group discussions that had taken place in events two and three, as well as references to Dr. Beckwith's presentation (event two), and to the words and ideas of the Center at the University inscribed in the distributed handout (event 2).

For example, in David Shipman's (CC system-wide technologies, situated at Rural North College) comment shown in line 6 of Table 20. David Shipman indicated that the team could reach critical mass with technology. Net 2.0 would facilitate net links that would help. As indicated in column 2 of line 6 of Table 20, this comment related to others made by Ms. C (initiator/ethnographer) in event one in which she discussed the need to think about where students would go to access the program being designed, and that access points could be a high school site, a community college site, a community based organization, depending on the model. The comment also

related to the section of Dr. Beckwith's (Coastal City University) presentation proposing that the team might have a variety of opportunities for collaboration, including online instructors, tutors or small group (virtual) or one on one. Finally, David Shipman's comment related to one he made during the discussion that had occurred in event three (column 3, line 5). In this comment, he described the statewide nature of the developing program. Tutors where he lived could supplement direct funded tutors employed by one of the participating school districts. David Shipman's response to Dr. West's questions made visible how ideas proposed in the context of the group discussions earlier in the day, and recognized and acknowledged in such settings, served as resource for and became a significant part of the planned work of the group (Bloome & Egan-Robertson, 1993).

Similar analysis of the discussions across all four events also revealed intertextual ties between the words and ideas expressed by previous speakers. This reaffirms notions by Bakhtin (1986) and others (Fairclough, 1992; Fairclough, 1993) that actors in social groups serve as a text for one another, and that words implicate histories.

Non-linear, Recursive Nature of the Discussions Contributing to the Developing Culture

To better understand how the developing languaculture (Agar, 1994) and common knowledge (Edwards & Mercer, 1987) of the group had emerged,

I returned to events two and three to examine, at a new level of analytic scale, who did what, with whom, and who said what, and to whom. I looked at the discursive actions that took place across time and events (Events 2-5), and the extent to which the words and ideas of speakers were taken up by others as part of such acts (i.e. intertextuality across Events 2-5). The non-linear and recursive nature of the discourse and discursive acts that emerged from my examination of the analysis within and across events is re-presented in Figure 3 below.

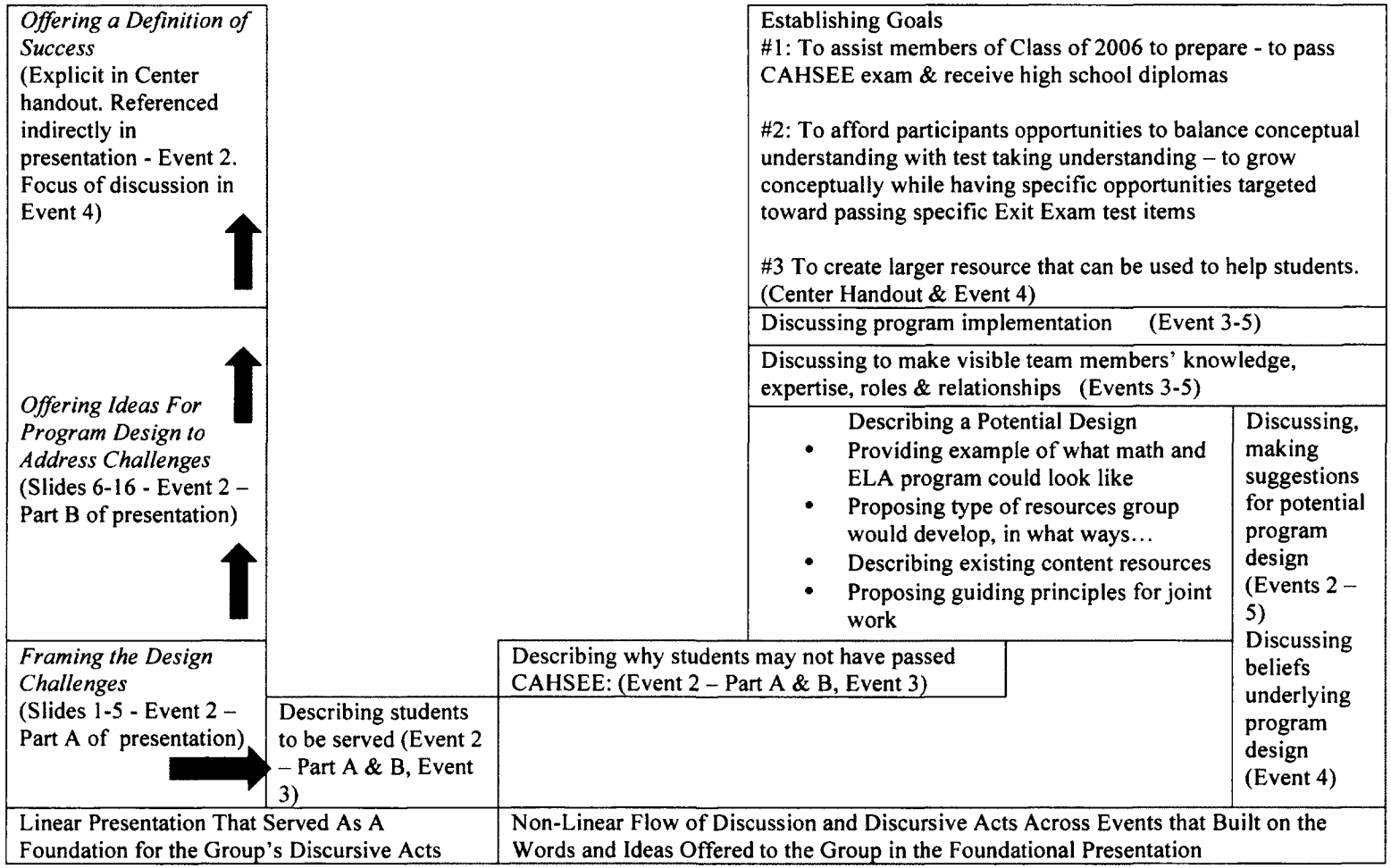


Figure 3. Graphic Representation of the Non-Linear Flow of Discursive Actions in Events #2-5

Figure 3 may best be read by looking at the left side as a fairly linear progression re-presented by Dr. Beckwith's presentation (vertical column starting at the bottom and building up). In contrast, the inter-connected boxes on the right, some juxtaposed with others, some bumping up against others in a non-linear fashion, serve to make visible the ways in which the discussion of the program occurred across subsequent events, but at the same time drew on the initial presentation as material resource in ways that impacted the flow of discursive actions. The discussion below unfolds the analysis and the flow of discursive action across Events 2-5, as re-presented by Figure 3.

As the second box from the bottom of the left hand side of Figure 3 makes visible, in Event #2 (Parts A and B), Dr. Beckwith started the conversation within the group by framing the design challenge (slides 1-5) for the project to be proposed in a power point presentation (2007). The information discussed in slides 1-5 served as a foundation for the next set of slides in which ideas for the program's design were offered by Dr. Beckwith (see third box from the bottom on the left hand side of Figure 3). The box at the top of the left hand side of figure three demonstrates that Dr. Beckwith's discursive acts surrounding the framing of the design challenge, and then her discursive acts surrounding the program design, were intended to lead to "success" (which is defined explicitly in the handout and is implicit in the presentation) (see top box on left hand side of figure 3).

A detailed analysis of the discursive acts (see Appendix C) indicated that in Part A Dr. Beckwith described the students the group intended to serve (slides two through through four). The students the group wanted to help were young adults ranging from 18-20 years old who probably would have sophisticated experience with video gaming and online social interactions. Latino groups represented the largest ethnic group of those who did not pass the exam. In addition, there were high concentrations of students who were English Language Learners, students from economically disadvantaged families, and students with special needs.

In addition, conditions that could impact students' participation and success in the program were identified. Conditions included the fact that students might have been out of high school for a year or more, and they might be working and/or might already be enrolled in a community college. In slide five, she described why students might not have passed the Exit Exam. For example, some students might not have been afforded opportunities to learn particular areas tested. Others might have had difficulty with, and/or didn't have, content and/or conceptual understanding.

Slide six proposed guiding principles for the group's joint work. These included addressing the needs and interests of students, not asking participants to return to high school, and helping students to "bridge" conceptual

understanding, 'real world' application and test format understanding and skills. Slide seven described existing content resources.

In Part B of her presentation, Dr. Beckwith offered ideas for designing a program that would be responsive to the challenges she had identified. Slides eight through fourteen contained suggestions for the type of resources the group would develop, and ways of developing those resources. The recommended program elements included materials that would build students' conceptual understanding, help students understand test formats and strategies, elements that related to the content focus in ELA and mathematics, interactive materials, and delivery systems.

The presentation also included recommended approaches to development designed to address needs and interests of young adults. The need to "explicitly help students to bridge conceptual understanding" through 'real world' application, test format understanding and skills for approaching concepts in test format is but one of many examples that emerged from the semantic analysis. Constraints impacting the development efforts, such as the fact that it was easier to place math in a digital interactive context compared to English Language Arts, were discussed as well. Slides fifteen and sixteen provided examples of what the math and English Language Arts program could look like.

Dr. Beckwith's recommendations were aimed at overcoming the challenges in order to reach two goals. The two goals were not contained in her Power Point presentation. They were, however, listed in the Center handout (see Appendix C, slide 1 in column 1 and corresponding text from handout in column two) that accompanied the presentation. The first goal listed in the handout addressed the intent of the grant funding that the team will be applying for – *to assist members of the Class of 2006 to prepare in order to pass the exit exam and receive their high school diplomas*. The second goal identified was to *afford participants opportunities to balance conceptual understanding with test taking understanding – to grow conceptually while having specific opportunities targeted toward passing specific exit exam test items*. Taken together, these two goals offered a definition of success for the group's work.

While the left hand side of Figure 3 depicts a linear progression of the ideas discussed by Dr. Beckwith, and while the linear nature of the discussion is visible when the discursive acts are considered in terms of major categories, a detailed analysis of Dr. Beckwith's discursive actions and sub-actions shown in relation to the text of the slides (Appendix C) demonstrated the non-linear and recursive nature of Dr. Beckwith's presentation and the discussion that followed. For example, the action related to the script that contains text from slide four is characterized as "describing the students to be served". Sub-

actions are identified for four lines of the script related to slide four. In the right hand column of Appendix C for lines 30, 34, and 38, the sub-actions are characterized as "describing challenges facing learners". In one of the lines of text (line 32) the sub-action is characterized as "describing conditions impacting the diverse audience". Sub-actions related to "describing conditions impacting the diverse audience" are also described in text from slide 2 in lines 8, 10, and 11. Dr. Beckwith had woven common themes back and forth across her presentation in a non-linear, recursive manner.

Discursive acts within the full group's discussion of the presentation (Part C of Event #2) were made visible in the analysis of the twenty-three comments made by eleven (nearly half) of the twenty-three participants in the meeting (see column 7 of Appendix D). The non-linear flow of discussion and discursive acts that drew from and added to the words and ideas offered by Dr. Beckwith's presentation as resource, are shown on the right side of Figure 3. As Figure 3 makes visible, the group discussion and discursive actions primarily addressed the program design, responding and expanding upon the ideas Dr. Beckwith had offered in slides 6-16.

The recursive nature of the discussions began to emerge when later in the day, as part of Event #3 during the mathematics breakout discussion, participants revisited the ideas Dr. Beckwith had offered in slides 1-5 regarding the students to be served and reasons why they may not have passed

the exit exam. It was also visible, for example, when the goals were revisited in Event #4. The iterative nature of the discussions also began to emerge in Event #3 as discussions surfaced team members' knowledge, expertise, ideas about roles and relationships, and as program implementation issues were articulated. Another indicator of the generative nature of the group's actions could be seen in the fact that these topics were not an explicit part of the planned meeting agenda.

Words of Actors Grounding the Identification and Descriptors of Discursive Acts

As noted above, the labeling or categories used to capture the discursive actions stemming from the words of each speaker were generated empirically from semantic and intertextual analyses. This helped to ensure that representations were grounded in empirical evidence as opposed to personal interpretations. Table 21 below provides examples of how the labels for actions in relation to slides 2-4 of the presentation, as re-presented in Table 9 (Chapter 3, p. 82), were generated.

Table 21

Semantic Analysis (Spradley, 1980) of the Diverse Audience

X is a characteristics of	X is a kind of person served
Young Adults – 18-20 years old	Latino groups (largest ethnic group of those who did not pass)
Probably have sophisticated experience with video gaming & online social interaction (e.g. MySpace)	English learners
	Economically disadvantaged
	Designated special education

In Event #2, Dr. Beckwith began the group discussion (Part A) by talking about the characteristics of the diverse audience to be served. The semantic analysis of this discussion, as shown in Table 21, enabled me to identify a series of referential choices in the presentation. I then examined those references in order to uncover potential semantic relationships among them. This enabled me to group the references made, and having done so, identified overarching *domains* (Spradley, 1980), or categories within which the references seemed to fit. Table 21 re-presents two of those domains – characteristics of people to be served and kinds of persons to be served. From this perspective, then, semantically, X is a kind of Y, or, in this case, for example, X (the identified reference) is a kind of person served.

This semantic approach to the analysis provided evidence that some of the 'characteristics' of students the group wanted to help were young adults ranging from 18-20 years old who probably would have sophisticated

experience with video gaming and online social interactions. At the same time, of the 'kinds of persons served' (Table 21, column 2), Latino groups represented the largest ethnic group of those who did not pass the exam. In addition, there were high concentrations of students who were English Language Learners, students from economically disadvantaged families, and students with special needs.

Through this semantic approach to the analysis, I identified additional categories, or domains, into which references made in the presentation fit. These included conditions that could impact students' participation and success in the program. Table 22 is a re-presentation of this semantic relationship – the relationship of particular references in the presentation to the group, the conditions of a diverse audience of students (X is a condition) for the proposed program.

Table 22

Semantic Relationship Analysis of the Conditions Impacting the Diverse Audience

X is	A Condition of Diverse Audience
Out of HS for year or more.	
May be working &/or...	
Enrolled in CC courses.	
Were not afforded opportunities to learn particular areas tested, and/or....	
Probably have sophisticated experience with video gaming & online social interaction (e.g. MySpace)...	

As shown, the range of conditions identified included, among others,

the fact that students might have been out of high school for a year or more, and might be working and/or already enrolled in a community college.

Dr. Beckwith went on to provide several examples of the challenges learners might face in relation to their conceptual understanding of items on the test. This piece of the domain analysis identifying semantic relationships among referential choices having to do with challenges is shown in Table 23.

As shown in Table 23, some students, for example, might not have been afforded opportunities to learn particular areas tested. Others might have had difficulty with and/or did not have content and/or conceptual understanding.

All labels given to discursive acts across Events #2-5 (shown in Appendix C, Appendix J and reflected in Figure 3 (p. 110) were grounded in this type of semantic analysis. Identifying the semantic relationships among referential choices made by Dr. Beckwith in the slide presentation made it possible to make visible the potential discursive work being accomplished in and through those choices. By identifying the kinds of discursive actions, I was able to further make visible the parameters for what

Table 23

Semantic Relationship Analysis of Challenges Facing Learners Based on Dr. Beckwith Presentation

X are examples of learners' challenges in relation to conceptual understanding of items on the test
Did not pass 1 or more sections of Exit Exam by May 2006.
Not having had courses by time tested.
Having forgotten content by senior year
Had some difficulty with items tested (23%).
Have difficulty with and/or don't have content &/or conceptual understanding, &/or...
Were not afforded opportunities to learn particular areas tested, and/or...
May or may not have the concepts, but do need test taking strategies &/or links to how content looks & works translated into test items, and/or...
May have language &/or reading level needs
Content taught in discreet strands – students might be missing ways of making links across concepts, using multiple concepts
May not have 'conceptual hooks' to remember – missing 'real world', holistic applications of conceptual understanding (using multiple concepts)
May not know how to draw on strength areas to support work in areas of greater need
May not understand test 'genre' – missing the link between content in one format and context and content or concepts in test format and context and how to approach the test format
May have not had opportunities to actively make links for self, to deconstruct test, to make conceptual links – has been 'shown' test format

might come to count as a particular kind of 'digital teaching and learning community' (the title of the power point) as proposed by Dr. Beckwith's presentation. By further examining intertextual references across speakers and events, I was able to uncover the ways in which the discursive work being accomplished through the presentation may have served as potential material resource for the group in constructing common knowledge and languaculture.

The Team's Diversity and the Role of Prior Knowledge and Experiences

While examining the intertextual references of speakers to the ideas and words of others, I identified a pattern in which participants drew upon their current or prior work in a certain role or prior sets of experiences with a given topic when speaking within the group. This afforded team members opportunities to learn of another's perspective in relation to the work at hand. In Table 13 (Chapter 3, p. 88), Appendix F, and Appendix L, for example, Carey Brown's prior experience as a mathematics instructor, knowledge of effective instructional methodologies in mathematics, and comments made within the mathematics breakout group in Event #3 served as potential resource for others. His prior experience and the comments he made, which drew on those experiences, served to generate awareness within the group of

the need to include a warm-up exercise or "refresher" in the program before assessing students' math knowledge and skills.

The contributions derived from participants' prior knowledge and experiences to the team's developing understandings across Events #2-5 were identified in the manner shown in Table 10 in Chapter 3 (p. 83) and in Appendix D (i.e. example from Event #2). Profiles of the contributions of each participant who spoke were developed from such information (Appendix M). An analysis of the profiles revealed that the participants who were brought together possessed and shared expertise in the following areas:

- Program design
- Systems design (i.e. programs, services, research and underlying technologies)
- Technical expertise
- Use of technologies in instruction
- Content expertise in ELA and Mathematics
- Teaching experience in ELA and Mathematics
- Knowledge of the exit exam and existing programs
- School and district operations and needs of teachers
- Knowledge of adult learners and English Language Learners
- Education research
- School finance and state policy concerns

- Digital divide and technology resources in schools
- Assessment
- Perspectives and resources in K12, community colleges, state colleges and universities, and libraries

Evidence from the profiles showed that the diversity in the expertise brought together to inform the program's design and the work of the team, aligned with the needs of the design proposed by Dr. Beckwith in Event #2 (Part B). That expertise also aligned with needs of students as they were described in Event #2 (Part A). In other words, the requisite expertise was in the room in the event that participants were willing to take up the ideas Dr. Beckwith had laid out. Thus, all actors whose potential involvement would be needed were afforded an opportunity in the beginning stages to inform the design of the project.

Team Membership and Verbal Participation

Analysis of data collected that enabled me to examine patterns of participation across the four events of this first meeting (See Appendix N, O, P and Q) demonstrated that all sixteen people who spoke made at least one verbal contribution to the common knowledge and co-constructed program

design during the day. In addition, all speakers drew upon prior knowledge and experiences (in addition to the words of others or intertextual ties shown in other portions of the chapter) when making such contributions to the group's possibilities for common knowledge.

To examine whether or not the verbal comments by individuals had any relationship to meeting participants' ultimate listing as a member of the team in the final grant proposal, I analyzed the level of participation within each of the events. I then analyzed frequency of participation across the events, continuity (whether there was participation in each of the three full group events in which there were opportunities to contribute to the dialogue), and whether or not the individual became a team member in the final proposal. This analysis revealed that there did not seem to be a relationship between team membership in the formal grant proposal and verbal participation in the meeting.

I then developed a table, which categorized each participant who did not join the Stepping team. Categories used were either a 'leader' in the entity (institution or organization) represented at the meeting and later in the grant, an administrator leading a group within a particular entity, or an educator or staff member within the entity (institution or organization). This analysis, presented in Table 24, revealed that five of the six meeting participants who

were not ultimately listed in the grant proposal were either in the 'leadership in entity' category or the 'educator/administrator/staff in entity' category.

Table 24

Meeting Participants Who Did Not Join the Team

Participant Not Joining the Team Officially in the Grant	Leadership in Entity Represented	Leadership of Administrative Branch of Entity	Educator, Administrator or Staff in Entity Represented
Mark Lowe, Instructional Technology Applications, Big Urban USD			Yes
Dr, West, Emeritus, Big Metro University			Yes
Javier Bustamante, Administrator, Big Urban USD			Yes
Don Knott, Partnership Development, City College of Big Metro		Yes	
Cate McGregor, System-wide technologies	Yes		
Dr. P, Vice Chancellor, Big Metro University	Yes		

Since other meeting participants from the entity in the "administrator leading a group within the entity" category did become a team member in the grant, one reason for non-membership may be that the person would be supporting the grant in other indirect ways or may have had a role (or might have a role in the future) that did not pertain to this particular phase of the project. In other words, the person was present to support and contribute, but not necessarily

with the expectation of becoming a team member. This hypothesis was confirmed upon examination of the larger data set that extends beyond the period of time that is the focus of this study.

Conclusion

The analysis in this chapter of the first face-to-face meeting of the Stepping Program team revealed that the meeting took place across five events. What became visible was that the developing languaculture of the team and the initiation of a common knowledge of and for the group developed through a series of non-linear, iterative and recursive discussions that occurred within and across these events. Discussions in Event #2: Dr. Beckwith Presentation and Event #3: Mathematics Breakout Group contributed to an exchange in Event #4: Outsider/Insider Discussion of Beliefs and Assumptions in which the developing culture and common knowledge that was emerging within the group became visible. An analysis of what members proposed to each other verbally in the meeting and through text (Dr. Beckwith presentation and Center handout by those not physically present) showed how such words, actions and references became a resource or a source of support for the group. This was visible in intertextual references of the actors across time and events (Bloome & Egan-Robertson, 1993).

The tracing of the non-linear, iterative and recursive nature of the discussions and discursive acts depicted in Figure 3 (p. 110) revealed that four of the day's events focused on the design of a potential program. Borrowing from the literature surrounding engineering design processes (Dym & Little, 2004), the first face-to-face meeting could be viewed as a "design session" in which the actors present worked together to address a common challenge – the need to help young adults across the state obtain their diploma by passing the exam. Part A of Dr. Beckwith's presentation in Event #2 began to define the problem. Part B of Dr. Beckwith's presentation in Event #2 proposed a conceptual design or design specifications. During Part C of Dr. Beckwith's presentation in Event #2, the full group began to generate alternatives. As shown in Figure 3 (p. 110), the design is revisited across the three subsequent events.

The analysis of the discourse among participants generated evidence of the ways in which the diversity of the developing team members' prior knowledge and experiences contributed to the design of the new program (e.g, Cary Brown's contribution to the Math Breakout Group). The tracing of such contributions across four events allowed for the development of individual profiles for each actor (Appendix M). The profiles made visible the many different types of actors and expertise assembled. Evidence that the participants recognized and valued the intellectual diversity was found in the

exchange in Event #4 in which B.J. French indicated that "the expertise in the room" would enable the team to "create a powerful and responsive system" (Table 18, line 3, p. 101).

While a diverse group had been assembled, and while the range of knowledge and expertise assembled had aligned with the potential program design offered by Dr. Beckwith in Event #2, explicit reference to the meeting organizer was not visible in any of the archived materials from the meeting. The materials did make visible the speakers who were responsible for leading each of the discussions during Event #2, Event #3 and Event #5. The analysis of intertextual ties of participants' comments (see sample in Table 20, p. 106), demonstrated that the ideas offered by the speakers leading these events were used by others and referenced in their dialogue within the group. If leadership is defined as being brought off in the discourse (Fairhurst, 2007), such as instances in which the ideas proposed by one individual in a group are taken up by others, then the presenters leading Events #2, #3 and #5 can be considered 'leaders' within this developing organization. By providing information about learners' needs and challenges, and by proposing ways of designing a responsive program, the individuals provided thought leadership. The issue of leadership will be taken up in greater detail in the next chapter.

Dr. Beckwith's presentation of the audience to be served, challenges facing students, through presentation of a PowerPoint and the handout

prepared by the Center, showed evidence of extensive work that had taken place prior to the meeting. The meeting, therefore, constituted only one step in the assembling of a team. This realization led to the need to trace across time and events, as opposed to simply analyzing a day in the life of the team. To develop a more comprehensive understanding of the early formation of the developing virtual organization, the factors that supported and constrained its development, and the leadership that took place, I engaged in an analysis of events that took place prior to the meeting. In the next chapter I explore how participants were identified, and examine the work that was done in order to assemble a team. The analysis informs understandings of how a diverse group that had not previously met could be brought together in a short period of time. The analysis also makes visible the groundwork that the meeting organizers laid for the events and discourse contributing to the developing culture within the organization evidenced in this chapter.

CHAPTER FIVE
TEAM ORIGINS AND EARLY DEVELOPMENT

In this chapter I extend the analysis of the developing virtual organization in order to further the exploration of the following research questions and related subtopics:

1) How did the virtual organization and its different teams develop? Who aided the development, when, where, in what ways, for what purposes, under what conditions?

   Subtopics explored included:

   a) How were participants identified and assembled?

   b) How did individuals, drawn from different disciplines and institutions, who had never worked together as a team before, develop common knowledge and a plan of action?

   c) What role did the team's first face-to-face meeting play in the development process?

2) What supported and constrained the work of teams and the developing virtual organization across the different phases of development?

   Subtopics explored included:

   a) Who supported team members' work across time and events in the developing project? How?

b) How did participants' prior knowledge and experiences contribute to the team?

c) Who or what constrained the formation and/or development of the team?

3) What model of leadership emerges from the study of the virtual organizations as social constructions?

Subtopics explored included:

a) What forms did leadership take?

(1) Who were the leaders?

(2) What roles did they play in the formation of the team?

(3) How did they work together?

b) What organizational structure and participant roles emerge from the study of the team in the early stages?

c) What were the ideas and working assumptions underlying the actions of the leader(s) who brought participants together to form the team? How were they communicated?

Using archived email correspondence, I trace who initiated and who responded to communications surrounding the possibility of pursuing grant funding to support the development of a new program and virtual organization. The analysis examines how the people involved in the first face-to-face team meeting were identified, recruited, and assembled, prior histories, roles and

relationships between individuals, converging interests, and other factors that supported and constrained the work.

Special attention will be given to the issue of leadership and forms of leadership. Findings in the previous chapter, derived from analyzing the documentation and meeting notes from the developing virtual organization's first team meeting, included the lack of explicit reference to a meeting organizer. The identity of the meeting organizer was not visible in the dialogue recorded during the first team meeting. However, my emic knowledge of the first meeting as both a participant and as the organizer of the meeting, made me aware of the fact that there had been an organizer. The lack of visibility at the first team meeting had been part of a deliberate strategy in which any opportunities for leadership would be afforded to others whose support would help to ensure the project's viability. However, my conscious effort to remain "behind the scenes" during the first meeting made it difficult to uncover evidence of my role as the initiator of the project after the fact.

In this chapter I step back from my personal knowledge of the project, and use my position within the group to further explore the developing organization in its early days. The analysis showed how my initial contact with a system level administrator in the community colleges served as a catalyst for the developing collaborative. Once put in motion, the project was no longer my project, or a project in which I was the sole architect. Rather, the

development of the project can best be described as a loosely knit collaborative production in which many individuals played key roles and helped to shape the organizations actions and directions.

To shift my angle of vision from my role as Development Director for the project to my new role as researcher, I turn to referencing myself as Ms. C., and to examining the roles, relationships and interactions of Ms. C with project participants from an ethnographic perspective. By looking at Ms. C and her communication with others, I uncover the social constructions being undertaken within the emerging team that generated the virtual organization. Communications are traced through archived versions of approximately 180 email exchanges between Ms. C and individuals who were either at the first face-to-face team meeting or individuals referenced in the emails as contributors of information of importance to the project. The content of the emails allowed for the re-creation of the history of the project and early points of contact between participants.

During this phase of the study, I examined Ms. C's prior working relationships and knowledge of potential collaborators which, after interrogating the written records from an ethnographic perspective by asking questions such as who, what, why, when, and how, I determined had supported the assembling of the team. The analysis of the six weeks prior to the first face-to-face meeting made visible who the leaders in the emerging

organization were during this early phase. In addition, forms of leadership visible in the written discourse were uncovered. Key events that led up to the first face-to-face meeting and the evolution of roles and relationships between the actors were also examined.

Ms. C's Profile and Ways Her "Knowledge of" and "Knowledge as" Supported the Developing Team

In this section I report the results of an interrogation of the written records of Ms. C and her exchanges with other participants in the Stepping team in order to explore her role in the project and the historical roots of the project. The analysis of the email records generated a profile of Ms. C's prior knowledge and experiences (see Appendix T - Ms. C's Prior Knowledge and Experiences Relevant to the Exit Exam Grant) that were relevant to the developing virtual organization. Similar information for other project participants had been visible in the discourse at the January 12th meeting (see profiles in Appendix M). The limited comments recorded for Ms. C at the first face-to-face team meeting made it difficult to develop a similar profile for her. The email exchanges enabled the following profile for Ms. C to be re-constructed:

1. Knowledge as a Part-Time Employee of an Educational Technology Oriented Non-Profit

The last entry in Appendix T revealed that System Administrator #1 from the community college system was also a Board member for a non-profit corporation. Ms. C's part-time employment with the non-profit, referenced in an email between System Administrator # 1 and a key individual in the Stepping Team (David Shipman), had afforded opportunities for Ms. C to come into regular contact with representatives from the different education segments represented on the board, including the community colleges. In this instance, the rapport built with System Administrator #1 enabled Ms. C to get in touch with him quickly to explore a grant possibility. The email exchange revealed that System Administrator #1 was on vacation at the time, but he had gotten in touch Ms. C and had taken immediate action to help her identify a potential community college partner.

2. Knowledge as a Director within a University and University System Office

The first entry in Appendix T indicated that Ms. C possessed knowledge derived from her role as Director of Statewide Initiatives for Capital City University and the University System Office. Knowledge of how to connect people together who should know each other was part of the job. Knowledge of resources within the system that could benefit other partners (such as the Exit Exam resources referenced in the first entry) and of their strengths and weaknesses (acknowledged in the email by the reference to the

need for further development) were also part of the job. Knowledge of the resources and expertise across the university campuses as well as opportunities to work with faculty were also part of the job, as evidenced by Dr. Black's email to a colleague at a University related to her work with Ms. C to create a multi-campus research unit (MRU). The fourth entry suggests a role with the University system-wide office to work on "a broader sweep of educational initiatives."

3. Knowledge of school finance and the State budget process

Ms. C's statement, drawn from the email history surrounding intersegmental partnerships reflected in Appendix R - "I saw the Exit Exam preparation dollars show up in the community college budget" - suggested knowledge of the legislature and the state budget process. A later reference contained in System Administrator #1's email exchange with David Shipman, following a conversation with Ms. C, suggested that Ms. C was tracking the funding from its emergence in the state budget through its allocation by the community college system office. In this exchange, System Administrator #1 outlined the competitive grant opportunity and, based on her conversation with Ms. C, the funding that would be made available to successful applicants.

4. Knowledge of the legislative process and how to engage with policy makers

The third entry in Appendix T revealed that Ms. C tracked the

status of legislation. The second to the last entry demonstrated that she also knew how to assist the non-profit with its engagement with a state agency and legislative staff (policy makers).

5. Knowledge of policy issues pertaining to the non-profit and its network

Again in the last entry summarized in Appendix T, System Administrator #1's email to David Shipman noted, "Ms. C of (non-profit) also works at Capital City University, but on K-12 issues". This made visible that Ms. C had dual roles, within the University and the non-profit. Her exchanges with System Administrator #1 related to telecommunications funding legislation, the meeting with a state agency surrounding the non-profit, and a budget report related to the K20 network suggested that her work with the non-profit organization was related to governmental affairs.

The profile generated for Ms. C illustrated the prior knowledge and prior experience that Ms. C brought to her role in helping to develop the virtual organization and to shape its work.

Ways Ms. C's Converging Policy Interests Shaped the Work of the Organization

The tracing of Ms. C's prior knowledge and experiences revealed roles with the non-profit related to state policy and budget matters, and a role within a University campus and the University system as a whole related to education

outreach programs. The subsequent tracing of Ms. C and her historical interactions with participants in the first face-to-face team meeting (see Appendix R) revealed that Ms. C had been working with many participants for at least a year, and had begun to connect the participants to each other. This is discussed in greater detail beginning on page 144. Support for students and teachers surrounding Algebra and the high school exit exam had been a consistent area of focus (see Table 27 on page 153). Taken together, this information suggested that Ms. C's work with the Stepping Program might have been intentionally linked to or situated within the larger policy context in which she was working. An abbreviated tracing of three policy areas (the non-profit's K20 network, the exit exam and University based K12 programs) suggested that the project reflected three converging policy interests.

The State's New Exit Exam Policy

State efforts to put a high school exit exam in place originated in 1999 when, according to a bill analysis generated by the State Senate, the Governor sponsored the proposal as one part of a four bill package during an extraordinary session of the Legislature dedicated to education reform issues (policy trace available upon request). The proposal, contained in a Senate Bill by a State Senator, received bipartisan support (aye votes from both Republican and Democratic legislators). The Senator was subsequently elected as the state's non-partisan Superintendent of Public Instruction.

As originally enacted, the state's new law would have applied to students in the graduating Class of 2004. However, recognizing the need for additional time to develop the test and the need to ensure that schools had incorporated opportunities for students to learn the subject matter to be tested, the State Board of Education took action in July of 2003 to defer implementation of the requirement to the Class of 2006 (seven years after the bill was signed into law). In October of 2005, policy makers learned that approximately 40,000 students in the Class of 2005 had not passed one or both of the English and/or mathematics portions of the test and would have been denied a high school diploma if the requirement had been in effect.

With the reality of nearly 40,000 students in the Class of 2006 soon to be denied a high school diploma facing them, state legislators and the Governor found the political will to act. Ten million dollars was provided in the 2006-07 State Budget Act to community colleges for non-credit (or non-degree applicable) instruction for those students from the Class of 2006 who had not yet passed the exit exam, with first priority going to services for those students who had met all other requirements for graduation. In addition, $69.5 million was appropriated to provide K12 schools with $500 per pupil for students in the Class of 2007 who had not passed one or both portions of the exam. Five and a half million dollars was allocated to K12 schools for High School Exit Exam intervention materials.

The community college system office allocated the $10 million from the state budget to community colleges that desired to provide services to students (18 and 19 year-old adults) in the Class of 2006. Services were to help the students pass the exam, and therefore earn a high school diploma. Funds were awarded to community colleges on a competitive basis through a request for applications (RFA). Not all 110 community colleges chose to apply, and not all of those who applied were funded. Awards were made in two phases (part a and part b) between August 2006 and April 2007. This meant that grantees awarded funds in the second phase of the first round of grants would begin their efforts to serve students nearly a year after students in the Class of 2006 were supposed to have graduated from high school.

A report commissioned by the Department of Education (HumRRO, 2006) provided data indicating that the exam had a disproportionate impact on students of color, students from low-income families, and students with special needs. There were 38,574 students in the Class of 2006 (roughly 10%) who did not pass one or both tests in English Language Arts or mathematics by the May 2006 administration (HumRRO, 2007). Of the 38,574 who had not passed, seventy-eight percent were either Hispanic or African American, sixty percent were economically disadvantaged, forty-four percent were second language learners, and fifty-four percent were students with special needs.

The Non-Profit's K20 Telecommunications Network

In 2000, the legislature and Governor made a decision to invest state funds in connectivity for the K-12 education community. The goal was to connect this community through a fiber based research and education telecommunications network that was being created to serve the higher education community. Connectivity would ensure that K12 students in all schools across the state would have access to the rich array of online learning resources that would soon be developed. The network was built and is managed to this day by a non-profit entity. The non-profit and the network are funded by the education segments served, including K12 schools, districts, and county offices of education and the community colleges (through line items in the annual state budget), the State University system, the University system, and numerous private colleges and universities.

Funding for the K12 portion of the network originally flowed from the state budget to the University system office, which then contracted with the non-profit for network support for the K12 community. As the state's fiscal condition declined, the K12 community was faced with paying for such services from the K12 portion of the state's budget (i.e. the minimum funding guaranteed K12 education in accordance with a formula in the state's Constitution) or losing services. Ultimately, funding for K12 participation in the network was included as a line item in the K12 portion of the state's

budget. During the course of making this fiscal change, significant debates ensued in the legislature and within the K12 community surrounding the current and future value of having high-speed broadband services and connectivity to the larger K20 research and education community. A state audit took place and, after reviewing the history of the project and the non-profit's actions, auditors found that the network was indeed of benefit to the K-12 community (State Auditor, 2006).

During the early days of the network when policy discussions about educational technologies were taking place, many of the bandwidth intensive Internet based applications in use today had not yet been invented. Examples of educational applications or uses of the network that would bring value to students or teachers across the entire state, thereby validating the significant financial investment, were limited. The online Advanced Placement (AP) courses, which included videos that could be streamed on demand across the network and embedded interactive simulations, offered some of the most compelling examples of the potential value of K12's inclusion in a K20 research and education network. Many students in high need communities did not have access to AP courses in their local schools due to the inability to justify a full-time teacher. The AP program provided access to instructional resources for teachers and students, and access to online instructors when they were not available in students' local schools.

Legislators representing communities with high concentrations of families living in poverty and second language learners expressed a desire for examples of network delivered programs that would be of value to students who were not college bound - students whom they viewed as being most in need of additional support. Emerging web based collaboration tools provided opportunities to show how the teachers and administrators of such students could be supported in their work to serve students. However, free or low-fee online resources, programs, and/or approaches to bringing services to the students themselves were lacking. Generating network application to address such needs and demonstrate the value of the network to all students became a high priority as part of the non-profit's strategy for maintaining legislative support (and funding) for its work.

The University's Work with K12 Programs

During this period of time, the University's system-wide office administered several programs intended to support students and educators in K12 schools. Programs addressed professional development needs of teachers, students and community collaborations with faculty at various campuses.

The proposal the Stepping Program team was developing addressed the needs of students in the Class of 2006 who were being denied a diploma as a result of the implementation of the state's new policy. It was consistent with the types of K12 and University partnerships Ms. C was employed to create for

the University. It also would provide an example of ways the non-profit's K20 network could support innovative approaches to teaching and learning, thereby demonstrating the value of the legislature's investment in the network. Three policy interests, and Ms. C's three roles, uncovered by tracing threads within the email records, had converged in this effort by design.

Chains of Actions and Ways Prior Relationships Supported the Developing Team and Virtual Organization

The chains of actions reflected in the email records analyzed between Ms. C and the participants in the first face-to-face meeting contradicted the notion that innovation driven collaborative teams emerge spontaneously (Engeström, 2006). Rather, the email records provided evidence that the Stepping Program emerged as part of a deliberate effort by Ms. C. to address converging policy interests. Ms. C, David Shipman and others worked collaboratively and purposefully across a six-week period in order to engage individuals from different organizations in the newly developing organization that would be funded from grant awards.

When reaching out to potential team members, Ms. C drew upon prior relationships she built during work conducted in the past. The good will generated by such prior work, therefore, served as an invisible source of support for the new endeavor. It helped to explain how 23 individuals could be

recruited to participate in a meeting with little advance notice during the middle of the holiday season (December and January).

Chain of Action #1: Locating a Qualified Grant Applicant

In the first chain of action revealed through the analysis of email records, Ms. C initiated a meeting with a leader within the community college system office (System Administrator #1) on December 4, 2006 to discuss the possibility of work with community colleges to develop a grant proposal related to the state's high school exit exam. Senior Administrator #1 sent an email that same day to two colleagues (Cate McGregor and David Shipman) with an inquiry as to whether or not David Shipman would be interested in working with Ms. C. The following day, David Shipman sent an email confirming his desire to work with Ms. C on the project. This exchange, shown in Table 25 below, marked the beginning of the development of the virtual organization, the Stepping Program and Ms. C and David Shipman's joint work on the initial grants that led to the virtual organization's development.

Table 25

Identifying an Initial Chain of Action: Analysis of Excerpts from Initial Discussions about the Grant

(Excerpted text is drawn from email exchanges over Dec. 4 and 5, 2006, between Senior Admin. #1, Cate MacGregor, and David Shipman)

Email Text	Initial Chain of Actions
Senior Administrator #1: Summarizing competitive	Framing the opportunity
grant opportunity to a potential community college	Describing the financial possibility
partner who might be interested in working with	Informing of Ms. C
Ms. C on a proposal.	Informing of her connection to the University and K12 issues Making Ms. C's interests visible Describing why David Shipman might be interested Sharing how he came to be involved Describing what Ms. C is seeking in a partner Get peripherally involved Describing why K20 Virtual Ed. came to mind Requesting a three person call Or a meeting Describing help Ms. C can provide Describing condition applicant must meet Acknowledging that David Shipman's college meets the requirements
David Shipman: Even without knowing all the details – I can tell you that we'd definitely be interested in helping out with this –	Expressing definite interest in helping
so count us in as your college entity	Confirming participation - "count us in" - and ability to meet requirements
Cate McGregor: Confirming meeting to share information about the grant opportunity. related to the high school exit exam with David Shipman.	Confirming meeting to discuss further
First half we will discuss and (then potential partners will) strategize (about what proposal would look like)	Describing purpose of meeting – to strategize
and then at 2 we will add in Big Urban School District to include them in the overall strategy (surrounding the proposal design).	And inclusion of Big Urban School District in the overall strategy from the beginning discussions

Senior Administrator #1's rapid response to Ms. C (i.e. the same day), and the detailed information about Ms. C shown communicated by Senior Administrator #1 to Cate McGregor and David Shipman in Table 25 above indicated that Ms. C and Senior Administrator #1 had a prior working relationship. The prior working relationship was being drawn upon as a resource as Ms. C worked to locate a grant partner.

David Shipman's rapid response to Senior Administrator #1 indicated that David Shipman and Senior Administrator #1 also had a prior working relationship which was related to online learning opportunities in community colleges. In other words, the email from Senior Administrator #1 to David Shipman (Row 1) revealed a second working relationship. Through the email, Senior Administrator #1, in effect, created a 'bridge' that connected Ms. C to David Shipman and Cate McGregor, thereby allowing Ms. C to access this resource. These chains of action suggest that the initial efforts to develop a team to pursue grant funds were supported by participants' prior relationships.

Chain of Action #2: Ms. C and David Shipman's Recruitment of a Team

To continue to explore the role of prior relationships in the recruitment of the initial team, I again analyzed email records of exchanges subsequent to the exchange that took place over December 4-5, 2006. Table 26 below unfolds the history of the recruitment process for the team being formed.

Table 26

January 12, 2007 Meeting Participant Recruitment & Recruitment Of Other Supporters

Date	Meeting Attendee Recruited by Ms.C	Meeting Attendee Recruited by David Shipman	Notes
12/4/06	Senior Administrator #1		Not at 1/12 mtg.
12/4/06	Cate McGregor		Through contact with system leader #1
12/5/06	Jim Pappas, Big Urban School District		
12/10/06	Dr. Black, Coastal City University		
	Dr. Beckwith, Coastal City University		Through contact with Dr. Black
12/14/06	Dr. Pea, Big Metro University		
12/14/06	Lou Masters, Big Metro University		[From head notes]
12/15/06	Maggie May, Coastal City College		In concert with David Shipman and Dr. Black
12/17/06		Madge Pepper, New Hire (Project Director) at Rural North College	
12/20/06		Sheila North, New Hire (Project Manager) at Rural North College	
12/20/06		Cary Brown, Snow Bird College	Through State University program
12/21/06	Charlie Shine, South State University		
12/27/06	Sandy McDaniels, State Library		
1/3/07	Mark Lowe, Big Urban School District		Through Jim Pappas
1/3/07	Javier Bustamante, Big Urban School District		Through Jim Pappas
1/4/07		Sarah Moore, Rural North College	
1/4/07	Consultant 1, exit exam program developer		Not at 1/12 mtg.
1/4/07	Consultant 2, exit exam program developer		Not at 1/12 mtg. Through Dr. Beckwith

1/4/07	Exit Exam Prep Team Members (Center), University Includes JG, DC, HS, IT, PM and JD	Half physically present at 1/12 mtg. Others present through words in handout & reflected in Dr. Beckwith's PowerPoint.
1/10/06	BJ French, Big Metro University	Through Lou Masters
1/10/06	Sargeant Schriver, Big Metro University	Through Lou Masters
1/10/06	Tony Coombs, Big Metro University	Through Lou Masters
1/10/06	Community Tech Center Partner	Not able to attend 1/12/mtg.
Replacement Day Of Record unavailable	Linda Ose, Big Urban School District Dr. West, Big Metro University	Through Jim Pappas

As shown in columns 2 and 3 of the table, both David Shipman and Ms. C began recruiting individuals who might be willing to participate in the grant-funded project and emerging virtual organization. Email records in the re-constructed history allowed for the identification of the dates on which the exchanges occurred with participants (column 1). Table 26 shows the participants in the January 12th meeting, the dates on which they agreed to participate in the effort in some way, who they were recruited by (David Shipman or Ms. C, or others who David Shipman and Ms. C had already recruited). Also shown are those who were not at the meeting on January 12th but who were involved in these early days in some way or were listed in the final grant proposals.

The analysis presented in the table showed that David Shipman recruited the lead college and community college math faculty member, hired team members associated with the management of the grant, and recruited a participant who could address the tutoring component of the program. Ms. C (Capital City University) recruited staff from a Big Urban School District, researchers, faculty, staff and graduate students from Coastal City University (in partnership with Dr. Black and Dr. Beckwith), an ELA instructor from Coastal City college (in partnership with Dr. Black & Dr. Beckwith), a math faculty member from South State University, faculty and staff from University #3, a Vice-Chancellor from Big Metro University, a representative from the library community, and a community technology center representative who could not attend the meeting but did join the grant application. Cate McGregor (CC System Office) participated in the work in support of both David Shipman (K20 Virtual Ed, RN College) and Ms. C after being 'linked' to the project through a copy of an email from her boss (Senior Administrator #1).

Analysis of the content of email exchanges in which participants had been recruited raised possibilities that many of those contacted by Ms. C had worked with her in the past, and were willing to do so again in this project. In one exchange in which a faculty member had agreed to participate in the January 12th meeting after getting an email on December 20th, for example, Ms. C writes, "Thank you so much for being willing to participate. *After all*

the work we have done [italics added], I can't imagine moving forward on an Exit Exam project without you." In an exchange with one of the participants from Big Urban School District in the first few days of the origins of the project, another meeting about Advanced Placement courses that she had already scheduled was mentioned, providing further evidence of past relationships.

To explore the relationships and prior histories of participants, I re-entered Ms. C's email archive and identified exchanges with the participants she recruited for the team in the year prior to December, 2006. A sample of collaborative efforts involving two or more education segments (K12, community colleges, and state colleges and Universities), other partners, and the use of technologies to support collaborative work across distances was made visible by the email records. Thirteen such projects were referenced and discussed. Five of these thirteen projects were focused on the Exit Exam and mathematics, with two focusing on support for teachers and three focusing on support for students.

While analyzing Ms. C's previous efforts to support intersegmental collaborative work, the names of many of the participants in the Stepping Program appeared. An analysis of the participants and their involvement in such past work appears in Table 27 (full list in Appendix R). As shown, twelve of the Stepping Program participants had worked with Ms. C on

collaborative efforts during the previous fourteen months (and even longer since one of the projects noted was just ending after a two year funding cycle).

The data indicated that Ms. C had extensive experience with bringing actors from different entities and disciplines together to consider new work with others. In addition to the evidence that she had connections with twelve of the participants, there was evidence that she had already been connecting participants to each other (i.e. organization building pre-dating the grant opportunity being studied). In one exchange surrounding the AT&T grant shown in Table 27 (Row 5 – 3/6/06), for example, Ms. C was arranging a meeting between Dr. Beckwith (CC University; a person for whom there were earlier entries on other grant efforts), Jim Pappas (BU School District), and Lou Masters (BU School District).

Table 27

Sample of Ms. C's History with Project Participants

Date of Reference	Project	Description*	Outcome*	Stepping Participant
Fall, 05	Online Professional Development Grant Proposal	High school math teachers & special education teachers to address concepts missed on exit exam.	Funded by state entity, then rescinded with change of administration	Charlie Shine
1/20/06	Grant Development	High schools to explore ways technologies can support reform	Foundation did not materialize	Consultants 1 & 2
2/18/06	Early Childhood Grant	Professional development leading to credential for early childhood	Resubmitted proposal. Not funded.	Dr. Black & Dr. Beckwith
3/6/06 5/23/06	AT&T Grant Development	Assist students in technology centers & schools with Algebra.	Change in VP at University & AT&T	Dr. Black & Dr. Beckwith, Dr. Pea, Jim Pappas, Dr. West, Lou Masters
4/26/06	Algebra Institutes	University seed funding to entities for Algebra Institutes.	One-year grants awarded.	Dr. West, system wide Vice-President at this time
4/21/06	Preschool Summits with Foundation	Events across the state to explore research and approaches for success	Work completed.	Dr. Black & Dr. Beckwith
8/18/06	Exit exam grant – Round 1 (first call)	Discussions with community college.	College got interested. Applied alone.	Consultant
8/22/06	Multi-campus Research Unit to address technology use in education	Discussions among faculty, education deans and the Vice-Provost for Univ.	Lack of interest by University leadership.	Dr. Black
8/28/06	NSF Math grant with State College	Discussions surrounding coordination with AT&T grant.	University chose not to collaborate.	Dr. Black, Dr. Beckwith, Dr. West, Jim Pappas, CTC rep, Dr. Pea & Lou Masters
9/7/06	Online math PD celebration.	Grant funded project Couch wrote. Help teacher with items missed on exam	Grant funded for three-year effort.	Charlie Shine
11/03/06	Non-profit's K20 Network	Help legislature and Legislative Analyst's Office understand value of physical network	Continued, ongoing efforts & part-time employment.	System leaders #1 & Cate McGregor

The discovery of prior histories among members of the developing organization offered a potential explanation for the rapid rate at which the work commenced even though formal commitments and resources had not yet materialized. In a matter of just a few days from Ms. C's first email, work was underway to develop a comprehensive proposal.

Pattern of Practice of Framing Opportunities with Concept Papers

The tracing of roots of and routes to participation in the Stepping team in the email records uncovered patterns of actions that, over time, could be viewed as patterns of ongoing *practices* - patterned ways of knowing, being, and/or doing. Particular patterns of practice became visible as I was able to identify those actions that were repeated, for example, across Ms. C's efforts to build K20 partnerships and that were also present in my analysis of actions in the pre-planning phase of the Stepping Program. Ms. C, for example, sent attachments to emails with details about the concepts for the project. In other words, she exhibited a form of leadership by "framing" the project (Fairhurst, 2011) with those with whom she was working by distributing a concept paper. The concept paper was revised across time with input from others.

This same pattern was seen in the tracing of exchanges regarding joint work with others during the previous year. Five different examples of email exchanges in which Ms. C had shared an initial concept paper and/or other resources at the outset of a partnership effort in order to "frame" the

discussions can be seen in Appendix S, row 3 (materials), row 12 (framework), row 15 (concept paper), row 16 (white paper), and row 25 (original proposal). These additional *versions* of the identified pattern of actions provided evidence of the ways in which the pattern of practice – distributing concept papers or other resources as a way of framing discussions and/or group activities – remained constant as a form of leadership at the same time that it was also shaped and reshaped for different purposes and under different conditions.

'Bridging' of Relationships Among Team Members and Evolving Roles

There did not appear to be any in-depth conversation to outline roles and relationships within the organization. Rather, roles seemed to have developed from initial understandings of what might be needed within the team, what each participant's strengths were (or were not), and what each person could (or could not) do based on, for example, perception of knowledge and experiences or resource availability. To borrow an analogy from children's literature, it appeared to be the making of "stone soup" where each participant brings what they can to create something wonderful that would not otherwise be able to exist.

As actors were recruited into the organization and given active roles, needs arose for contacts with others, whom the participants did not know at the

outset. In many instances, someone who had an existing relationship with someone else was 'bridging' the relationship for another – a form of social networking.

To explore this further, I reformulated the analytic re-presentation contained in Table 25 (p. 146), by adding additional columns that would serve to make visible not only particular actions, but also roles and relationships with other potential members of the team. Through this revisiting of a previous analysis, I was able to re-present relationships by adding names of people with whom the original listed person was engaging in an existing or a developing relationship. Excerpts (extending those presented in Table 25) from this analysis are shown in Table 28 below. They make visible six instances where such "bridging" activity could be found. The first email referenced was one in which a person with an existing relationship with two or more parties, who did not know each other, attempted to connect these people to each other. The emails following this first excerpt show that the connection or transfer of acquaintanceship resulted in opportunities for further dialogue (an initial step towards relationship development).

Table 28

Relationships and Occurrences of "Bridging" Efforts

Individual	Action	Role	Relationships (Existing or Developing)
Example #1: Senior Administrator #1 "bridging" between Ms. C, David Shipman and Cate McGregor			
Senior Administrator #1 (To David Shipman)	Email connecting Ms. C to David Shipman and Cate McGregor. Determining college's interest in grant proposal.	Connecting to people who can be a resource	Senior Administrators #1 & Cate McGregor, David Shipman and Ms. C (Developing)
Ms. C (To David Shipman and Cate McGregor)	Confirming willingness of Dr. Pea to host 1/12 meeting. Informing of Coastal City University's efforts to recruit participation from a community college. Agreeing to a 1/10 pre-meeting.	Recruiting participation Organizing opportunities for collaboration Informing and updating Co-managing	Ms. C, Cate McGregor and David Shipman (Developing)
Ms. C (To Assistant)	Call with Dr. Black to discuss University involvement in proposal.	Recruiting partners	Ms. C & Dr. Black (Existing) Ms. C and David Shipman (Developing)
Example #2: Dr. Black "bridging" Ms. C and Maggie May			
Dr. Black (To Maggie May)	Dr. Black recruiting participation in proposal by Maggie May	Recruiting partners	Dr. Black & Maggie May (Existing)
Ms. C (To Dr. Black, David Shipman, Maggie May, & Dr. Beckwith)	Ms. C recruiting participation in proposal by Maggie May and others from South Coast University	Recruiting partners	Ms. C, David Shipman & Maggie May (Developing) Ms. C, Dr. Black & Dr. Beckwith (Existing)
Ms. C (To University #2)	Call with Dr. Black, David Shipman, Maggie May, & Dr. Beckwith.	Co-creating	Dr. Beckwith, Dr. Black, David Shipman & Maggie May (Existing)

	Discussion of straw man for ELA, internal working notes, draft agenda and invites for 1/12 meeting is cited as reason for the call.	Identifying resources	Ms. C, Dr. Black & Dr. Beckwith (Existing) Ms. C, David Shipman, Maggie May (Developing)
Ms. C (To Maggie May)	Confirming call with her boss, Cate McGregor and David Shipman to determine college's willingness to participate in the grant.	Recruiting partners Problem solving Co-managing	Ms. C, Cate McGregor, David Shipman & Maggie May's boss (Developing)
Maggie May (To Ms. C)	Maggie May informing Ms. C of her efforts to get campus support for grant participation.	Informing and Updating Problem solving	Maggie May & Ms. C (Developing)
Example #3: Technology resource person #1 "bridging" David Shipman to College Tech person 2 & 3			
David Shipman (To Tech resource person #1)	David Shipman email to Tech resource person 1 seeking math person and exploring possibilities for a content repository.	Recruiting Partners Identifying resources	David Shipman & Tech resource person #1 (Existing)
Tech resource person #1 (To David Shipman)	Connects David Shipman to resource 2. Resource 1 schedules call for 12/20. Also connects David Shipman to resource 3.	Recruiting Partners Identifying resources	Resource 1 & Resource 2 (Existing) David Shipman & Resource 2 (Developing)
David Shipman (to Ms. C and Cate McGregor)	Resource 3 recommends Cary Brown to David Shipman	Recruiting partners	David Shipman & Tech Resource 3 (Developing)
College Tech Person #2 (To David Shipman)	Citing inability to participate 1/12 due to being out of town	Declining	College Tech person #2 to David Shipman (Developing)
Example #4: Ms. C "bridging" David Shipman and Lou Masters			
Ms. C	Email organizing face-to-face meeting with	Organizing opportunities for collaboration Recruiting partners	Ms. C & Lou Masters (Existing) Lou Masters, David Shipman & Cate

			McGregor (Developing)
Dr. Beckwith	Draft MOU for work with college for January – March (until grant begins)	Resourcing	Dr. Beckwith & Ms. C (Existing)
		Co-managing	Dr. Beckwith & David Shipman (Developing)
Example #5: Ms. C "bridging" Dr. Beckwith and Consultant			
Ms. C	[Head note: Calls Consultant to seek assistance]	Identifying resources	Ms. C & Consultant (Existing)
Ms. C (To David Shipman)	Seeks guidance from David Shipman on consulting rates.	Resourcing Co-managing	Ms. C & David Shipman (Developing)
Ms. C and Dr. Beckwith	Ms. C emails Consultant to connect her with Dr. Beckwith. Dr. Beckwith emails Consultant to set up a call.	Connecting to people who can be a resource	Ms. C & Dr. Beckwith (Existing) Ms. C & Consultant (Existing) Dr. Beckwith & Consultant (Developing)
Example #6: Ms. C "bridging" Dr. Beckwith and Charlie Shine			
Ms. C, Dr. Beckwith, Charlie Shine	Email exchange around test data	Connecting to people who can be a resource	Ms. C & Charlie Shine (Existing) Ms. C & Dr. Beckwith (Existing) Charlie Shine & Dr. Beckwith (Developing)

Factors Constraining the Recruitment of a Team

Not everyone Ms. C and David Shipman attempted to recruit into the virtual organization elected to participate. Appendix U shows the types of people who declined and the rationales that they gave for declining. Workload and resource limitations were one factor in people's decision not to participate. One faculty member from a community college provided a lengthy response indicating his beliefs that the focus should be on the educators themselves rather than on the students. Additionally, an administrator from another community college cited concerns with finding faculty qualified in this area and the shortage of faculty who could serve existing students.

Key Events, "Leaders" And Forms Of Leadership

A subsample of the events that took place over the six-week period is shown in Appendix V, along with the actors who were collaborating to accomplish the events. The analysis of these events afforded opportunities to ground the identification of leaders in the discursive acts identifiable in the discourse (carried out, in part, in the archived email exchanges). The notion that leadership is brought off in the discourse differs significantly from leadership associated with an individual's position or job title within an existing organization (i.e. the assigned leader) (Northouse, 2010). From this

perspective, the leader(s) emerge as ideas expressed in talk or action are recognized and taken up by others in order to make progress (Fairhurst, 2007; Robinson, 2001). Northouse (2010) argues that with emergent leadership, "it is the leader who often initiates the relationship, creates the communication linkages, and carries the burden for maintaining the relationship."

The analysis of discursive acts by individuals during the first three weeks (Table 29 and Table 30) indicated that many individuals had dual roles in the sense that they were carrying out activities related to planning, budgeting, organizing and staffing, and problem solving that could be described as management (Kotter, 1990; Northouse, 2010), and they were also exhibiting leadership by establishing direction, aligning people, and motivating and inspiring (Kotter, 1990; Northouse, 2010).

Table 29

Early Participants' Roles (Based on Actions) and Forms of Leadership (Dec. – Jan.)

Roles	Ms. C	David Shipman	Dr. Beckwith & Dr. Black	Cate McGregor
Facilitating partnering by others	X			X
Connecting to and with people who could be a resource	X			
Recruiting partners	X	X	X	
Identifying Resources	X	X	X	X
Framing the project	X			
Connecting with people who could be a resource	X		X	
Encouraging	X		X	
Building research capacity		X	X	
Building technical capacity		X		
Building management capacity		X		

Table 30

Early Participants' Roles (Based on Actions) and Forms of Management (Dec. – Jan.)

Roles	Ms. C	David Shipman	Dr. Black & Dr. Beckwith	Cate McGregor
Co-creating	X	X	X	
Problem solving	X	X	X	X
Organizing opportunities for collaboration	X		X	
Informing and updating	X	X	X	
Co-managing	X (Overall project)	X (Overall project)	X (Work of team at South Coast University)	

This finding suggests that in the early days of virtual organizations involving collaborative, intersegmental education program efforts, there may be many leaders as opposed to 'the leader' (singular). It suggests that part of the examination of leadership in this context would be to identify who is leading what component of the work, when, and in what ways.

To assess this notion, I analyzed participants' actions and identified the role in the project that the action fulfilled. The data uncovered through the analysis process described above, showed that Ms. C, David Shipman, Dr. Beckwith, Dr. Black, and Cate McGregor all played leadership roles during the first six weeks. David Shipman and Ms. C's leadership roles as shown in Table 30 pertained to the project as a whole. Cate McGregor played an important yet indirect role in this work. Dr. Beckwith and Dr. Black's leadership roles pertained to the research efforts at Coastal City University, informing the development of the project. Some roles overlapped (such as recruiting partners). Others were unique to each individual (such as framing the project).

Appendix V makes visible that grant related work was taking place by a wide range of actors. David Shipman (K20 Virtual Ed, Rural North College) and Ms. C were actively recruiting participants, but they had support and assistance from others. David Shipman took an active role in hiring management staff that the project would soon need and provided short-term

support (funding and contracts) to participants from Coastal City University and Big Metro University so they could be actively working on the project in these formative stages. Ms. C organized the meetings that needed to take place. She also developed the initial concept papers for the project and updated them several times to reflect input from others and the emerging design. This work was done in close collaboration with participants from the Coastal City University. A team at the Coastal City University, led by Dr. Beckwith, actively worked to understand as much as possible through research.

Participants from Big Metro University, led by Lou Masters, explored potential technology resources that could support the programmatic efforts if the grant was funded. A pre-meeting with the "core team" (title given by Dr. Beckwith in an email sent on 1/4), allowed for a dry run of information to be shared with the full group on January 12th (see January 10, 2007). The pre-planning work (a title I am using since the request for applications had not yet been released) was a team effort from the very start.

The analysis of emails did not yield any evidence of conversations among participants to inform understandings of what individuals' authority or reporting relationships would be, or what the overall organizational structure of the project team would be. Participants seemed to be holding themselves accountable to others, and made efforts to inform and update one another on a frequent basis.

Conclusion

Findings in this chapter provided additional information about the ways that the innovative team and virtual organization formed and developed. Through the analyses presented, it was possible to uncover the ways in which the team was intentionally brought about or initiated by Ms. C. Ms. C, acting in a way that was consistent with her many roles through her employment with different entities, had identified an opportunity to develop a grant proposal and a virtual organization to address the needs of young adults who had failed the state's high school exit exam. The approach to addressing this state policy issue (i.e. through the use of technologies) would address two other policy issues (use of technologies in education and K20 educational partnerships). Ms. C's ability to locate an eligible grant partner and recruit other participants in a short period of time was made possible by the prior histories and relationships with others possessing diverse knowledge and expertise. The relationships, cultivated through collaborations around similar efforts in the past, were resources that supported the team's development in this newly constituted effort.

While Ms. C played a significant but often invisible role in the development of the team, she was not the only person who supported the team's development during this initial stage. The individuals who attended the

first face-to-face meeting of the team that formed the virtual organization had also been actively recruited by David Shipman and others (Dr. Black and Dr. Beckwith). The January meeting included a mix of people who possessed diverse expertise. Some had come in contact with one another previously, while others had not met before.

The analysis indicated that the recruitment of participants was constrained by workload burdens and shortages of qualified faculty that made it difficult to recruit partners. On the other hand, factors supporting the work of bringing participants together can be summarized as follows:

- Prior knowledge, experiences and relationships among participants
- Prior histories with Ms. C and, in some instances, with each other
- The framing of the opportunity through a concept paper, which described what, the newly forming organization would do
- Converging policy interests
- The "bridging" of relationships among team members
- A leader with access to "seed money" to support the pre-planning work, including Memorandums of Understanding, and actions by one leader (David Shipman) to build the team's management, research, and technological capacity
- A leader (Ms. C) employed by multiple entities (and therefore partnerships, multiple affiliations) with the purpose of developing

intersegmental which provided her with the time and 'credentials" to work on team development

- The pending availability of grant funds as resource for joint work.

A model of emergent leadership became visible in which "the leader(s)" were being recognized through discursive acts in which their ideas and words were being taken up by others. The leader was not someone chosen in advance who occupied an official position within an existing organization. Rather, the analysis demonstrated that there were many individuals exhibiting leadership, and that the boundaries between "leadership" and "management" were permeable.

One way in which Ms. C contributed to the leadership of the project was through the development of a concept paper that "framed" the potential opportunity in this particular effort for potential team participants. The review of Ms. C's prior history with the development of intersegmental and interdisciplinary teams revealed a pattern of practice of framing initiatives through the use of initial concept papers (a form of leadership being brought off in the discourse – Fairhurst, 2011). The analysis also revealed a pattern in which Ms. C used email introductions to "bridge" relationships among members of the team and other informants who did not have pre-existing relationships.

Ms. C and David Shipman co-managed all aspects of the project during this phase. Significant efforts were made by a team at Coastal City University to inform the January meeting with research they conducted over a short period of time (January 4 – 12). In addition, a team at Big Metro University researched potential technologies to support the virtual organization. While these actions were taking place, David Shipman was taking steps to build the team's management, research and technical capacity so that the team could operate effectively if/when the grant was received.

A formal organizational structure and formal roles for participants were not evident in the analysis of these first six weeks and the analysis of the face-to-face meeting. While the recruitment of the team and the structuring of the team's work was visible, discussion and/or formal acknowledgement of who was able to do what, when, how, and in what ways was not articulated verbally or in writing.

CHAPTER SIX
THE GRANT DEVELOPMENT PHASE

In this chapter, I continue to explore the ways in which the virtual organization formed and developed in its early stages, factors that supported and constrained its development, and the model of leadership that emerged in this study of an intersegmental, interdisciplinary team in education. The analysis in this chapter, made possible by archived email correspondence between Ms. C (a tracer unit in this study) and the participants in the first face-to-face team meeting, explores the seven weeks that elapsed between the team's first face-to-face meeting and the date on which two grant proposals were submitted to support the proposed virtual organization (see timeline/event map in Figure 1, Chapter 1, p. 4). A contrastive analysis was made between this period and the six weeks that preceded the first face-to-face meeting (13 weeks total) in order to identify ways the team evolved across time and events.

The analyses in this chapter add to information in Chapter 5 regarding the factors that supported and constrained the formation and development of the origination phase of the virtual organization (i.e. its first thirteen weeks). The contrastive analysis between the first six weeks and the last seven weeks provided evidence of the dynamic nature of the team. Differences in the factors supporting and constraining the work of the team across the two

periods of time, and shifts in the roles and relationships among team members, made visible when the last seven weeks was compared to the organization's first six weeks, provided evidence of the dynamic nature of the team.

The text of the two grant proposals, developed during the period of time being studied in this chapter, became a resource for this stage of the analysis. Based on an email exchange in which Dr. Beckwith wrote, "the focus was on getting the proposal done", we can assume that Dr. Beckwith was one of the authors writing the text of the grants. Thus, the perspectives of the individuals submitting the proposals were inscribed in the text of the grant proposals through Dr. Beckwith's representations. Profiles created for participants in Chapter 4 by analyzing the contributions of each actor to the group during the first face-to-face meeting appear in Appendix M. The profile for Dr. Beckwith also appears below in Table 31.

The profile revealed that Dr. Beckwith had knowledge of, and experience with, teaching, education research, and assessments, and through this work, knowledge of the importance of building students' confidence. Her knowledge and experiences stemmed from her work as a researcher, a bilingual teacher, and as the Executive Director of a Center at Coastal City University. Dr. Beckwith's numerous contributions to the developing virtual organization, derived from the analysis in Chapter 4, are shown in Table 31.

Table 31

Profile for Dr. Beckwith

Profile: Dr. Beckwith, Executive Director, Center, Graduate School of Education, Coastal City University		
	Drawing on prior....	
Knowledge of and experience with.....	Knowledge of and experience as.....	Contribution to the project
• Importance of confidence building with students • Assessment • Teaching • Education research	• Researcher • Former bilingual teacher • Exec. Director, Center	• Research base and pedagogical approach • Raising the need to build students' confidence. • Providing an example of how assessments can be used to support students. • Expanded notion of use of testing to include use by students to support their decisions surrounding their learning. • Support for a broad notion of goals (beyond Exit Exam). • Program design to meet students' needs and interests

The Impact of the Face-to-Face Meeting on the Team's Development

To understand the impact of the first face-to-face meeting on the team's later development, I re-entered the email archive and analyzed the actions accomplished in and through the discourse over the seven weeks between the meeting and the submission of the two grants. The discursive acts carried out during the first six weeks were then contrasted with discursive acts during the last seven weeks.

In the previous chapter investigating the first six weeks of the team's development, the analysis of the leaders and forms of leadership identified a "bridging" function in which a leader introduced individuals within the team to one another as the need for joint work arose. I found that, in many instances, someone who had an existing relationship with someone else was "bridging" the relationship for another – a form of social networking. The first email was one in which a person with an existing relationship with two or more parties attempted to connect the unknowns to each other. The emails that followed showed that the connection or transfer of acquaintanceship had resulted in opportunities for further dialogue (an initial step towards relationship development).

In the seven weeks following the face-to-face meeting, Sheila North (a participant in the meeting; project manager; Rural North College) entered into

direct exchanges with meeting participants whom she had not known previously. Email introductions were no longer needed to support Sheila North's exchanges with meeting participants. This suggested that the face-to-face meeting had created a "bridge" or had a "bridging effect" for Sheila and the other participants. Regardless of how people had concluded the meeting, in terms of their relationships, or with whom they had a prior relationship, Sheila North was interacting and making connections directly with others, thereby creating opportunities for further dialogue without the need for "bridging" by someone else in the group. This further suggested that meeting attendees were now 'insiders' within a developing team. The meeting had 'cemented' the loosely knit developing relationships that were being nurtured by leaders during the first six weeks.

The contrastive analysis of the first six weeks of the team, the team meeting, and the last seven weeks, also led to the identification of the ways in which the meeting supported the development of the program itself. In addition, it made visible the social construction of understandings surrounding the work that the team would do, the reasons for doing it, and the conditions under which the work would occur. The final grant proposal(s) (for English Language Arts and Mathematics), reflecting the work of the team, were written during the seven weeks that followed the first team meeting. They contained

evidence that the team members had continued to discuss the need for a "systems" model and a dynamic, responsive system.

Analysis across events indicated that this topic had been discussed in the math breakout group in Event #3 of the meeting (see Chapter 4), and then in the full group discussion after lunch (Event #4, see Chapter 4). The archived records included a flow diagram, re-presented in Figure 4 below, that demonstrated the proposed system discussed in Event #3 of the meeting. Through their grant proposals to the system-wide office for the community colleges, team members argued that the Stepping Program would:

> Deliver a sustainable systems model for both Exit Exam preparation and other non-credit courses that will be supported by an archive of high quality online resources and course modules. The team will build and refine its model across the grant period, based on a recursive and responsive process of gathering, developing, and evaluating materials, gathering student input and data, learning from student experience with the program and with the Exit Exam, and refining the model over time. (Grant proposal, 2007, p. 12)

The intertextual ties (Fairclough, 1992) between team members' interactions with one another in the first meeting, the flow diagram artifact developed at the meeting and re-presented in Figure 4, and the words of the written grant proposals put forth by the team as a whole seven weeks later,

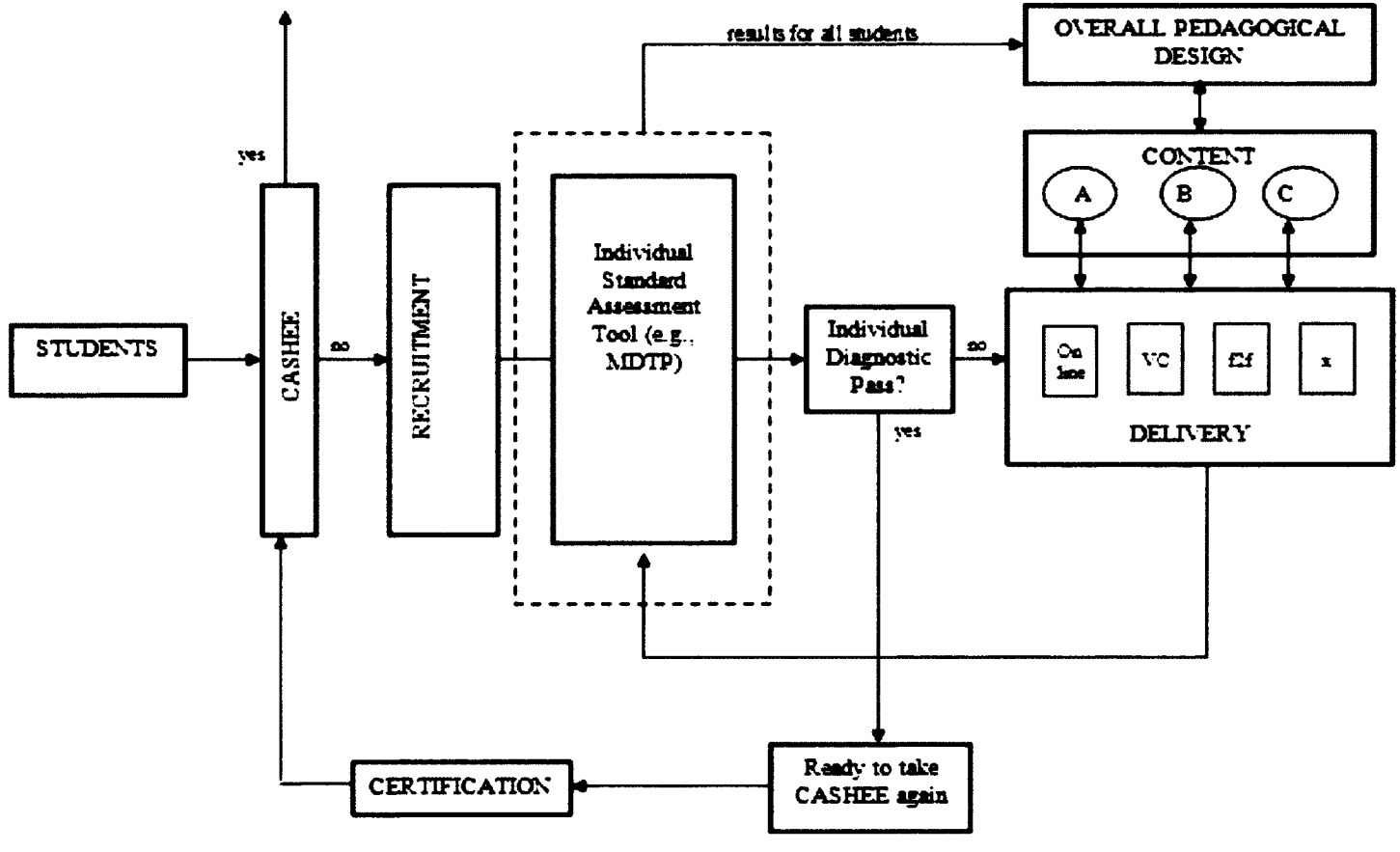


Figure 4. Flow Diagram of a Systems Model Produced in Math breakout group during Jan. 12 face-to-face meeting

offer further evidence of the take-up of the words and conceptual directions proposed to and taken up by participants, the development of common knowledge, and the emergence of "groupness" (Schein, 2010) that occurred as a result of the meeting.

Factors Supporting the Team's Work

In previous analyses of weeks 1-6 of the developing virtual organization, I identified several factors that supported and/or constrained the work of the group. In Table 32 below I present another layer of analysis in which I contrasted the actions that supported and constrained the team during the first six weeks with those I identified in the last seven weeks.

The analysis presented in Table 32 revealed that two of the factors identified in Chapter 5 as supporting the development of the team during the first six weeks were mentioned as supporting factors in the final grant proposal written during the last seven weeks. These included:

1) Members with Diverse Knowledge and Expertise

During Event #4 in the first team meeting, examined in Chapter 4, one of the team members (B.J. French, DC, Big Metro University) explained to an outsider coming in to the group (Dr. West, BM University) that the diversity of the prior knowledge and experiences of individual participants was one of

Table 32

Contrastive Analysis of Factors Supporting and Constraining the Work of the Team

Weeks 1-6	Weeks 7-13
Factors Supporting	Factors Supporting
Prior knowledge, experiences and relationships among team members	Diversity in prior knowledge and experiences
Prior histories with Ms. C and, in some instances, with each other	Prior histories with Ms. C and, in some instances, with each other
Converging policy interests	
"Framing" of the opportunity	No longer needed.
"Bridging" of relationships	No longer needed.
Leader with seed money to build management, research and technical capacity	
Leader employed by multiple entities to develop intersegmental partnerships	
Pending availability of grant funds	
Factors Constraining	Factors Constraining
Workload shortages	
Shortage of qualified staff	Diversity in prior knowledge and experiences
	Insufficient communication. New form of bridging of information needed among team participants
	Lack of role clarity
	Time constraints

the factors that would allow the group to succeed with students. Significantly, the language of the grant proposals contained similar references in the description of the project management. In this section, the diversity of the group is formally acknowledged as an important aspect of the team. The intertextual ties between the comment during the meeting and the project management description in the grant proposals make visible that the "common knowledge" socially constructed at the meeting through the dialogue and

discursive acts carried through to actions of the team in subsequent weeks.

The grant reads:

> Central to the success of this intersegmental collaboration is the fact that many members have worked together on other projects in different combinations and for different purposes. They come to the partnership with a variety of resources to draw on in order to meet a common agenda. Together the partners bring content expertise at secondary and higher education levels, expertise in working with students who are similar demographically to those of the target group, expertise in technology, and expertise in bridging content and technology to build an accessible comprehensive model to meet both the current needs of members of the Class of 2006 as well as more far reaching needs of future students. (Grant proposal, 2007, p.12)

2) Historical Relationships Between Members of the Team

The project management description in the grants also acknowledged the importance of the prior relationships among members of the team. The grant reads:

> Different project partners have collaborated in different ways on past projects and bring those experiences to the current collaboration. For example, Ms. C, Director of Statewide Initiatives for the University system office, and members of the Center at Coastal City University have worked together on several projects since 2003 that served as the basis of the design of the current model. Their work has included bringing together a conceptual model in education with innovative connectivity using Internet 2 and the K20 network. Their current use of the model to design after school programs and informal education in math and science has also included collaboration with an entity representing community technology centers, another partner in the current grant proposal. Ms. C brings connections to the Technology Division of the Big Urban School District, to the K20 Virtual Ed., to the Center for Design at Big Metro University, and to the Digital Library. (Grant proposal, 2007, p. 18)

Recognition by team members of the importance of the prior histories

between Ms. C and others had not been explicitly stated in the analysis of the talk during the first face-to-face meeting or during the analysis of the discourse and discursive actions by team members during the first six weeks of the team's development. References to prior work led this researcher to identify and trace such histories in Chapter 5 in order to understand how the prior relationships may have impacted the team's development. Dr. Beckwith's direct mention of prior histories as a factor supporting the team suggested that Dr. Beckwith possessed personal knowledge of the prior work of Ms. C. By revisiting the analysis presented in Table 27 (Chapter 5, p. 153), in which Ms. C's prior collaborations involving members of the team were summarized, I was able to verify that Dr. Beckwith had been involved in several of the intersegmental partnerships Ms. C had worked to create during the past year. In addition, Dr. Beckwith had contact with other Stepping Program participants as a result of prior work with Ms. C.

Factors Constraining the Team's Work

While factors such as the prior histories and relationships of team members were identified in the previous chapter as supporting the development of the organization, other factors were identified as constraining the formation of the team and virtual organization (e.g., workload burdens and

a shortage of qualified staff). During the last seven weeks, several additional factors were identified as constraining the work of the team. These included:

1) Loosely Defined Roles and Organizational Structure

There is some evidence to suggest that the lack of role clarity in this early phase was discussed and that it may have constrained the group's work in some ways. In an email exchange with Sheila North and Ms. C, Dr. Beckwith writes:

> It helps if we understand what Lou Masters' team saw as what they needed to do preliminarily in terms of development. When I left the ELA meeting on Jan 12, I had a sense that Sargeant Schriver and Tony Coombs were going to go off and do some thinking about the test maker component for ELA, and the writing rubric, etc. I didn't have a sense beyond that of what was expected. And I think the same is true from listening to the math group report that day. Certainly I don't think everybody was clear about others' roles. I probably had a bigger picture in terms of the future collaboration between the content development teams and the online development team (as one team) - I don't think Cary Brown did at all. But again, the focus was on getting the proposal done and I didn't know that others were seeing preliminary work as development work as well. Sorry about that.
> (Dr. Beckwith, personal communication, February 23, 2007)

While the absence of well-defined roles may have created challenges, it may also have supported the team's work in these early days in the sense that the roles were not pre-defined or imposed by others. The time given for sorting out roles within the group as a whole as participants discussed their expertise and/or discovered the expertise of others made visible the negotiated nature of the structures that best suited individual participants

as well as the collective. This is evidenced, for example, in an exchange that took place in the math break-out group/Event #3 between Charlie Shine and B.J. French in which the two actors were discussing the strengths they brought to the project (see full version of analysis of discussion topics, prior knowledge and experiences for Event #3- sample shown in Table 13 of Chapter 3).

2) Diversity in Team Members' Prior Knowledge and Experience

In this chapter, in the previous chapter, and in the analysis of Event #3 of the first meeting in Chapter 4, the diversity in the participants' prior knowledge and experiences was identified as a factor that supported the team's work. However, an analysis of an exchange between Dr. Beckwith and Sheila North (Dr. Beckwith, personal communication, February 23, 2007) revealed how such diversity and the multiplicity of actors working on different parts of the team's development may have also constrained the team's work. Dr. Beckwith wrote:

> Education is really an inter-disciplinary field you know - unlike a lot of others. Sometimes it's hard, if you haven't been in it, where it's working at any rate, to get why there needs to be that sort of cross-pollination process and meta-communication. And it doesn't mean that it's easy to do. (And, remember, also, that AM and group are scientists, not educators – Lou Master's a physicist, for example - and they're often used to working, when working with partners, under a contract for a very specific project with clear definitions of where it's going, etc., even when that project is education-based, or to developing their own independent projects.... So, this is a different kind of process for them as well - especially if they were asked to do something preliminarily

> that would have benefited from conversations with the content specialists and the content specialists didn't know that or have an opportunity to do or weren't ready to do that kind of work. Which is why it's even more critical to get everybody on the same page). (Dr. Beckwith, personal communication, February 23, 2007)

In this brief exchange, Dr. Beckwith made visible the different kinds of assumptions participants from the field of education might be working under as opposed to assumptions that might be held by the physicists working on the programming and development of the online portions of the program. She conveyed the need for Sheila North to take actions to "get everybody on the same page".

3) Insufficient Communications

The early efforts to put staff in place quickly and to build the team's management, research and technical capacity were previously described as actions that supported the team. However, another portion of the exchange between Dr. Beckwith and Sheila North (Dr. Beckwith, personal communication, February 23, 2007) revealed how the distributed team approach created communications challenges and initially constrained the work of the team. Dr. Beckwith wrote:

> One thing would help me - if you could clarify... what the MOU was (that is, the understanding in terms of preliminary work prior to submission of the proposal - or whatever that understanding was). Like Cary Brown, I don't really know what the expectations were - on their part or the core team's. I think that would help - and making it visible to everyone on the project would be a good step. As well as summarizing the progress to date....I think, in hind sight, of course, it

> would have been really helpful to have had joint meetings all the way along (even the content ones - that is, it would be ELA and the Design Center, etc.). I also think that, as Cary Brown says (and Lou Masters), it's critical to have everybody talking and seeing everything, if we want this to be a model that we develop together. For example, there seems to be some misunderstanding on Lou Masters' (and colleagues') part that there has been some additional defining of what the content modules will look like, beyond what was discussed on Jan. 12, and there really hasn't been (except for Lou Masters and group identifying the 3 areas, but those still aren't the content modules). So, I'm assuming they haven't been 'wasting their time' but I don't know what they've been doing - or with what understanding – just like they have assumptions about what's been happening that they haven't been included in during the proposal development process (but I do understand that they think more has gone in terms of content development and definitions than has, since Jan. 12). But I know I've been a real nagger about bringing everyone together and being on the same page throughout - making it all transparent rather than putting it into separate boxes. (Dr. Beckwith, personal communication, February 23, 2007)

In this exchange, Dr. Beckwith's identification of the need to connect work and conversations across parts of the team, and the implications of the recommendations for Sheila North and her role(s), suggested that a new type of "bridging" activity was needed to support the team's ongoing development. Dr. Beckwith's comments could be used to describe this new type of bridging as "bringing everyone together" (the same kind of bridging that happened at the January 12th meeting) and "making it all transparent rather than putting it into separate boxes" (a new type of bridging activity). This suggested that at least one of the project's leaders would need to continue to organize

opportunities for collaboration and would need to support communications in a way that made the work of each of the sub-teams visible to the whole.

4) Time Constraints

Time constraints referenced in Dr. Beckwith's email might also have constrained the group's work. Dr. Beckwith wrote, "the focus was on getting the proposal done and I didn't know that others were…". This suggested the need to focus one's time and energy on writing the grant. Email records indicate that the request for applications was released on February 5, 2007 and proposals were due March 1, 2007 – less than one month later.

Evidence of the Dynamic Nature of the Emerging Organization

As noted above, during the last seven weeks, no new factors supporting the work of the team were identified. The diversity in team members' prior knowledge and experiences, and their prior histories with one another continued to be recognized as factors that supported the team. However, as Table 33 below makes visible, some of the factors identified as supports for the team during the first six weeks had also become constraints (such as the diversity of the team and the lack of a well-defined organizational structure).

These findings supported the conceptualization of the team and emerging virtual organization as a dynamic and rapidly changing entity during

the origination phase. Continued change and development appeared likely as the final grant proposal included a well-defined organizational structure for the team's work going forward (see Table 33). The documents revealed that one community college (Snow Bird CC) was the lead community college for one

Table 33

Contrastive Analysis of Roles by Entity in Final Math and ELA Grants

Partner Math	Partner ELA	Role Math	Role ELA
Snow Bird College		Lead Community College – Responsible for leading content development & coordinating faculty outreach and support	
Snow Bird Unified School District		I.D. and recruit students. I.D. technology-capable sites	
Big Urban School District	Big Urban School District	Recruit students, support, and assist with delivery models & program design	Identify students, support, and assist with delivery models & program design, give feedback to content design team
Rural North College	Rural North College	Project management	Lead Community College – Responsible for project management & coordinating faculty outreach and support
University System			
- Capital City University	- Capital City University	Assist with all aspects of the project	Assist with project oversight and staff development
- Coastal City University	- Coastal City University	Assist with project oversight, content development, research & evaluation	Assist with project oversight, content development, research and evaluation
- Big Metro	- Big Metro	Assist with online	Assist with online

University	University	resource development	resource development
State University System			
- South State University		Assist with content development	
	Rural North COE		I.D. & recruitment of students, identify sites with videoconferencing & other technology capabilities
Other			
State Library	State Library	Ensure resources appropriate for use in libraries. Recruit library participation	Ensure resources appropriate for use in libraries. Recruit library participation
Community Tech Center	Community Tech Center	Recruit community based organization participation	Recruit community based organization participation
	Community Colleges		Faculty content and learning approach design. Program design.

grant and the other (Rural North C) was the lead for a second grant. Both were responsible for coordinating faculty outreach and support.

One community college was also responsible for leading content development (math). This was not the case for the ELA focused grant. Leadership of content development for the ELA focused grant was assigned jointly to a University (Coastal City University) and the "Community Colleges" (Coastal City College). The community college with the math focused grant (Snow Bird College) subcontracted project management to the other community college (RN College), whereas that community college (RN College) provided such support for itself. Charlie Shine, a faculty member at a

State University, was a partner in the mathematics grant and his role was to assist with content development. Ms. C (University) assisted with all aspects of the project in the mathematics grant. In the ELA grant her role was to "assist with project oversight and staff development".

Big Urban School District was a partner in both grants. Another school district was also identified in the grant focused on mathematics. A county office of education was identified in the ELA grant. All three K-12 partners were to identify students, support and assist with delivery models and program design. Big Urban School District would also "give feedback to the content design team" in the ELA grant.

Roles of the other partners were the same across both grants. Coastal City University would assist with project oversight, content development, research and evaluation. Big Metro University would assist with online resource development (e.g., programming). The State Library would ensure that resources were appropriate for library use, and would recruit library participation. The Community Technology Center representative would recruit participation by community-based organizations.

Leadership Models, Roles and Forms of Leadership

In the previous chapter I uncovered how during the first six weeks there was little evidence of conversations or formalized relationships among

participants that demystified what individuals' authority and reporting relationships were. The overall organizational structure of the project team was not apparent during the formative stage. Plans for putting a more formalized structure in place were not discussed either. In a few instances, Sheila North informed and/or asked for reviews of documents (such as the project budget) from David Shipman and Ms. C. This role indicated that she understood that she needed to get approval from both individuals.

Similar to the analysis of the first six weeks, participants in the last seven weeks oriented to, and held themselves accountable to others, and made efforts to inform and update one another on a frequent basis. This effort to keep each other informed was evidenced in the roles identified in the analysis of actions, as presented in Table 14 (Chapter 3, p. 90).

A new model of leadership embraced by participants through their support of the grants was made visible in the organizational charts contained in the grant proposals. The charts appear in Figures 5 and 6 below.

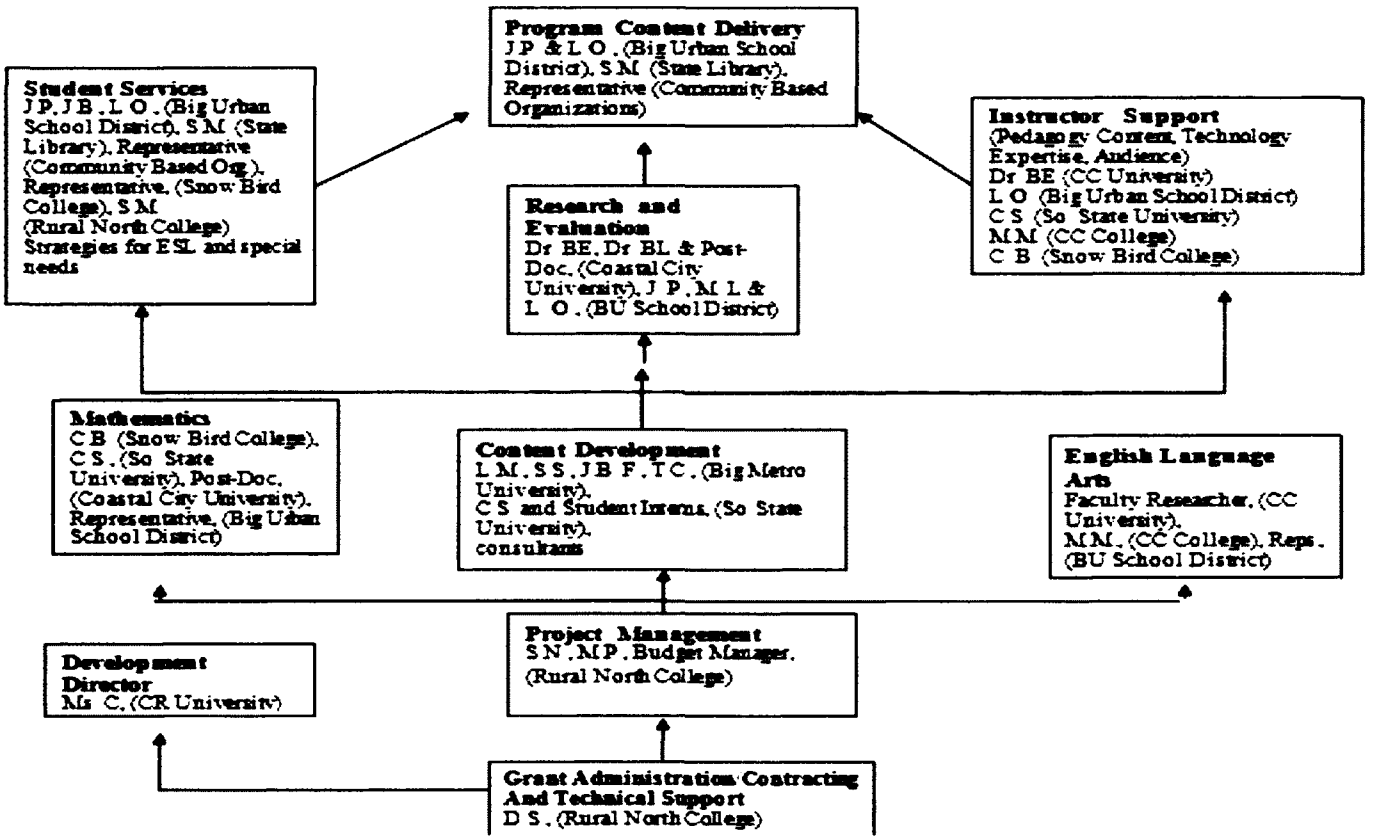


Figure 5. Organizational Chart for ELA. From ELA Grant Proposal

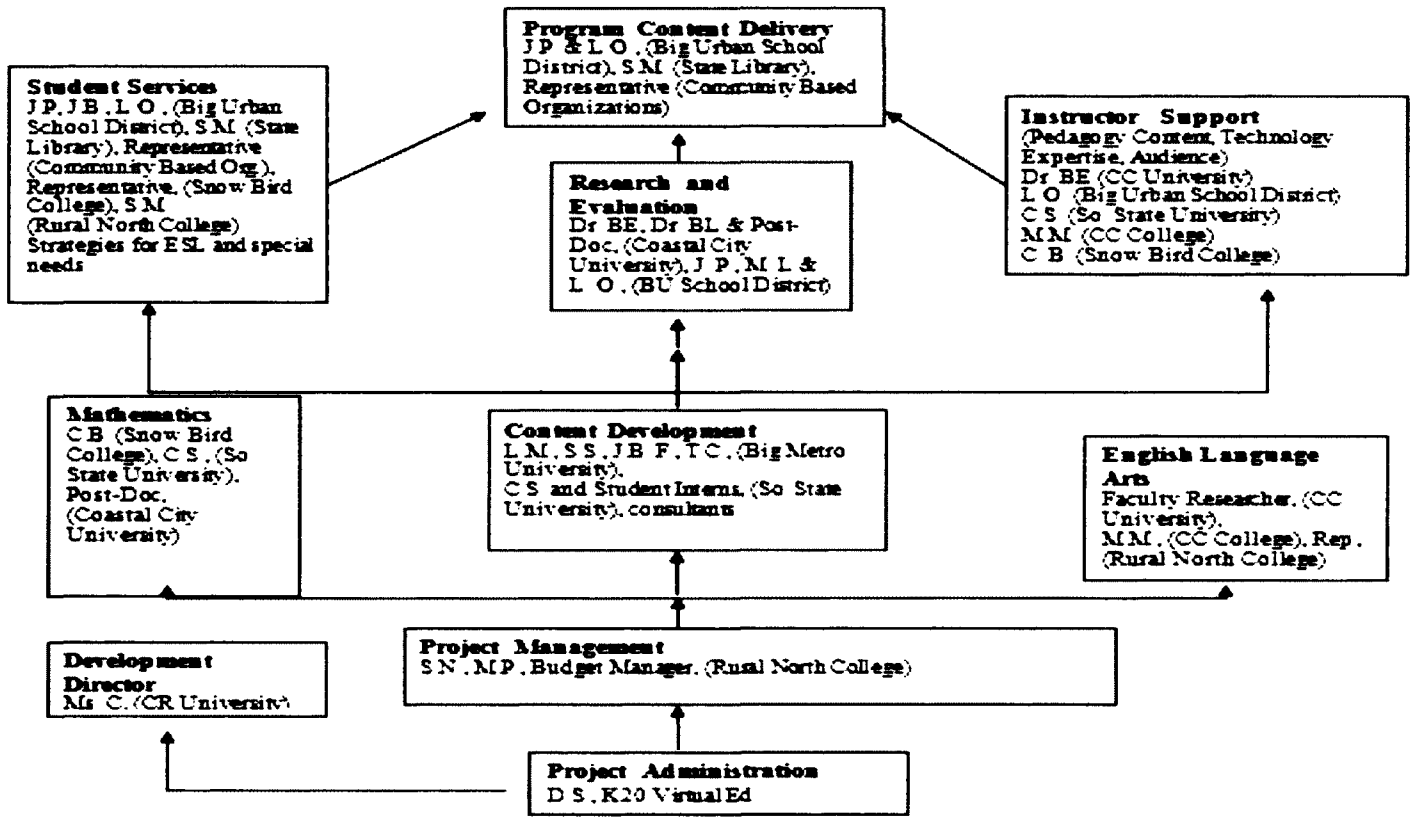


Figure 5 Organizational Chart for Math From Math Grant Proposal

One way of understanding the organizational structure that developed during the grant writing process is to view it as constructed to address the growing constraints identified in this chapter. Detailed descriptions of the partners and their roles, as well as organizational charts, emerged in the final grant proposals. As indicated in Figures 5 and 6, unlike many organizational charts, those with overall responsibility for the projects appeared at the bottom of the charts with arrows moving upwards. This way of displaying the organizational structure conveyed the notion that the leaders of the project(s) were working in support of all others on the team. The entire team was working to support those at the very top – partners responsible for program content delivery to students (such as Big Urban School District, the State Library and the public libraries represented, and community based organizations represented).

Groupings within the organizational chart with titles (such as Content Development) and individuals listed within the boxes conveyed the image of a distributed leadership model. Sub-teams with differentiated responsibilities would operate and engage with one another, and collectively would constitute the organization. The charts used in the two grant proposals were identical, conveying the idea that while there were two grant applications, participants in the two grants saw themselves as one team.

The grant document described the design as follows:

> The Stepping Program has three inter-related and interactive organizational components: planning, management and implementation (process), and performance (product). Each of these components will provide data that will inform other pieces, providing a continuous feedback loop. In addition, a single management system for two separate, but parallel grants addressing different content areas of Exit Exam offers a cost-effective model for collaboratively meeting needs on a statewide basis. (Grant proposal, 2007, p. 21)

To further examine participants' roles and forms of leadership during the seven weeks after the January 12th meeting, I returned to an analysis of each email record and identified the action being taken. I then analyzed the action taken and identified the role in the project that the action fulfilled (see sample page represented in Table 14, Ch. 3, p. 90 and Appendix G). Table 14 (p. 90) served as resource for the analysis re-presented in Table 15 (Ch. 3, p. 92) in which the actors who were most prominent in the email exchanges were listed across the top, and roles each had fulfilled during the period of January 13, 2007 through March 1, 2007 were listed in the cells.

This analysis indicated that David Shipman, Ms. C, and Dr. Beckwith and Dr. Black continued to provide leadership to the effort (Table 15, Ch. 3, p. 92). Sheila North (RN, project manager) emerged as a new leader (Table 15). Some of the roles taken up by David Shipman, Ms. C, Dr. Beckwith and Dr. Black, and Sheila North overlapped (such as building the budget). Others were unique to the individual. This same pattern was identified and discussed in Chapter 5 of this study.

I then contrasted the roles David Shipman (RN College), Ms. C, and Dr. Beckwith and Dr. Black (Coastal City University) had taken on during the first six weeks with those taken during the subsequent seven weeks following the meeting (see sample page in Ch. 3, Table 16, p. 94 and Appendix I). Some roles had disappeared and seemed to no longer be needed. For example, I no longer saw instances where Ms. C is sending documents to "frame" the project (Fairhurst, 2011). This helped guide what was discussed in the January 12th meeting, but was no longer needed after the meeting since all had come to common understandings of what the project would entail.

In addition, "connecting with people who could be a resource" was no longer seen. This lack of continued action in this area suggested that participants felt the need to make new connections and the connections forged at the January 12th meeting continued to support the work of the grant. Building management and research capacity was not a role seen in this time period to support the development of the grant, suggesting that sufficient capacity had been developed during the previous time period.

Analysis confirmed that many roles continued, such as recruiting partners, informing and updating each other on progress, and co-managing. New roles seen in this phase included acknowledging participants for their contributions, building a fiscal plan, raising concerns about communications, asking questions about roles, and securing support for the project from

administration for whom members worked (other key leaders who indirectly supported the project). Changes in the roles provided evidence that the leadership model and forms of leadership were being constructed dynamically through the team's work.

Conclusion

Through the analysis of archived emails during weeks 7 through 13, as well as of the final two grant proposals submitted by the developing team as resource for the development of the virtual organization, a picture of a dynamic and evolving entity emerged. After exchanges between participants during the face-to-face meeting of the team, relationships among team members appear to be cemented, as evidenced by participants' comfort in contacting one another without the assistance of another.

Intertextual ties between the words and directions proposed during the discussions in the first face-to-face meeting and those uncovered in the first grant proposals provided further evidence of the common knowledge that had initially developed at the meeting, and then was inscribed in the grant proposals. The proposals, therefore, constituted historical artifacts that contained a piece of the group's collective history. They also inscribed the boundaries of the virtual organization, the nature of the roles and relationships,

as well as the goals and directions, and rights and obligations of team members.

The contrastive analysis of the first six weeks with the final seven weeks showed that, with the passage of time, factors that supported and constrained the emerging virtual organization changed. Some of the factors that had supported the organization's development during its first six weeks were no longer needed after the first meeting. Other factors, such as the diversity in the team members' prior knowledge and experiences continued to support the team but also created constraints. Other new constraints emerged including insufficient communications, time constraints, and the lack of role clarity.

A contrastive analysis of participants' actions during the first six weeks of the team's development with the last seven-week period (thirteen weeks total), revealed how roles were changing and evolving. Some roles in the last seven weeks of the grant development work were the same as those in the first six weeks (such as the recruitment of participants), some roles appeared to no longer be needed (such as building the team's management, research and technological capacity), and new roles emerged (such as developing a fiscal plan). Specific roles carried out by leaders were detailed in Table 16 (Ch. 3, p. 94). This finding supports the conceptual argument that the team continued to

adjust dynamically during these early days in order to address the needs of the developing virtual organization.

The identification of the lack of role clarity as a constraint suggested that the organizational model in which there were many leaders and forms of leadership might have supported the team in its early days. However, this same organizational model but might not have been as well suited to the needs of the team during this later period of time in which the tasks shifted from bringing the team participants together and conceptualizing the work to beginning to do joint work. The need for a different organizational model appeared to be recognized by the team in their final grant submissions. The application included a diagram of the organizational model that would be put in place if funding materialized. The model had the individuals responsible for all aspects of the grant at the bottom as opposed to the top, indicating that their role was to support the work of others. Teams with distinct areas of work were identified at the next layer, suggesting a distributed leadership model. The people the team was working to serve appeared at the top of the organizational chart. The unusual way of depicting the organization's leadership appeared to reinforce the notion of a collaborative partnership among the diverse entities represented as opposed to a top down leadership model.

CHAPTER SEVEN
IMPLICATIONS OF THE STUDY

In this final chapter I discuss findings from the study that made visible the ways in which an intersegmental, interdisciplinary team, brought together to conceptualize and construct an education program, began to form a virtual organization. In doing so, I provide examples of what supported and constrained the organization at different phases of development, and the model of leadership and organizational structure that emerged over time. I begin by describing the ways in which the findings confirm existing research, then describe grey areas in which findings confirm and contradict existing research, and finally discuss findings that contradict existing research, and those that add to the field. I conclude by discussing the implications of the study and potential directions for future research.

Confirmations of Existing Research

Confirmation of a New Type of Innovative Team and Virtual Organization that Requires Diverse Knowledge and Expertise

Preliminary research conducted in preparation for this study (Coburn & Stein, 2010; Engeström, 2008; NSF, 2011a; NSF, 2011b) described a new type of team or virtual organization emerging in business and industry and in

academia. This new type of team is characterized by NSF (2011a) as having four common characteristics: (1) participants are distributed and work across different spaces with participants from different localities and institutions; (2) interactions are distributed across time (synchronous and asynchronous); (3) dynamic structures and processes at every stage, use of information and computing technologies; and (4) engagements with technology enabled resources (such as databases, simulations, instrumentation, and analytic tools and services). Preliminary findings in this study also confirmed that the characteristics of the Stepping Program team (see Table 2, Chapter 3, p. 55), brought together to conceptualize and develop a new virtual organization, resembled the characteristics of this type of team.

This study was designed to go beyond the naming or labeling of the team, however, to uncover how a team or virtual organization with the characteristics noted above forms and develops. The study examined the work of two primary actors, Ms. C (initiator/ethnographer) and David Shipman (K20 Virtual Ed, RN College), who intentionally brought a team together whose members possessed a wide range of knowledge, skills and competencies. Ms. C and David Shipman identified, assembled, and coordinated the work of team members with a wide range of prior knowledge and experiences. These findings confirmed Engeström's (2006) finding that innovative teams must

"coordinate interactions that span a wide range of competencies and knowledge bases" (p. 18).

Contributions that the individual actors and their unique knowledge, skills and competencies made to the group's work were documented throughout the study. Chapters 4 through 6 made visible that the conceptualization of the Stepping Program and planning for the development of the virtual organization required a heterogeneous group with diverse expertise in areas such as education science, research, mathematics, English language arts, technology, instructional uses of technology, state policies and school finance, and pedagogy. A homogenous grouping, such as that often found in various professional organizations or professional learning communities, would not have had the diverse knowledge, skills, and ways of thinking, knowing and being that this project demanded.

The concrete examples of what each participant in this diverse team added to the development of the virtual organization confirmed Engeström's (2006) arguments regarding the need for diverse types of knowledge and expertise. He writes, "Challenges cannot be met through 'teamwork' in the usual sense of small, homogenous, and informal groups (Adler, 2006, Heckscher, 2007, p.44)".

While the diversity found in the participants in the Stepping Program team was essential to the conceptualization and development of the

organization, findings also suggested that at times the intellectual resources available within the diverse team were not sufficient. Email exchanges documented instances in which expertise that lay outside the participants' backgrounds was needed to address needs arising within the group (for example, outreach to consultants 1 and 2, shown in Table 24 [Chap. 4]).

Knowing who to contact and facilitating contact with individuals who possessed needed expertise on behalf of others working on the team was one of the many roles of leaders. The need for the leaders and participants to reach out to others to meet needs of the developing organization confirmed arguments by Engeström (2008), who, citing Adler (2006) and Heckscher (2007), also argued that competencies and knowledge bases shift constantly to accommodate the evolving nature of knowledge projects.

The incorporation of knowledge and expertise lying outside of the emerging organization was explicitly discussed as a permanent feature of the work of the developing organization during team members' first meeting and in the final grant proposals. Discussions in the first meeting (Event #2, math breakout group) described participants' intentions to design and implement a responsive system that would take into account input from end users (teachers and students). This initial intention was expanded and inscribed in the two grant proposals. This description of a responsive system that dynamically adjusts to input from its "customers" is consistent with Engeström's findings

(2006), citing Victor and Boynton (1998, p. 195), in which he argued that innovative teams engage in co-configuration work in which customers' or users' input informs "intelligent" products that adapt to users' changing needs (evolution over time).

Confirming Research on Leadership in Innovative Teams and Virtual Organizations

Findings in this study (Chapters 5 and 6) revealed a loosely knit organizational structure in the organizational phase of the Stepping team, in which many leaders and forms of leadership were identified. These findings were analogous to Engeström's observations that, "There is an emerging way of organizing work in settings that strive toward co-configuration, in which collaboration between partners is of vital importance, yet the collaboration takes shape without rigid, predetermined rules or fixed central authority (i.e.. negotiated knot working) (p. 20)."

Uncovering the leadership model that enabled the virtual organization to form and develop, in fact, proved to be more difficult than I had originally envisioned. The study was originally limited to the first face-to-face team meeting, but was expanded to the six weeks leading up to the meeting and the seven weeks that followed (until grant submission) in order to provide more evidence of who was leading what components of the work to develop the organization, in what ways, under what conditions, and for what purposes.

The 'leader(s)' could not be identified by looking solely at the first meeting. In fact, this study found that it was not until the final grant proposal was completed that any type of formal organizational structure or formal roles emerged in the Stepping Program. The analysis demonstrated that this lack of clarity surrounding who was responsible for what, who had authority to do what, lines of communication, among other processes, supported the team's development as the team was it was beginning in the first six weeks, but it started to constrain the team's development as it matured during its second phase (last seven weeks before grant submission).

Given these shifts, Engeström's notion that teams need a flexible form of leadership was born out in this study, and evidenced by the distributed nature of the leaders and forms of leadership. His characterization of the new type of leadership as a "rapidly pulsating, distributed, and partially improvised orchestration of collaborative performance between otherwise loosely connected actors and activity systems...(p. 196)" fits the ways in which participants in the Stepping Program seemed to be working during the first thirteen weeks.

Contradictions with Existing Research

While Engeström's work and ways of conceptualizing this new type of

team or virtual organization contributed greatly to this study, there were two areas in which this study contradicted his earlier findings:

The Spontaneous Emergence of Virtual Organizations

Engeström uses the term "mycorrhizae" as an analogy for the way innovation-driven teams are created. In this analogy that was built on the symbiotic association between a fungus and the roots of a plant, Engeström argues that innovative collaboration driven teams may emerge at any time. Fungus provides water and nutrients to the plant, and the plant provides nutrients to the fungus through and within the substrate on which they feed. The potential for growth at any time lies in the substrate.

In Chapters 4 – 6 of this study, I unfolded the actions and roles of leaders to bring a team together to conceptualize, design and build a virtual organization, and the many factors that supported and constrained the team's work. The analysis of efforts by Ms. C over the prior year to nurture the development of such teams (Chapter 5) provided evidence of the difficulty of such work and the critical role of resources (financial and otherwise) in this process. The actions of leaders and the degree of work involved in initiating and developing this virtual organization made visible limitations in Engeström's argument about the spontaneous emergence of innovation driven teams and virtual organizations from fertile soil. It also indicated the need to

examine what supports and constrains the development of potentially spontaneous teams.

What is Left Behind as Virtual Organizations Rise and Fall

Engeström (2006) uses the term "knot working", which refers to "a longitudinal process in which knots are formed, dissolved, and reformed as the object is co-configured time and again, typically with no clear deadline or fixed endpoint....the center does not hold (p. 196)." The analysis of Ms. C's prior work to facilitate the development of collaborative K20 initiatives found in Chapter 5 pointed to many efforts that could be considered to be "knot working". Despite promising beginnings, and even funding that materialized for one of the projects, the efforts ultimately went by the wayside. Engeström argues that the knots are formed (in this instance, partnership efforts begin to emerge or do emerge in the case of the funded grant), and then they dissolve (and there is evidence of this in the histories), and then they are reformed as the object is configured in a new effort. He notes, "the center does not hold".

The tracing of the histories in the Stepping Program and the ways in which previous efforts to develop collaborative projects allowed team members in this virtual organization to come together in a matter of a few days and to begin working before funding had materialized suggested that something more permanent was left in the wake of previous projects that did

not fully mature. In fact, the lasting portion of such prior relationships and efforts is referenced in the final proposals for the Stepping Program:

> Central to the success of this intersegmental collaboration is the fact that many members have worked together on other projects in different combinations and for different purposes. They come to the partnership with a variety of resources to draw on in order to meet a common agenda. Together the partners bring content expertise at secondary and higher education levels, expertise in working with students who are similar demographically to those of the target group, expertise in technology, and expertise in bridging content and technology to build an accessible comprehensive model to meet both the current needs of members of the Class of 2006 as well as more far reaching needs of future students. (Exit Exam grant proposal, 2007, p. 12)

From this perspective, the people (as opposed to the project) were at the center of Ms. C's previous efforts, and the people networks did "hold". They became a key resource that allowed for the rapid formation of the Stepping Program team. Individuals were brought together and started working in a matter of a few days even though resources to support the work had not yet materialized. Research supporting this finding and the role of prior histories was outlined in Chapter 5. In prior collaborative team efforts, the object or grant possibility may have gone away, but the people relationships and network built continued to grow and solidify.

Grey Areas: Confirmations and Contradictions

Stages of Organizational Development and the Dynamic Nature of Emerging Virtual Organizations

Research literature informing this study offered two different descriptions of the stages of organizational development. Schein (2010) described four linear stages including: (1) a group formation stage, (2) a group building phase, (3) group work, and then (4) group maturity. Coburn & Stein (2010) described three phases of development in which the descriptions were more general in nature than those described by Schein. Neither of the descriptions were an exact match with the phases of development in the Stepping Program, suggesting that each developing virtual organization may go through different phases (length of time for a given set of things to occur, the types of things that need to occur, differences in sequencing, among other processes). However, if we set aside the labeling of the phases and look at descriptions of what happened during the phases, evidence from the Stepping Program both supported and contradicted arguments by Schein.

Schein (2010), for example, argues that the first stage, the group formation stage, begins with an "originating event" with a small group of 10-15 people. This study has demonstrated that there were many actions that were taken during a six-week period before the first meeting that supported the

origination and early development of the team and the organization it developed. While the first meeting of the Stepping Program team could be considered an "originating event" in the sense that it was the first time that all team participants had gathered in a face-to-face setting, it was hardly the beginning of team formation. This suggests an "origination phase" as opposed to a single event, and that the phase begins well in advance of the first time that people are brought into the same room together.

Schein (2010) argues that in the second stage (the group building stage) of an organization's development, group members begin to share authority, leadership, and accomplish tasks successfully. He suggests that the team begins to operate in terms of other unconscious assumptions that "we are the best group", and "we all like each other". This study of the Stepping program indicated that there were many leaders and forms of leadership, and that participants shared authority, leadership, and accomplished tasks successfully from the very beginning. This pattern did not arise after the originating event as part of a linear process but was a recursive and iterative process that was non-linear in nature.

In the third stage of organizational development, labeled by Schein as "group work", Schein argues that further development of groupness occurs as more realistic norms about intimacy evolve. In other words, group members come to an acceptance that liking each other is not the goal. Members just

need to like each other enough to enable learning and joint task performance (i.e. get to a point of mutual acceptance). In the Stepping Program it was not until the grant planning phase, weeks seven through thirteen of the origination phase studied (after the first meeting), that potential issues among team members began to surface in an email exchange between Sheila North and Dr. Beckwith. Given the limited period of the team's development that was the focus of this study, findings related to norms about intimacy over time could be explored further.

Schein asserts that over time a fourth stage of organizational development occurs (labeled as "group maturity") in which the set of shared assumptions becomes common knowledge and the culture determines much of the group's behavior. Members appear to know who the group is, what its role in the world is, how to accomplish its mission, and how to conduct its affairs. Socialization processes reflecting the culture enable newcomers to learn the rules and norms. Evolution takes place over time through incremental changes.

This description of dynamic change within newly forming teams and organizations as the team goes through stages captures the changing roles and relationships evident in the data and described in Chapter 6. It reflects the group's ultimate ability to describe development plans and an organizational structure in their grant proposals at the end of thirteen weeks. While the

descriptions of the stages that organizations go through may not be an exact match, the notion that the organizations are dynamic and continuously evolve is consistent with the findings in this study.

The Emerging Culture or Groupness in a Developing Team

In describing his notions about the first stage of an organization's development, Schein notes that individual actors enter such meetings with questions about their identity (What am I here for?), authority (Will I have a role to play?), and intimacy (Will we reach a level of intimacy I need, as evidenced by respect, acceptance, etc.?). Throughout the event, individuals initiate various actions and the group responds. As members begin to understand each other's needs, goals, values, and talents and integrate them into a shared mission, the group begins to define its own authority and intimacy system. Groupness arises through successive dealings with marker events that arouse strong feelings and then are dealt with effectively. The staff member or leader plays a central role at this stage. As the meeting progresses, members begin taking on greater leadership roles and participants' sense of ownership of group outcomes arises (Schein, 2010, p.200).

This study showed that by the time a newcomer (Dr. West) entered the first meeting of the Stepping Program team after the team's lunch break, participants were able to respond to the newcomer's questions about the group's underlying theoretical assumptions about the students they were

attempting to serve and the program they were developing. They were also able to articulate common goals. In doing so, they drew upon words and ideas initially conveyed by others during two events that took place earlier that day. Intertextual ties across time and events were made, and the developing sense of "groupness" was apparent in the answers to questions asked by the outsider coming in to the group.

Schein argues that during this stage of the development of innovation-driven teams the leaders often find themselves bringing different macro cultures (representatives from different nations and/or occupations) together. At the outset, Schein argues, "the group must undergo some experiences that enable the members to discover essential cultural characteristics of the other members, to overcome the rituals of deference and demeanor that curtail open communication across status levels, to develop some level of understanding and empathy, and to find some common ground (Schein, 2010, p. 386)".

While this study is of actors working in an education oriented project with social aims as opposed to private industry, the work did involve bringing people together whose prior knowledge and experiences reflected the macro cultures present in different disciplines (mathematics, English language arts, education sciences, research, technology, physics, teaching, administration) and different types of education entities (e.g., K12, community college, state colleges and universities, non-profits, a state agency). One could argue that

Dr. Beckwith's initial presentation and the discussion that followed in event two, detailed in chapters four and six, provided the opportunity for the development of common knowledge and through the process of the construction of common knowledge, a shared culture or sense of groupness began to emerge. Subsequent events provided such opportunities as well.

While the culture of the developing team seemed to be emerging, there is little direct evidence that the exchanges in event four or the exchanges in other events for that matter, allowed for the discovery of "essential cultural characteristics of other members". The events did, however, seem to provide for the development of common knowledge about the students and the challenges they faced, the opportunity to develop common goals and a shared theoretical base to guide future work, and a venue for developing a design for the project that all could support.

Schein (2010) argues that the experiences that the group must undergo in the beginning provide the capacity to overcome rituals of deference and demeanor that curtail open communication across status levels. This study has shown that the first meeting appeared to cement the loosely knit relationships in a manner that obviated the need for a person who knew two others, who, in turn, did not know each other, to have such acquaintances 'bridged' by the person who knew both actors. The initial relationships built at the meeting allowed for exchanges in the next seven weeks between participants without

one person having to play a 'bridging' role. In that sense, evidence existed to support Schein's claim.

Leaders and Forms of Leadership

In examining models of leadership, consideration was given to Schein's (2010) argument that the ideas and assumptions of the leaders of an organization were the opposite side of the coin of the organization's culture. Schein emphasizes the role of the initial leader or founder in creating the culture of such newly formed teams in the early stages, arguing that culture and leadership are two sides of the same coin. Schein posits that the initial leader who had the original idea typically has strong notions of how to fulfill the idea based on his or her own cultural history and personality, and strong assumptions that are brought to the work. He argues that such assumptions are often imposed on partners. In this study, there were many leaders who carried out different forms of leadership.

All participants were present in the first meeting of the Stepping Program team, and all participants worked to shape the ideas and assumptions that guided the team's work. Thus, it was difficult for any one leader to have an overwhelming role. However, one leader's (Ms. C's) use of a concept paper to recruit participants and to prepare for discussions at the first meeting demonstrated how this particular leader worked to infuse her ideas and assumptions within the organization's work. Her ideas in the concept paper

shaped how the opportunity for involvement was communicated (i.e. leadership brought off through communication), how participants perceived the work of the developing organization, and what was proposed at the first team meeting.

The inability to develop a profile for Ms. C through the discursive acts in the first meeting suggested a 'behind the scenes' approach to leadership and an approach in which leadership was brought off in communications (Fairhurst, 2007). The organizational chart that emerged in the final grant proposal in which Ms. C and David Shipman were represented as leaders at the bottom of the organizational chart working to support the sub-teams in the organization and the entities the organization was meant to serve was consistent with the profile developed for Ms. C in Chapter 5.

New Findings

Diverse Project Oriented Teams Capable of Designing and Launching New Virtual Organizations are Not Built Overnight

Many of the findings in this study resonate with Engeström's (2008) research surrounding a new form of collaborative teamwork taking place in business and industry. However, what was uncovered through the detailed analysis of how this virtual organization formed and developed in its early stages reflects a point of departure from Engeström's notion that innovation-

driven collaborative teams spontaneously emerge. That notion was not borne out in the study of this particular virtual organization.

In this case study, actors were purposefully assembled to address a complex statewide policy challenge in education – the need to help young adults pass the state's exit exam in order to obtain a diploma. The study has uncovered the types of leaders and new forms of leadership that enabled a successful virtual organization to form and develop. It showed the range of prior knowledge and experiences that needed to be brought together by the leaders in order for the virtual organization to have the capacity to address the educational challenges that faced educators and students. It showed the important contributions that individuals from different disciplines and organizational institutions can make in innovation-driven collaborative teams. Thus, while the study confirmed many aspects of Engeström's theories surrounding the new type of teamwork that has emerged, it also revealed that the formation of virtual organizations (at least in education contexts) is anything but a spontaneous occurrence.

The study also showed that the team studied, which was able to win funding, create the organization and deliver instruction and support to large numbers of people across the state, did not develop overnight. Many of the participants had known each other and had been working together (Ms. C and Charlie Shine [So State University] and Ms. C, Dr. Beckwith [CC University]

and Dr. Black [CC Univ]) for several years on similar projects. This suggests that some of the ideas or concepts at work in the Stepping Program may have emerged as a result of the work conducted much earlier.

Stepping back from this particular Exit Exam project and its funding source, the effort could be seen as representing but one phase of an ongoing effort to develop a network of collaborators who design, develop, implement and then reformulate innovative approaches to teaching and learning with new technologies. What is learned by collaborations in one phase is taken into the next, and the people relationships built in one phase add to those from the past, and contribute to the relationships built with new partners. In short, the project itself, with all its phases, could be viewed as one phase in an ongoing long-term commitment of leaders coming together from different segments of education to create the new.

New Forms of Leadership and Leadership Models

Multiple leaders who carried out both leadership and management roles were identified in this study, demonstrating that there may not be a singular leader during the early phase of a developing virtual organization. The fact that partners in the new entity were being recruited by one of the many leaders (Ms. C) who attempted to draw people together with different types of expertise from several different organizations already in existence (borrowing some of the individuals' time and expertise), may have factored into this

distributed leadership model. Ms. C did not possess the resources (e.g., employees, funding) to do the work that led to the grant submissions in any single institution with which she worked. Rather, she needed to identify and recruit people who had resources and expertise to expend resources on the joint work she envisioned. She went about this work by painting the picture of possibilities in a concept paper and worked with others to lay the groundwork for a successful first meeting in which the ideas in the concept paper would be expanded upon and offered as possibilities to meeting participants.

This approach to leadership resembles Engeström's notion of a "partially improvised orchestration of collaborative performance between otherwise loosely connected actors and activity systems...". Regardless of the label, the model reflects a new approach to leadership in which leadership itself is a collaborative performance of many with common underlying goals and assumptions guiding their joint work.

Setting the Stage for the Construction of Common Knowledge and Informed Design Work in Diverse Teams

Chapter 4 made visible the important role the first face-to-face meeting played in developing common knowledge among diverse team members who had not met before, and the development of a design for the virtual organization and its future work. The presentation by Dr. Beckwith and handout developed by the Center participants were shown to be foundational to

the non-linear, iterative and recursive conversations that followed. The presentation and handout enabled participants to develop common knowledge of the students to be served, the challenges students faced, and potential designs for a program that would be responsive. The conversations that ensued used such work as a jumping off point for further conversations about the design of the program.

The analysis in Chapter 5 of the six weeks leading up to the meeting, made visible the many hours of prior work by many different individuals to set the stage for the presentation and the conversations that occurred throughout the day. In other words, the outcomes from the meeting that moved the team's work forward were not derived by simply getting the right people into a room to talk. Much more had been involved in order to structure the conversations and the outcomes.

Implications for Education Policy, Research and Practice

The findings contained herein speak to the importance of relationships and joint work over time among individuals from different education segments and different disciplines in order to have the knowledge and experiences required to build virtual organizations with the capacity to develop large-scale education initiatives. The tracing of historical relationships of those

participating in this project suggested that many had wanted to do this type of project for some time, but the individuals' had experienced difficulty in securing funding to do so. This suggests that there may be more capable innovators who could form powerful virtual organizations if the financial resources could be matched with those who were capable of assembling and facilitating the work of individuals required in a virtual organization. While this type of collaboration is sometimes encouraged as an approach in large federal grants, smaller grants by federal and state agencies and many of those by private funders do not lend themselves to this type of teamwork. Furthermore, the need to designate one of many participating entities as the lead in most grants creates intellectual property rights issues, accounting burdens, and other issues for collaborators.

This study could inform these and other policy issues if it were used as a basis for further research to distill principles and practices for the development of other virtual organizations in education contexts that could be purposefully assembled to address other education challenges. Such principles and practices could be validated through replication studies, grounded in ethnography, involving other teams and projects focused on innovative approaches to teaching and learning with new technologies.

The unique contributions of participants from each of the state's four segments of education made visible as part of this study, suggests that the

virtual organization benefited from the diverse yet complementary roles/areas of specialization that currently exist within each segment. By extension, the differential knowledge and expertise that came together in this particular team can be viewed as a reflection of the specialized roles of each education segment envisioned by the leaders who developed and enacted the state's Master Plan for Higher Education. In future years when policy makers return to review the Master Plan to update its contents, findings from this study could inform discussions of the roles and relationships among the various segments of education that could further enhance the state's ability to support innovative and highly effective virtual organizations in education.

Future Research Directions

This study has demonstrated that while virtual organizations and efforts to form virtual organizations may rise and fall, the relationships, knowledge, and expertise of the people at the center of such work remains as a potential resource for the next effort. The work may be reformulated in the next effort, building upon a base that was built by past work. A more detailed analysis of the past work of participants in the Stepping Program who had prior relationships could reveal what was learned in the past that carried over or fed into the work of this developing team and organization.

This study also demonstrated the dynamic nature of the team and a developing organization, including shifting roles, distributed leadership in which several individuals were taking on leadership roles (as opposed to 'the' leader), and different forms of leadership that were exhibited by different individuals at different points in time. Additional research surrounding this new form of leadership could yield principles of leadership that support work in emerging virtual organizations. The demonstrated need for leaders to attend to participants' prior histories is one of many factors that could be reflected in such principles. Additional research could also assess the extent to which existing leadership training models encompass the principles that could be developed for leadership within an emerging virtual organization.

This study revealed that, through the interactions, a group culture was developing. However, this study comprised only a brief glimpse into the developing virtual organization since it encompassed only thirteen weeks of a team that worked together for nearly four years. A continuation of this study across the entire period could offer even greater insights into the many intertwined social and technical issues impacting development.

Limits to Generalizability of the Findings

While arguably the findings from this study can inform understandings

of the development of intersegmental, interdisciplinary teams and virtual organizations, their future use should take into account the organizational and cultural contexts in which the findings were generated, and the organizational and cultural contexts in which they will be applied (Engeström, 2008). Engeström (2008) argues that traditional studies of teams were often decontextualized and "aimed at describing laws of group behavior through the examining of the psychological dynamics of small groups". Qualitative differences among teams brought together for different purposes, and differences in teams' histories, make general applications of such research difficult. Activity theorist Yrö Engeström writes that while there are universal features that can be used to define what is meant by "team", such as "size, skill complementarity, purposefulness, mutual accountability and commitment ...the collaborative work and associated cognitive and communicative processes within and between teams in real organizational contexts" can differ significantly from one context to the next (Engeström, 2008).

REFERENCES

Adler, P. (2006). *The Firm as a Collaborative Community: Reconstructing Trust in the Knowledge Economy.* Oxford: Oxford University Press, 479-512.

Agar, M. (1994). *Language Shock: Understanding the Culture of Conversation.* New York: HarperCollins Publishers Inc.

Agar, M. (2006a). Culture: Can you take it anywhere? *International Journal of Qualitative Methods, 5*(2), 1-12.

Anderson-Levitt, K. (2006). Ethnography. In J. Green, G. Camilli, & P. Elmore (Eds.), *Complementary Methods for Research in Education.* Washington, DC: American Educational Research Association.

Atkinson, A., Delamont, S. & Housley, W. (2008). *Contours of Culture.* Plymouth, United Kingdom: AltaMira Press.

Baker, W. D., Green, J. & Skukauskaite, A. (2008) "Video-enabled Ethnographic Research: A Microethnographic Perspective." In G. Walford (Ed.), *How to do Educational Ethnography.* (76-114). London: Tufnell Press.

Bakhtin, M. M. (1986). Speech genres and other late essays. Austin: University of Texas Press.

Berger, P. & Luckmann, T. (1966). The social construction of reality. Garden City, NY: Doubleday.

Bloome, D. & Clark, C. (2006). Discourse-In-Use. In J. Green, G. Camilli, & P. Elmore (Eds.), *Complementary Methods for Research in Education* (pp. 227-241).Washington, DC: American Educational Research Association.

Bloome, D., & Egan-Robertson, A. (1993). The social construction of intertextuality in classroom reading and writing lessons. Reading Research Quarterly, 28(4), 305-333.

California State Auditor Report. (2006). *California K-12 High Speed Network: The Network Architecture Is Sound, but Opportunities Exist To Increase Its Use.* (Publication No. 2005-116). Sacramento, CA: Bureau of State Audits.

Castanheira, M.L. (2000). *Situating Learning within Collective Possibilities: Examining the Diverse Construction of Opportunities for Learning in the Classroom.* Unpublished doctoral dissertation. University of California – Santa Barbara.

Coburn, C.E., and Stein, M.K. (2010). *Research and Practice In Education: Building Alliances, Bridging the Divide.* Plymouth, UK: Rowman & Littlefield Publishers, Inc.

Cole, M. (1991). Conclusion. In L.B. Resnick, J.M. Levine & S.D. Teasley (Eds.), *Perspectives on socially shared cognition* (pp. 398-417). Washington, DC: American Psychological Association.

Collins, A.M., Joseph, D. & Bielaczyc, K. (2004). Design research: Theoretical and methodological issues. *Journal of the Learning Sciences* 13, no. 1 (January 2004):15-42.

Collins, E., & Green, J.L. (1992). Learning in classroom settings: Making or breaking a culture. In H. Marshall (Ed.), *Redefining student learning: Roots of educational restructuring* (pp. 59±85). Norwood, NJ: Ablex.

Collins, E. C., & Green, J. L. (1990). Metaphors: The construction of a perspective. In D.G. Lux (Ed.), *Theory into practice*. 29(2), (pp. 71-77).

Cook-Gumperz, J. (Ed.). (1986). The social construction of literacy. New York: Cambridge University Press.

Dixon, C., Green, J. & Brandts, L. (2005). Studying the discursive construction of texts in classrooms through Interactional Ethnography. In R. Beach, J. Green, M. Kamil, & T. Shanahan (Eds.), *Multidisciplinary Perspectives on Literacy Research.* Cresskill, NJ: Hampton Press/National Conference for Research in Language and Literacy.

Dym, C. L., & Little, P. (2004). Engineering design: A project-based introduction. New York: Wiley.

Edwards, D. & Mercer, N. (1987). *Common Knowledge.* NY: Methuen.

Ellen, R.F. (1984). *Ethnographic Research: A guide to general conduct.* London: Academy Press.

Engeström, Y. (2008). *From Teams to Knots: Activity–Theoretical Studies of Collaboration and Learning at Work.* Cambridge, MA: Cambridge University Press.

Erickson, F. (1984). What makes school ethnography ethnographic? Anthropology and Education Quarterly, 15(1), 51-66.

Erickson, F. (2006). Definition and Analysis of Data from Videotape: Some Research Procedures and Their Rationale. In J. Green, G. Camilli, & P. Elmore (Eds.), *Complementary Methods for Research in Education.* Washington, DC: American Educational Research Association.

Erickson, E, & Shultz, J. (1981). When is a context? Some issues and methods in the analysis of social competence. In J. Green & C. Wallat (Ed.), *Ethnogaphy and language in educational settings* (pp. 147-160). Norwood, NJ: Ablex.

Evertson, C.M., & Green, J.L. (1986). Observation as inquiry & method. In M. Wittock (Ed.), *Handbook of research on teaching (3rd ed.,* pp. 162-213). Washington, D.C.: AERA.

Fairclough, N. (1993). Discourse and text: Linguistic and intertextual analysis within discourse analysis. Discourse and Society Q(2), 193±218.

Fairclough, N. (1992). Intertextuality in critical discourse analysis. *Linguistics and Education, 4(3-4),* 269-293.

Fairhurst, G.T. (2007). *Discursive Leadership.* Thousand Oaks, CA: Sage Publications.

Fairhurst, G.T. (2011). *The Power of Framing: Creating the Language of Leadership.* San Francisco, CA: Jossey-Bass.

Floriani, A. (1993). Negotiating what counts: Roles and relationships, content and meaning, texts and context. Linguistics and Education S(3±4), 241±274.

Garfinkel, H. (1967). *Studies in ethnomethodology*. Englewood Cliffs, NJ: Prentice-Hall.

Gee, J. & Green, J. Discourse analysis, literacy and social practice, In P. D. Pearson (Ed.), Review of research in education, 23. pp. 119-169. Washington, DC: American Educational Research Association

Giddens, A. (1979). *Central problems in social theory: Action, structure and contradiction in social analysis.* Berkeley: University of California Press.

Goffman, E. (1974). *Frame analysis: An essay on the organization of experience.* Boston: Northern University Press.

Green, J. & Bloome, D. (1997). Ethnography and ethnographers of and in education: A situated perspective. In J. Flood, S.B. Heath, & D. Lapp (Eds.), *Handbook of research on teaching literacy through the communication and visual arts*. New York: Macmillan Publishers.

Green, J. & Dixon, (2007). Classroom Interaction and Situated Learning. In Marilyn Martin-Jones and Anne-Marie de Mejía (Eds.), *Encyclopedia Of Language And Education*, Volume 3, Discourse and Education, New York: Springer.

Green, J., Dixon, C.N., & Zaharlick A. (2003). Ethnography as a Logic of Inquiry. In J. Flood, D. Lapp, N. Squire, & J.M. Jensen (Eds.) *Research in the Teaching of the English Language Arts* (2nd ed., pp. 201-224). New Jersey: Lawrence Erlbaum Associates.

Green, J., & Meyer, C. (1991). The embeddedness of reading in classroom life. In C. Baker, & A. Luke (Eds.), Toward a critical sociology of reading pedagogy (pp. 141±160). Philadelphia, PA: John Benjamins.

Green, J.L., Skukauskaite, A., & Baker, W.D. (2011). Ethnography as Epistemology: An Introduction to Educational Ethnography. In J. Arthur, M.J. Waring, R. Coe, & L.V. Hedges (Eds.), *Research Methodologies and Methods in Education*. London: Sage.

Green, J.L., Skukauskaite, A., Dixon, C. & Córdova, R. (2007). Epistemological issues in the analysis of video records: Interactional Ethnography as a logic

of inquiry. In R. Goldman, R. Pea, B. Barron, & S. Derry (Eds.), *Video Research in the Learning Sciences* (115-132). Mahwah, NJ: Lawrence Erlbaum Associates.

Green, J.L. & Wallat, C. (1979). What is an instructional context? An exploratory analysis of conversational shifts across time. In O. Garnica & M.L. King, *Language, children & society.* NY: Pergamon Press, 159-188.

Green, J.L., Yeager, B. & Green, L. (2010). *Stepping into Your Future: Support for active reading, writing, math and test taking in the 21st century.* Power Point presentation, San Francisco (Stepping into STEM meeting), August, 2010.

Gumperz, J. J. (1982). *Discourse strategies.* Cambridge, England: Cambridge University Press.

Harel, I. & Papert, S. (1991). *Constructionism (Cognition and Capacity).* New Jersey: Ablex Publishing Corporation.

Heath, S.B., Street, B.V., & Mills, M. (2008). *Ethnography: Approaches to Language and Literacy Research.* New York: Teachers College Press.

Heckscher, C.C. (2007). *The Collaborative Enterprise: Managing Speed and Complexity in knowledge-Based Business.* New Haven: Yale University Press.

Howe, K. & Eisenhart, M. (1990). Standards for qualitative (and quantitative) research: A prolegomenon. *Educational Researcher*, 19, 2-9.

HumRRO (2006). *Year 7 Report.* California Department of Education, http://www.cde.ca.gov/ta/tg/hs/evaluations.asp

HumRRO (2007). *Year 8 Report.* California Department of Education, http://www.cde.ca.gov/ta/tg/hs/evaluations.asp

Hutchins, E. (1995). *Cognition in the wild.* Cambridge, MA: MIT Press.

Ivanic, R. (1994). I is for interpersonal: Discourse and construction of written identities and the teaching of writing. *Linguistics and Education,* 6, 3-15.

Kelly, G. J., & Green, J. (1997). What counts as science in high school and college classrooms? Examining how teachers' knowledge and classroom discourse influence opportunities for learning science. *Journal of Classroom Interaction, 32(2),* 1-3.

Kotter, J.P. (1990). *Force For Change: How Leadership Differs From Management.* New York, NY: The Free Press.

Lakoff, G., and Johnson, M. (1980). *Metaphors we live by.* Chicago: University of Chicago.

Lave, J., & Wenger, E. (1998). *Communities of Practice: Learning, Meaning, and Identity.* Cambridge, MA: Cambridge University Press.

Lincoln, Y. S., & Guba, E. G. (1985), *Naturalistic Inquiry.* Newbury Park, CA: Sage.

McDermott, R. P. (1976). *Kids made sense: An ethnographic account of the interactional management of success andfailure in one first-grade classroom.* Unpublished doctoral dissertation, Stanford University.

Mitchell, C.J. 1984. "Typicality and the Case Study." In *Ethnographic Research: A Guide to General Conduct*, ed. R.F. Ellen, pp. 238–41. New York: Academic Press.

National Science Foundation. (2011b). *A Report of the National Science Foundation Advisory Committee for Cyber infrastructure Task Force On Grand Challenges.* Retrieved November 5, 2011, from http://www.nsf.gov/od/oci/taskforces/TaskForceReport_GrandChallenges.pdf.

Northouse, P.G. (2010). *Leadership: Theory and Practice* (5th ed.). Thousand Oaks: Sage.

*NSF Solicitation for Virtual Organization as Sociotechnical Syst*ems. (2011a). Retrieved November 5, 2011, from http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503256.

Resnick, L.B. (1991). Shared cognition: Thinking as social practice. In L.B. Resnick, J.M. Levine & S.D. Teasley (eds.), *Perspectives on socially shared cognition* (pp. 398-417). Washington, DC: American

Psychological Association.

Rex, L.A., & Green, J.L. (2007). Classroom discourse and interaction, Reading across the traditions. In B. Spolsky & F.M. Huklt (Eds.), *International Handbook of Educational Linguistics.* (pp. 571-584) London: Blackwell.

Rex, L., Green, J., Dixon, C. (1998). Critical Issues. What Counts When Context Counts?: The Uncommon "Common" Language of Literacy Research. In Journal of Literacy Research, Volume 30, Number 3 (pp. 405-433).

Rex, L. A., Steadman, S., & Graciano, M. K. (2006). Researching the complexity of classroom interaction. In J. L. Green, G. Camilli, & P. B. Elmore (eds.), *Handbook of Complementary Methods in Education Research* (pp. 727–772). Mahwah, NJ: Lawrence Erlbaum/AERA.

Robinson, V.M. J. (2001). Embedding leadership in task performance. In K. Wong & C. W. Evers (Eds.), *Leadership for quality schooling (*pp. 90-102). London: Routledge/Falmer.

Rosen, L. (2010). Examining a novel partnership for educational innovation. In C. Coburn & Stein, M.K. (Eds.), *Research and Practice in Education: Building Alliances, Bridging the Divide*. Plymouth, UK: Rowman & Littlefield Publishers, Inc.

Schein, E.H. (2010). *Organizational Culture and Leadership.* San Francisco, CA: Jossey-Bass.

Shotter, J. (1993). *Conversational realities: Constructing life through language*. London: Sage.

Sigman, S.J. (1992). Do social approaches to interpersonal communications constitute a contribution to communication theory? *Communication Theory, 2,* 347-356.

Spradley, J. P. (1980). *Participant Observation.* Orlando: Holt, Rinehart and Winston, Inc.

Street, B. (1993). Culture is a verb. In D. Graddol (Ed.), *Language and culture (*pp. 23-43). Clevedon, UK: Multilingual Matters/BAAL.

Taylor, J.R., & Van Every, E. (2000). *The emergent organization: Communication as its site and surface.* Mahwah, NJ: Erlbaum.

Thayer, L. (1988). Leadership/communication: A critical review and a modest proposal. In G.M. Goldhaber & G.A. Barnett (Eds.), *Handbook of organizational communication* (pp. 231-263). Norwood, NJ:Ablex.

Toulmin, S. (1972). *Human understanding, Vol. 1: The collective use and evolution of concepts.* Princeton, NJ: Princeton University Press.

Victor, B., & Boynton, A.C. (1998). *Invented here: Maximizing your organization's internal growth and profitability.* Boston: Harvard Business School Press.

Walford, G. (2008). "Selecting sites, and gaining ethical and practical access". In G. Walford, (Ed.), *How to do Educational Ethnography.* Tufnell Press: London.

Weick, K. & Roberts, K.H. (1993). Collective mind in organizations: Heedful interrelating on flight decks. *Administrative Science Quarterly, 38,* 357-381.

Wink, J., & Putney, L. (2002). *A Vision of Vygotsky.* Boston, MA: Allyn & Bacon Longman.

Yeager, E. (2003). *"I Am a Historian": Examining the Discursive Construction of Locally Situated Academic Identities in Linguistically Diverse Settings.* Unpublished dissertation. University of California, Santa Barbara.

Yeager, B. (2006). Teacher as researcher/researcher as teacher: Multiple angles of vision for studying learning in the context of teaching. *Language Arts Journal of Michigan* (Summer), pp. 26-33.

Yeager, B. & LINC Center (2007). *Digital teaching and learning communities: CAHSEE Preparation Initiatives.* Power Point presentation at University of California, Los Angeles, January, 2007.

Yeager, B. (2008a). *CAHSEE Prep Initiative: Stepping Into Your Future – Math Phase I Final Evaluation Study Report.* Santa Barbara, California: Author.

Yeager, B. (2008b). *CAHSEE Prep Initiative: Stepping Into Your Future – English Language Arts Phase I Final Evaluation Study Report.* Santa Barbara, California: Author.

Yeager, B., Hough, S., Bolaza, C., Vaz Bauler, C., Inglese, T., Macias, R., et. al. (2009a). *CAHSEE Prep Initiative: Stepping Into Your Future – Math Phase II Final Evaluation Study Report.* Santa Barbara, California: Author.

Yeager, B., Hough, S., Bolaza, C., Vaz Bauler, C., Inglese, T., Macias, R., et. al. (2009b). *CAHSEE Prep Initiative: Stepping Into Your Future – English Language Arts Phase II Final Evaluation Study Report.* Santa Barbara, California: Author.

Yeager, B., Hough, S., Bolaza, C., Vaz Bauler, C., Inglese, T., Macias, R., et. al. (2010a). *CAHSEE Prep Initiative: Stepping Into Your Future – Math Phase III Final Evaluation Study Report.* Santa Barbara, California: Author.

Yeager, B., Hough, S., Bolaza, C., Vaz Bauler, C., Inglese, T., Macias, R., et. al. (2010b). *CAHSEE Prep Initiative: Stepping Into Your Future – English Language Arts Phase III Final Evaluation Study Report.* Santa Barbara, California: Author

APPENDICES

Appendix A

Glossary of Participants Backgrounds, Affiliations and Pseudonyms

Participant Background	Pseudonym For Participant	Pseudonym For Institution	Abbreviations For Institutions
Director of system-wide technology initiatives serving community colleges	Cate McGregor	Community College System Office	CC System Office
Director of system-wide technology initiatives serving community colleges	David Shipman	K20 Virtual Ed. at Rural North College	K20 Virtual Ed, RN College
Technology director (and former physics teacher) for a large urban K12 district	Jim Pappas	Big Urban School District	BU School District
A director of an instructional technology group from a University	Lou Masters	Big Urban School District	BU School District
Member #1 of an instructional technology group from a University	B.J. French	Design Center, Big Metro University	DC, BM University
Member #2 of an instructional technology group from a University	Sargeant Schriver	Design Center, Big Metro University	DC, BM University
Member #3 of an instructional technology group from a University	Tony Coombs	Design Center, Big Metro University	DC, BM University
Math faculty member from a community college district	Cary Brown	Snow Bird College	SB College
Math faculty member from a state university	Charlie Shine	South State University	So. State University
Community college faculty member who taught English Language Arts (ELA)	Maggie May	Coastal City College	CC College
Education researcher #1 with an ELA background from a University	Dr. Black	Coastal City University	CC University
Education researcher #2 with an ELA	Dr. Beckwith	Coastal City University	CC University

background from a University			
An individual from a community college district who specialized in partnership development	Don Knott	Big Metro College	BM College
A director of secondary education in a large urban K12 district	Javier Bustamante	Big Urban School District	BU School District
An administrator from a large urban K12 district	Linda Ose	Big Urban School District	BU School District
A director of instructional technology applications from a large urban K12 district	Mark Lowe	Big Urban School District	BU School District
A coordinator from a community college that operated a tutoring center for students	Sarah Moore	Rural North College	RN College
An emeritus professor of mathematics who had just stepped down from a system-wide university position responsible for education partnerships	Dr. West	Big Metro University	BM University
A representative of the state librarian	Sandy McDaniels	State Library	State Library
A project director hired to support the program	Madge Pepper	Rural North College	RN College
A project manager hired to support the program	Sheila North	Rural North College	RN College
A director of statewide initiatives employed by a university	Ms. C	Capitol City University	CapCi University
A Vice-Chancellor of Research from a university	Dr. Pea	Big Metro University	BM University

Note: Sample pages are provided. Complete versions and related reference materials are available upon request.

Appendix B

Comparison of Dr. Beckwith's PowerPoint and Center Handout

DR. BECKWITH POWERPOINT PRESENTATION	CENTER HANDOUT
Slide 1 *Digital Teaching and Learning Communities:* *High School Exit Exam Preparation Initiatives* Audience, Existing Resources, Learning Approaches and Methods	*Digital Teaching and Learning Communities: High School Exit Exam Preparation Initiative* Audience, Student Incentives, Materials and Learning Approaches (Analysis completed by Center Team Members) GOALS we have and that we took into account: • To assist members of the Class of 2006 to prepare in order to pass the exit exam and receive their high school diplomas • To afford participants opportunities to balance conceptual understanding with test taking understanding – to grow conceptually while having specific opportunities targeted toward passing specific High School Exit Exam test items SOURCES FOR ANALYSIS AND RECOMMENDATIONS *XYZ Department of Education Exit Exam website* *Study Guides, Teacher Guides, and other Program Resources* *Test Blueprints and Released Items* *Independent Evaluations (HUMRRO) – particularly Year 7 evaluation* *Exit Exam On Target materials* *Website* *Online access to materials for examination*

	Conference call with developer (SS)
	Sample interactive materials (using Exit Exam On Target and Exit Exam as resource) *Examination of materials online (Number Sense Strand)* *Conference call with developer*
	University College Prep- Exit Exam Prep Materials *Website* *Online access to materials for examination* *Conference call with AC, Director of Strategic Partnerships at XXX*
	Numedeon, Inc – Whyville virtual community *Examination of online site* *Conference call with Numedeon President (and one of developers)*
	Second Life – Online virtual community *Examination of site*
	University web site for preparation and information re: Entrance Exams
Slide 2 Audience • Did not pass 1 or both sections of Exit Exam by May, 2006 • Out of HS for year or more • Young adults – 18-20 years old • Probably have fairly sophisticated experience • with video gaming & online social interaction • (e.g., MySpace)	*AUDIENCE* *Audience characteristics we took into account:* • *Participants who will have been out of the high school setting for a year or more when the initiative begins* • *Participants who will be, for the most part, young adults – 18-20 years of age (depending on when students enter the Prep Initiative)* • *Participants who may be working and/or enrolled in community college courses* • *Participants who will probably have fairly sophisticated experience with video gaming, online social interaction (e.g., MySpace)*

Appendix C

Chain of Actions During Dr. Beckwith Presentation

	PowerPoint Presentation by Dr. Beckwith	Chain of Actions and Sub-Actions
1.	Slide 1	Slide 1
2.	Digital Teaching and Learning Communities: Exit Exam Preparation Initiatives Audience, Existing Resources, Learning Approaches and Methods	Signaling what she will cover in her presentation
3.		
4.	Slide 2	Slides 2-4
5.	Audience	Describing the students to be served
6.	Did not pass 1 or both sections of Exit Exam	*Describing challenges facing learners*
7.	by May, 2006	
8.	Out of HS for year or more	*Conditions impacting diverse audience*
9.	Young adults – 18-20 years old	*Describing characteristics of diverse audience*
10.	May be working &/or enrolled in CC courses	*Conditions impacting diverse audience*
11.	Probably have fairly sophisticated experience	*Describing characteristics of diverse audience*
12.	with video gaming & online social interaction	*Conditions impacting diverse audience*
13.	(e.g., MySpace)	
14.		
15.	Slide 3	
16.	Audience – HUMRRO Evaluation	
17.	May be drawn from:	
18.	Latino groups (largest ethnic group of	*Describing diversity of the audience*
19.	those who did not pass)	
20.	English Learners	*Describing diversity of the audience*
21.	Economically disadvantaged	*Describing diversity of the audience*
22.	Designated 'special education'	*Describing diversity of the audience*

23.	Students who self-described as:	*Describing challenges facing learners*
24.	Not having had courses by time tested	
25.	Having forgotten content by senior year	*Describing challenges facing learners*
26.	Had some difficulty with items tested (23%)	*Describing challenges facing learners*
27.		
28.	Slide 4	
29.	Exit Exam Prep Initiative's Diverse Audience May Represent Those Who:	
30.	Have difficulty with and/or don't have content	*Describing challenges facing learners*
31.	&/or conceptual understanding, and/or	
32.	Were not afforded opportunities to learn	*Conditions impacting diverse audience*
33.	particular areas tested, and/or	
34.	May or may not have the concepts, but do	*Describing challenges facing learners*
35.	need test taking strategies & or links to how	
36.	content looks & works translated into test	
37.	items, and/or	
38.	May have language and/or reading level needs	*Describing challenges facing learners*
39.		
40.	Slide 5	Slide 5
41.	Problem: Gaps and Missing Links	Describing why the students may not have passed the Exit Exam
42.	Content taught in discreet strands – students might be	*Describing challenges facing learners*
43.	missing ways of making links across concepts, using multiple	
44.	concepts	
45.	May not have conceptual 'hooks' to remember –	*Describing challenges facing learners*
46.	missing 'real world', holistic applications of conceptual	
47.	understanding (using multiple concepts)	
48.	May not know how to draw on strength areas to	*Describing challenges facing learners*
49.	support work in areas of greater need	
50.	May not understand test 'genre' – missing the link	*Describing challenges facing learners*

Appendix D

Analysis of Intertextuality During Group Discussion

Col	1	2	3	4	5	6	7
	Speaker	Comment	Reference to Presentation	Re-Creation in Notes	Reference to Handout	References to Other Participants' Comments	Actions
1.	CS, So. State University	Recounts his experience with PD program and mathematics. What percentage of students do it correctly? What did students do?	Ways of determining content focus	Content focus - Standards tested - # of items...focus energy on most tested areas – concept clusters – correlated with dependent concepts	Areas of test are weighted in terms of the number of items (there may only be 1 item reflecting a particular area tested, while there would be several items in other areas)		Affirming use of assessment data to inform program design. Providing example that supports.
2.	Dr. BE, CC University	PISA is a literacy test, not a reading or writing test. Need info for type of readers and ways they are approaching the test. Number of items and				Adding to CS' comment.	Raising need for assessment data to understand participating students.

		types passed.					
3.	Unattributed	Student choice of practices. Can practices. Have choice.					
4.	Dr. BL, CC University	We need to work with a subgroup so we know how kids approach the test.	Approaches to developing content and examples	Moving from materials that build conceptual understanding to test format and strategies Materials that ask student to deconstruct & construct test items Materials that connect content – AND its conceptual base – with way that content will appear on the Exit Exam	Analysis of materials and approaches, as well as the need to recruit and engage young adults in this initiative (and meet their particular needs) who represent a diverse audience has led us to the following We would recommend including 4-5 students, in the planning & development phase (small stipends included in budget), who passed the Exit Exam (perhaps some in their senior year, probably from the same demographics as our audience) in some	Adding to Dr. BE and to CH' comments, referencing suggestions in the handout but not explicitly (didn't cite handout).	Suggesting work with subgroup to understand students' approach to test.

					of our work. These students could be interviewed about what helped them to pass the test, how they approached the test,		

Appendix E

Comparison of Dr. Beckwith's Actions/Sub-Actions to Participants' Actions

	Chain of Actions and Sub-Actions During Dr. Beckwith Presentation	Corresponding Actions of Participants In Response to Presentation
Slide 1	Signaling what she will cover in her presentation	
Slides 2-4	Describing the students to be served *Describing challenges facing learners* *Conditions impacting diverse audience* *Describing characteristics of diverse audience* *Conditions impacting diverse audience* *Describing characteristics of diverse audience* *Conditions impacting diverse audience* *Describing diversity of the audience* *Describing diversity of the audience* *Describing diversity of the audience* *Describing diversity of the audience* *Describing challenges facing learners* *Describing challenges facing learners* *Describing challenges facing learners* *Describing challenges facing learners* *Conditions impacting diverse audience* *Describing challenges facing learners* *Describing challenges facing learners*	Discussing challenges of reaching students.
Slide 5	Describing why the students may not have passed the Exit Exam *Describing challenges facing learners* *Describing challenges facing learners*	

	Describing challenges facing learners *Describing challenges facing learners* *Describing challenges facing learners*	
Slide 6	Proposing guiding principles for the joint work *Stating guiding principle* *Stating guiding principle* *Suggesting approach to development that addresses needs and interests* *Stating guiding principle* *Suggesting approach to development that addresses needs and interests*	Re-stating and emphasizing a design principle (not returning to high school)
Slide 7	Describing existing content resources	
Slides 8-14	Proposing the type of resources the group would develop, in what ways... *Suggesting approach to development that addresses needs and interests* *Providing example of what is proposed for development* *Providing example of what is proposed for development*	Affirming use of assessment data to inform program design. Providing example that supports. Raising need for assessment data to understand participating students Suggesting work with subgroup to understand students' approach to test.
	Suggesting approach to development that addresses needs and interests *Providing example of what is proposed for development*	Affirming the importance of test data to inform understanding of individual students' needs.

Appendix F

Discussion Topics and Prior Knowledge & Experiences Event #1

				Drawing on.....		
Speaker	Comment	Discussion Topics	Topic Categories	Knowledge of and Experiences with.....	Knowledge of and experience as....	Contribution to the project
CS, So. State University	Recounts his experience with PD program and mathematics. What percentage of students do it correctly? What did students do?	Assessment and program design.	Assessment	A similar project that built online Exit Exam math resources for teachers.		Provided insights into ways assessment data can inform program developers' understanding of students strengths (and weaknesses) in relation to the test.
Dr. BE, CC University	PISA is a literacy test, not a reading or writing test. Need info for type of readers and ways they are approaching the test. Number of items and types passed.	Assessments.		Assessment		Expanded notion of use of testing to include use by students to support their decisions surrounding their learning.
Unattributed	Student choice of practices. Can practices. Have					

	choice.				
Dr. BL, CC University	We need to work with a subgroup so we know how kids approach the test.	Testing		Researcher	Offered an approach to understanding students' test taking method drawn from an approach in another research study.
Dr. BL, CC University	Record #3 Recent article to be distributed via email will discuss French study which identified 4 different ways of taking tests: 1. Double Discourse; 2. Content/answer on a personal basis; 3. Find piece/answer that seems mostly likely to fit and 4. Multiple Choices. In addition, the study found ways of taking tests were also determined and tied to the schools students went to, how they approached tests and where they lived.		Testing		
MM, CC College	(following discussion of students' choices in	Testing.	Testing (content in the		Expanded notion of use of testing to

	ways to answer question) don't have an accurate view – can't accurately build. How accurate am	handout)	include use by students to support their decisions surrounding their

Appendix G
Actions and Roles from January Meeting to Grant Submittal

Team Member	Action	Role
LM (Big Metro University)	Thanking DS and Ms.C for great meeting	Thanking
JP (BU School District)	Connecting Ms. C to Apple	Connecting to people who can be a resource
Dr. BL (CC University)	Thanking group for meeting. Sharing her notes.	Thanking Sharing notes and resources
Ms. C (CR University)	Thanking Dr. BE for her work	Thanking
Dr. BE (CC University) (To Center participants)	Filling group in on 1/12 meeting.	Informing and Updating
Dr. BE (CC University) (To Ms. C's Assistant)	Noting Ms. C and her Assistant's office move	
DS (RN College) (To SN cc to Ms. C)	Forwarding SN's plan of action	Informing and Updating Co-managing
DS (RN College) (To MP and SN)	Information about SharePoint site	Resourcing
LM (Big Metro University) (To DS and Ms. C)	Asking about next steps	
SN (RN College) (To DS and Ms. C)	Coordinating a call to discuss LM's email	Co-managing
Ms. C (CR University) (To SN, DS, MP)	Requesting call to discuss LM.'s email	Co-managing
Ms. C (CR University)(To SN)	Inquiring about meeting notes	Co-managing
Ms. C (CR University) (To JP and guest)	Note regarding possibilities for partnership with Apple	Connecting to people who can be a resource
Ms. C (CR University) (To LM)	Letting her know that a meeting is scheduled to discuss the contract	Informing and Updating Co-managing
Ms. C (CR University) (To LM)	Email re: contract	Informing and Updating Co-managing

MP (RN College) (To Ms. C, DS, SN)	Email with agenda for meeting at Butte with all four	Co-managing Organizing opportunity for collaboration
LM (BM University)(to Dr.P)	Seeking approval	Securing support of bosses
DS (RN College) (To Ms. C)	Approval of contract	Building technical capacity Co-managing
DS (RN College) (To College staff)		Informing and updating
DS (RN College) (To LM)	Welcome aboard	Co-managing
DS (RN College) (To Team)	Doug discussing next steps	Co-managing
Dr. BE (CC University)	Notes	
SN (RN College) (To Dr. BE)	Sending last RFA	Identifying resources
SN (RN College) (To 1/12 attendees)	Notes from meeting and SharePoint site	Thanking Sharing notes and resources
Budget person (RN College) (To Ms. C)	Email re: budget development	Building fiscal plan
CM (CCSO) (To Ms. C)	Sharing Maggie and Pam's contracts	Informing and updating
DS (To CB, et al)	Arranging a face-to-face meeting in Snow Bird to discuss Snow Bird's potential grant submittal	Recruiting partners
Ms. C (CR University) (To CM)	Setting up lunch	
Ms. C (CR University) (To Budget person)	Sent draft budget	Building fiscal plan
CB (SB College) (To area school district)	Seeking participation in grant.	Recruiting partners
Ms. C (CR University) (To SN)	Requesting SN to check with others re: participation	Co-managing Recruiting partners
DS (RN College) (To SN)	Requesting SN to see if individual wanted to be part of team	Identifying resources Co-managing
SN (RN College) (To SM)	Confirming desire to participate	Partnering

Appendix H

Early Participants' Roles (Based on Actions) and Forms of Leadership (Jan. - March)

Roles	Ms. C (CR University)	DS (RN College)	Dr. BE & Dr. BL (CC University)	SN (RN College)
Thanking	X		X	X
Connecting to and with people who could be a resource	X			X
Recruiting partners	X	X		X
Identifying Resources		X		
Building a fiscal plan	X	X		X
Sharing notes and resources			X	X
Co-creating			X	X
Organizing opportunities for collaboration				X
Informing and updating	X	X	X	X
Raising concerns			X	
Asking questions			X	
Securing support of bosses		X		X
Building technical capacity		X		
Co-managing	X (Overall project)	X (Overall project)	X (Work of team at UCSB)	X (Overall project)

Appendix I

Role Comparison First Six Weeks to Last Seven Weeks

Roles	Ms. C 1 (CR Univ)	Ms. C 2 (CR Univ)	DS 1 (RN Coll)	DS 2 (RN Coll)	Dr. BE & Dr. BL 1 (CC Univ)	Dr. BE & Dr. BL 2 (CC Uni)	CM 1 (CC SO)	SN 2 (RN Coll)
Partnering	X		X		X			
Facilitating partnering by others							X	
Connecting to and with people who could be a resource	X	X						X
Recruiting partners	X	X	X	X	X			X
Identifying Resources	X		X	X	X		X	
Framing the project	X							
Collaborating	X				X			
Co-creating			X		X	X		X
Organizing opportunities for collaboration	X				X			X
Informing and updating	X	X	X	X	X	X		X
Problem solving	X		X		X		X	
Connecting with people who could be a resource	X				X			
Encouraging	X				X			
Building research			X		X			

capacity								
Building technical capacity			X	X				
Building management capacity			X					

Appendix J

Actions and Sub-Actions of Speakers in Event #2

Affirming use of assessment data to inform program design. Providing example that supports.
Raising need for assessment data to understand participating students Suggesting work with subgroup to understand students' approach to test. Affirming the importance of test data to inform understanding of individual students' needs. Distinguishing between the online and distance education components of the program. Raising a challenge - reaching students. Identifying a pitfall to avoid in program design Raising question. Suggesting components and elements of the program design. Raising need to consider go to sites that support students' access to the program Providing example of blended model. Identifying need. Suggesting digital divide is reason for technology use. Re-stating and emphasizing a design principle (not return to high school). Raising importance of confidence building. Providing example of where testing would come into program design. Supporting a blended model Raising potential of using a variety of technologies Bringing an end to the discussion. Discussing the need to design for sustainability. Discussing technology components of the program design. Raising student recognition as a potential component of the program Suggesting Moodle as a potential resource for communities of practice. Suggesting Merlot as a resources for community of practice. Raising a challenge - workload associated with virtual communities.

Appendix K
Comparison of Actions During Event #5 to Events #2-4

	Chain of Actions and Sub-Actions During Dr. Beckwith Presentation (Event 2)	Corresponding Actions of Participants In Response to Presentation (Event 2)	Corresponding Actions of Participants in Math Break-Out Session (Event 3)	Corresponding Actions of Participants in Full Group Discussion (Event 4)	Corresponding Actions of Participants in Full Group Discussion (Event 5)
Slide 1	Signaling what she will cover in her presentation				
Slides 2-4	Describing the students to be served *Describing challenges facing learners* *Conditions impacting diverse audience* *Describing characteristics of diverse audience* *Conditions impacting diverse audience* *Describing characteristics of diverse audience* *Conditions impacting diverse audience* *Describing diversity of the audience* *Describing diversity of*	Discussing challenges of reaching students.			

	the audience *Describing diversity of the audience* *Describing diversity of the audience* *Describing challenges facing learners* *Describing challenges facing learners* *Describing challenges facing learners* *Describing challenges facing learners* *Conditions impacting diverse audience* *Describing challenges facing learners* *Describing challenges facing learners*
Slide 5	Describing why the students may not have passed the Exit Exam *Describing challenges facing learners* *Describing challenges facing learners* *Describing challenges facing learners* *Describing challenges facing learners* *Describing challenges facing learners* *Describing challenges facing learners*

Appendix L

Discussion Topics and Prior Knowledge/Experiences Event #3

			Drawing on prior		
Participant	Comments	Discussion topics	Knowledge of and Experience with	Knowledge of and experience as	Contribution to the project
CB, Snow Bird College	Assessments. Tests a lot. Do a refresher before assessment. Start with gaming. First part of class is a learning hour/speak together – creating a common language base. …Importance of not assessing in first hour of program. Few hours to practice first. Capture the community building.	Assessment Student needs	Assessments Students need for warm-up before a test Teaching math	An instructor	Effective methods of instruction
DS (RN College)	What we are trying to do is… What do we need to understand coming out of here? We have 8-9 months to do the work. What information do we need? What are the elements? Who is willing to own a piece? The K20	Meeting outcomes Program design Roles and Relationships	Developing programs and services	A director	Organizational structure – roles and relationships

	Virtual Ed. at RN College's role. .. Here is what we have got. This is what we need to change. People ready to take that piece (subsets e.g. student delivery, build the software component). Who is playing on what part? May not involve all. Content component and research (can software help us build the research?). Look at quality of delivery when done – when we have built something good. Ms. C and he need to come out with a set of technology tools, and ...If they take on another project its not from the very start. Fine with that's phase 1 and that's phase 2. Piece on network community – let someone go off.. team – phase 1 is, phase 2, networking community is phase2. Find out roles.				
CS, So.	Need for diagnostic tool	Assessment	Assessment	Math educator	Links between

State University	in the program. Could use MDTP ... ..free. Note. CB knew of it. Student and teacher get testing. Basic level of programming. Recommendations can be made programmable. Output to SM's team to individualize instruction based on which modules are needed. Identify strengths to build from. Everybody here through Algebra 1 in 8th grade. What percent is Algebra? Can focus on non-Algebra. Start by focusing on strengths.	Program design Student and teacher needs	Programming Strengths based teaching methods Content focus	assessment, students and teachers, and program design Approach to identifying content focus

Appendix M
Consolidated Profiles of Participants and Their Contributions

Profile: David Shipman, Director, Rural North College		
	Drawing on prior....	
Knowledge of and experience with.....	Knowledge of and experience as.....	Contribution to the project
• Approaches to program design. • Designing for sustainability. • Developing programs and services • Systems design • Technology and ways of connecting people across distances • Ways people can work together across distances	• Director of the K20 Virtual Ed. At RN College	• Raised awareness of the need for a financially sustainable design • Organizational structure – roles and relationships • Support for the new approach to student needs • Support for the joint work across distances • Support for technology enabled education • Support for a broad notion of goals (beyond Exit Exam). • Provided an example of ways others have supported students' long-range goals • Support for the functioning of the team

Profile: Maggie May, Associate Professor, English, Coastal City College		
	Drawing on prior....	
Knowledge of and experience with.....	Knowledge of and experience as.....	Contribution to the project
• Assessment and testing (content in the handout) • Uses of technology in education • Being part of teams • Potential motivators for students • Teaching ELA to adults • Assessment	• Community College instructor • Former graduate student at Coastal City University	• Expanded notion of use of testing to include use by students to support their decisions surrounding their learning. • Program design to meet students' needs and interests • Program design that ensures student safety and privacy • Program design to meet team's goals Program design that makes use of technologies

Profile: Dr. Charlie Shine, Math Professor, South State University		
	Drawing on prior....	
Knowledge of and experience with.....	Knowledge of and experience as.....	Contribution to the project
• A similar project that built online Exit Exam math resources for teachers. • Technologies • Assessment • Programming • Strengths based teaching methods • Content focus • Exit Exam • Students' need for • confidence • Math content • Talk about • mathematics • Ways to design	• Math educator	• Provided insights into ways assessment data can inform program developers' understanding of students strengths (and weaknesses) in relation to the test. • Raised potential of using a variety of technologies • Links between assessment, students and teachers, and program design • Approach to identifying content focus • Content focus • Program design

Profile: Dr. Beckwith, Executive Director, Center in Graduate School, Coastal City University		
	Drawing on prior....	
Knowledge of and experience with.....	Knowledge of and experience as.....	Contribution to the project
• Research and Teaching • Importance of confidence building with students • Assessment • Research and Teaching • Teaching • Education research	• Researcher • Former bilingual teacher • Exec. Director, Center	• Research base and pedagogical approach • Raising the need to build students' confidence. • Providing an example of how assessments can be used to support students. • Expanded notion of use of testing to include use by students to support their decisions surrounding their learning. • Support for a broad notion of goals (beyond Exit Exam). • Program design to meet students needs and interests • Program design to meet students' needs and interests.

Profile: Dr. Jim Pappas, Chief Technology Director, Big Urban School District		
	Drawing on prior....	
Knowledge of and experience with.....]	Knowledge of and experience as.....	Contribution to the project
• The use of technology in education (including UCCP). • Dire need for content resources in high schools. • A blended model that as working • Digital divide • School finance. • Technologies • Sanctioned ways of protecting privacy and ensure safety	• A representative of one group in the grant • Education Technology Director for Big Urban School District	• Distinguished between "online" (digital resources) and "distance education" (breaks down wall of the classroom). • Insights into the needs of grant partners. • Affirmed the efficacy of a blended model (distance and face-to-face). • Rationale for use of technology despite Digital Divide (way of overcoming). • Suggested Moodle as a potential resource for communities of practice. • Program design that ensures student safety and privacy • Program design that makes use of technologies, and meets students' needs and interests

Profile: Mark Lowe, Instructional Technology Applications, Big Urban School District		
	Drawing on prior....	
Knowledge of and Experience with.....	Knowledge of and experience as.....	Contribution to the project
• Educational technology resources • Teachers and their preferences • Data collection and sharing • Existing Exit Exam preparation program offerings	• Administrator, Big Urban School District	• Offered insights into design considerations in order to avoid problems educators have found with other products • Raised questions about the balance between online and other program components • Offered insights into design considerations important for meeting teachers' needs • Program design that makes use of technologies • Insights into the importance of teacher training component of program design • Insights into student recruitment and participation • Insights into the amount of time students would dedicate to a program

Profile: Dr. Carey Brown, Math Instructor, Snow Bird College		
	Drawing on prior....	
Knowledge of and Experience with.....	Knowledge of and experience as.....	Contribution to the project
• Assessment methods • Students' need for warm-up before a test • Teaching math • Communities of Practice • MERLOT • Students need to be able to visualize the math • Programming • Students and their needs • Needs of people and institutions • Libraries	• Reviewer for online entity • Math instructor	• Effective methods of instruction • Suggested MERLOT as a resource for a Community of Practice • Visual depictions of math concepts in program design Support for work with others to address student needs

Profile: Dr. BJ French, Design Center for Big Metro University		
	Drawing on prior....	
Knowledge of and experience with.....	Knowledge of and experience as.....	Contribution to the project
• Processes • Ways to design a system using technology • Technology	• Computer programmer/systems designer • Assistant Director in Design Center	• Technical/system design • Design for using technologies to support the program • Visual depiction (flow diagram) of the program and ways technologies would support the work

Profile: Sarah Moore, Coordinator, Center for Success, Rural North College		
	Drawing on prior....	
Knowledge of and experience with.....	Knowledge of and experience as.....	Contribution to the project
• Tutoring	• Director of a community college tutoring center	• Program design that provides support to students.

Profile: Dr. West, Emeritus Professor, Graduate School of Education, Big Metro University		
	Drawing on prior....	
Knowledge of and experience with.....	Knowledge of and experience as.....	Contribution to the project
• K12 programs, math instruction, intersegmental partnerships	• Former University Vice President	• Stimulated group discussion about its underlying belief system • Stimulated group discussion about its goals • Stimulated group discussion about ways it would address students' long-range goals • Provided an example of ways others have supported students' long-range goals

Profile: Javier Bustamante, Administrator, Big Urban School District		
	Drawing on prior....	
Knowledge of and experience with.....	Knowledge of and experience as.....	Contribution to the project
• Issues related to program implementation • English Language Learners • Existing Exit Exam preparation program offerings	• Administrator in Big Urban School District	• Awareness of the needs of those implementing • Need for background information about students to inform instruction • Insights into the importance of the teacher training component of program design

Profile: Linda Ose, Supervisor, Big Urban School District Division of Secondary Instruction		
	Drawing on prior....	
Knowledge of and experience with.....	Knowledge of and experience as.....	Contribution to the project
• Local needs • Instructional methods for English Language Learners	• Administrator in Big Urban School District	• Raised awareness of the challenges of reaching students • Way of enabling the project to meet its goals by reaching sufficient numbers of students

Profile: Sandy McDaniels, Library Program Consultant, State Library		
	Drawing on prior....	
Knowledge of and experience with.....	Knowledge of and experience as.....	Contribution to the project
• Size of the state • Teachers	• Library administrator • Former student	

Profile: Dr. Black, Associate Dean, Graduate School of Education, Coastal City University		
	Drawing on prior....	
Knowledge of and experience with.....	Knowledge of and experience as.....	Contribution to the project
• Testing • Research and technology use in education • Research and teaching	• Researcher • Former teacher	• Offered an approach to understanding students' test taking method drawn from an approach in another research study • Research base and pedagogical approach for the program

Profile: Dr. Lou Masters, Director, Center for Design, Big Metro University		
	Drawing on prior....	
Knowledge of and experience with.....	Knowledge of and experience as.....	Contribution to the project
• Virtual communities	• Person supporting virtual communities	• Raised a challenge - workload associated with virtual communities.

Profile: Ms. C, Director of Statewide Initiatives, Capitol Region University		
	Drawing on prior....	
Knowledge of and experience with.....	Knowledge of and experience as.....	Contribution to the project
• Ways of working across distances using technologies.		• Raised need to consider range of "go to" sites as part of the program design.

Appendix N

Order of Topics of Discussion Event #2

Order of Participation	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Participants In Event 1																								A= Assessment
Unattributed (4)				A			A								T					T				T = Technology & program
Dr. Beckwith (3)	P		A											G										G = Guiding Principles
Mark Lowe (3)										T	T		T											N/A = Not Applicable
Ms. C (2)												T					N/A							P = Presentation
Jim Pappas (2)								T													T			
Maggie May (2)						A													T					
Charlie Shine (2)		A														T								
Carey Brown (1)																						T		
Dr. Black (1)					A																			
Linda Ose									S															

(1)																								
Lou Masters(1)																							T	
David Shipman (1)																	T							
23 total comments																								

Appendix O
Order and Topics of Discussion Event #3

Order of Participation	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Legend
Participants In Event 2																			A = Assessment
Carey Brown (4)	A, S			P					A, P							S, P, I			S = Student needs
Charlie Shine (3)			A, P, S			K, R		A											M = Meeting outcomes
David Shipman (3)		M, P, R											A, P		P ,I				P = Program design
Unattributed (2)					K						P								R = Roles & relationships
Javier Bustamante (2)												I						S , P	K = Knowledge & expertise
BJ French (2)							K, R			A, P, I									I = Program implementation
Linda Ose (1)																	S, I, P		
Cate McGregor (1)														P, I					

Appendix P

Order and Topics of Discussion Event #4

Order of Participation	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Legend
Participants in Event 3															Q = Questions
David Shipman (4)			B							G		S		O	B = Beliefs
Dr. West (4)		Q - B					Q- G				Q-S		L		G = Goals
BJ French (2)					B				G						S = Student Learning
Dr. Beckwith (2)						B		G							L = Long-range planning
Dr. Black (1)				B											O = Other
Linda Ose (1)	O														

Appendix Q
Order and Topics of Discussion Event #5

Order and Topics of Discussion Event #4																									
Participant*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	20	22	23	24	Legend
Event 4:	P	O								E, T, C	T	C, O		E		R	C		P	A, O, C, E, T				P, T	A = Approach/ need team T = Technology use P = Program design C = Constraint R = Reasons to participate E = Entity or person to support O = Other
Designing	P									A	T					C			P	P				P, E	
As	R									T	P								A, T	P				C	
Educators	R									R									R	A				P	
	A									A										T				O	
																				R					
																				R					
																				A					
																				R, E, P					
Subtotal Comments	5	1	0	0	0	0	0	0	0	5	3	1	0	1	0	2	1	0	4	9	0	0	0	5	
Total # Comm	13	3	0	0	4	1	0	0	4	7	6	3	3	1	5	7	2	2	9	11	0	0	0	11	

Appendix R

Ms. C's History With Intersegmental Projects and Project Participants

Date of Reference	Project Title*	Description*	Outcome*	Stepping Program*
Fall, 2005	Professional Development Resources Online – Special Education	Grant proposal to work with high school math teachers and special education teachers to address new approaches to teaching concepts students often miss on the on the math portion of the Exit Exam. Involved CR University, So. State University and K12 schools and others.	Funded by Commission, then rescinded with change of administration	CS, So. State University
1/20/06	CTA Institute For Teaching's Gate's Foundation Grant Meetings	Planning effort with high schools to explore ways technologies can support change (College Prep, ACME collaboration model, PD program). Considered ways to build on Exit Exam on Target at CR University.	Foundation funds to CTA did not materialize at level anticipated	CR University representatives and Exit Exam on Target. ACME (award from CENIC after nomination by Ms. C) model considered.
2/18/06	Early Childhood Education	Professional development leading to credential for early childhood educators. Involved 3 universities, and preschool associations.	Resubmitted proposal to US DOE. Not funded.	Dr. BL and Dr. BE, CC University
3/6/06 and 5/23/06	AT&T	Planning effort for initiative to assist students in community technology centers and schools with mathematics and	Priorities changed when VPs changed	Dr. BL and Dr. BE, CC University, Dr. W, Big Metro University, JP, Big Urban School District, community technology centers

		Algebra support. Exit Exam on Target and University College Prep considered as resources (both hard copy and online version being developed by graduate student.		Dr. P and LM, BU University
4/26/06	Algebra Institutes	University system office seed funding to selected community based organizations for work with University on summer Algebra Institutes. Partnership development and grant administration coordinated by Ms. C.	One-year grants awarded.	Dr. W, Big Metro University (Vice-President at University at this time)
4/21/06	IFT Preschool Summits with Packard Foundation	Three events across the state to explore research and approaches to enhancing students' academic success through preschool. Explorations of technology use to support interactions with attendees and data from attendee interactions.	Work completed. Preschool initiative on ballot failed and Packard Foundation changed priorities.	Dr. BL and Dr. BE, CC University
8/18/06	Exit Exam Grant possibility with community colleges– Round 1 (first call)	Discussions with XX CCD re: submittal of a proposal to help students who did not pass Exit Exam in the Class of 2006 and therefore were denied a diploma.	College got interested and decided to apply by themselves.	College Prep and Exit Exam on Target
8/22/06	University Multi-campus Research Unit to address	Discussions among faculty, education deans and the Vice-Provost for	Lack of interest by University leadership.	Dr. BL, CC University

	technology use in education	University surrounding the need for and development of a MRU.		
8/28/06	NSF Math grant with College	Discussions surrounding coordination of work at College with AT&T grant to address match requirement that surfaced in AT&T grant discussions	College chose not to collaborate.	Dr. BL and Dr. BE, CC University, Dr. West, Big Metro University, JP, XXUSD community technology centers Dr. P and LM, Big Metro University 2

Appendix S

Excerpts from Email Records of Ms. C's "Framing" of Opportunities

Row	Date	Team Member	Communication Excerpt
3	1/20/06	Ms. C (To CTA)	Ms. C. to her assistant: Can you *please send some photos and descriptions of projects* that use the K20 network from the leg handouts? Please make sure to include UCCP, ACME and PDROM. Also, please email a copy of the K20 network advantage brochure and the Apples/Oranges document.
12	5/26/06	Ms. C (To Corporate Representative)	...I'll get you the *framework* and draft agenda/invitee list, etc. ASAP. Cisco article I mentioned is attached. PDROM project developed per a grant I wrote can be found at ...
15	8/18 – 9/19/06	Ms. C (To potential community college collaborator)	I left a phone message but thought I would send an email too. XX suggested that I get in touch with you to set up a time when We could get together to talk about *the attached concept paper*. I work As Director of Statewide Initiatives for the Capitol Region School of Ed and for The University system office. Part of my job is to connect people together who should know each other. I saw the Exit Exam preparation dollars show up in the community college budget and thought that the work could really benefit from several resources the University has developed to help students pass the Exit Exam. I'd love to work with you to see if there is a way to find the resources required to make the Exit Exam prep resources available to community colleges across the state.

16	8/22/06	Ms. C (To colleagues in University system)	During this next year I am hoping to facilitate a more formalized effort to promote system wide collaboration (possibly an MRU?) around the use of emerging technologies in education. Towards that end, Dean XX and Dean XX have agreed to get together to talk about this concept immediately before the next Deans' and Directors' meeting... Dr. Black and Dr. Beckwith from CC University will be participating in the meeting. I am writing with the hope that the two of you could get your Dean to agree to participate, and that you will agree to come along too. ...If this comes together it would be nice if we ...*could put together a brief white paper* to review with our respective deans in advance of the meeting.
25	10/01/06	Ms. C (To Jim Pappas)	...The goal is to demonstrate that online resources/tools enabled by K20 network can really make a difference with kids academically, and to demonstrate a scaleable, sustainable model for widespread replication. Services will begin in summer school and after school programs planned by teachers, which allow for the greatest experimentation with technology use. It is expected that participating teachers will migrate "what works" back into their regular classroom as data is generated which validates such efforts as good teaching practice. In my grant, the summer and after school programs offerings will be split between programs offered on school sites and programs offered in the community. Teachers from the respective middle schools will be involved regardless of location. I would send you the original proposal but it has changed so much that it would not be worth your time. I will be redrafting the proposal and budget in mid-October and resubmitting in December. *Very raw notes regarding the ongoing discussions and framing of the proposal are attached.* I'd love to talk with you and who ever else you think should be brought in as soon as possible to work out the details of Big Urban School District's participation. ...

Appendix T

Ms. C's Prior Knowledge and Experiences Relevant to the Exit Exam Grant

	Date	Team Member	Communication Excerpt
15.	8/18 – 9/19/06	Ms. C (To a college)	I work as Director of Statewide Initiatives for the University School of Ed and for the University President's Office. Part of my job is to connect people together who should know each other. I saw the Exit Exam preparation dollars show up in the community college budget and thought that the work could really benefit from several resources the University has developed to help students pass the Exit Exam. I'd love to work with you to see if there is a way to find the resources required to make the Exit Exam prep resources available to community colleges across the state. While the resources are excellent (from my perspective anyway) they still need additional development work. I'm hoping that by partnering, we would also generate additional resources to continue to evolve the resources so they are as helpful as possible to the users (i.e. students and instructors).
17.	8/22/06	Dr. Black (To colleague at another University)	...we have been exploring the use of advanced technologies and have worked to identify a range of faculty interested in the use of advanced technologies to leverage resources across campuses. The recent work building professional learning communities at both the high education and K-12 levels suggest that the time has come to build a cross campus initiative. No one campus has the resources for building University leadership in research and professional development, but together we can build a larger presence, research direction and knowledge generating process. When your Dean was visiting, I had an opportunity to talk briefly with him about the technology initiatives... The Dean and I have a professional history in literacy that goes back 3 decades, so I talked with him about the potential but only briefly...We see this as a unique opportunity to bring these faculty together for K-20 and technology... The MRU would bring together colleagues across the campuses to build the research base for the state that is grounded in P-20 outreach efforts as well as Higher Education initiatives. Additionally, the expertise exists across campuses in the University system to bring a multi-faceted research approach to the study of issues from micro moments in video

			analysis and other technology settings, to the larger policy issues central to the expansion of the opportunities for learning of students and teachers.
21.	8/31/06	System Leader #1 (To Ms. C)	To: System Leader #1 Subject: RE: FW: AB 1388 gets of suspense and the floor If this bill gets signed I'd be happy to try to help schedule a meeting with the Commission folks and you and Rural North college.
27.	10/03/06	University system leader (To Dean at University and Ms. C)	Dean at CR University and Ms. C, Can we put our heads together so that we can brief the Provost appropriately in advance of the meeting he is setting up with our corporate partner. In case this is out of the blue... he is interested in knowing about progress and future trajectory of the science and math work and how it fits in with the initiative that Stephanie has been working on and that the corporation is also considering supporting... In the meantime, Ms. C and I have been meeting in different combinations with he and his colleagues for a while and on a number of fronts, and I think between us we have a pretty good sense of their interests and how we might leverage them in partnerships that are mutually beneficial
32.	11/03/06	Ms. C (To System leader #1)	... has a meeting scheduled with the budget advisor's office on Nov. 6th at 1 PM to discuss the methodology for calculating the related data required in the 2006-07 state budget control language (see below)... Jennifer has invited selected legislative staff members. You are welcome to join the meeting. Please let us know in advance if you plan to attend.
33.	12/4/06	System leader #1 (To DS)	Senior Administrator #1: Summarizing competitive Grant opportunity to a potential community college partner who might be interested in working with Ms. C on a proposal.

Appendix U

Rationale Given For Declining Involvement by Non-Participants

Individual	Rationale Given for Non-Participation	Re-Stated
Faculty member #1, unnamed community college	The bottom line for me is that education knows how to be successful with the student's fortunate enough to emerge from a socio-economic environment that has already planted the expectations, standards and support needed to survive the K-12 and college experience. But it has never demonstrated much capability to create an educational environment appropriate for the majority of students lacking this framework. From my perspective, the educational system is underprepared for the underprepared students, and this would suggest that the real problem we need to tackle is ourselves.....Though it is admirable to see the effort going into helping these kids survive the Exit Exam, my concern is that it will do little to change the landscape for the more substantial issues that are inherent in both the K-12 and college systems.... I applaud your efforts and concern for these students, but also realize from my efforts at the community college level that the changes we need to make will may only come when the system begins to implode and educators become concerned enough to widen the discussion to include their own under preparedness... To be perfectly honest, my biggest concern is how to get educators out of their own cycle of poverty of understanding and I don't think that this is the focus of the January 12th meeting.	Prefer to focus on instructor's capabilities
Faculty member #2, unnamed community college	Unfortunately due to the start-up of a new semester and late notice, I will be unable to participate in the meeting on Friday in L.A. However, please keep me in the loop. I too, enjoyed our conversation last night.	Workload
Vice President, unnamed community college	[Head Note and email exchange:] The college had other pressing priorities. Given University's withdrawal of former preparation program for reading and writing instruction, insufficient faculty well prepared for students college is already serving.	Workload, resources and shortage of qualified instructors
Faculty Member of unnamed community college – after district said it	My husband and I poured over our books last night and ultimately came to the sad conclusion that we are just not in the position to be able to take a financial risk right now, even though it is a small risk and one for such an exciting and worthy cause. I deeply regret that	Lack of support for participation from college

would not participate	The college didn't choose to participate in the way we had all initially hoped and that I'm not able to participate at this time. If the grant comes through and you'd like to think of me again, please do not hesitate to contact me any time in the future about possibilities for joining you in your work.	
Staff Person, system wide office state college	I will be out of town next Friday and unable to attend the meeting at Big Metro University. Please keep me updated about the outcomes of your meeting and let me know if there's an opportunity to collaborate using our math website tools and resources to meet students' needs.	Conflict. Narrow interest/role
Unnamed Math Faculty Member at University	I'm really sorry, but at this time I'm not going to be able to participate in this grant. We have too much work in our office right now, and I have no time to devote to it. Thanks for thinking of me.	Workload

Appendix V

Key Events in Team Formation (December, 2006 – January 12, 2007)

Collaborators	Dec. 4-10	Dec. 11-17	Dec. 18-24	Dec. 25-31	Jan. 1-7	Jan. 8-12
Ms. C, Dave Shipman & System leader #2	Agreement to work together Recruiting team members	Face-to-face strategy session. Reviewing Ms. C's revised concept paper Recruiting team members	Reviewing draft agendas, invite lists, documents, etc. for 1/10 and 1/12 meetings prepared by Couch Recruiting team members	Problem solving Working together to negotiate with members on contract Recruiting team members	Problem solving Working together to negotiate with members on contract Recruiting team members	Recruiting team members
David Shipman			Keeping campus leaders informed to ensure campus support. Hiring team members. Developing MOU for planning w/UCSB	Keeping campus leaders informed to ensure campus support. Hiring team members.	Keeping campus leaders informed to ensure campus support. Developing MOU for early development w/UCLA	Keeping campus leaders informed. Recruiting Tahoe as applicant. Developing MOU for early development w/UCLA
Ms. C & System leader	Couch sharing concept paper			MC sharing job descriptions		
Collaborators	Dec. 4-10	Dec. 11-17	Dec. 18-24	Dec. 25-31	Jan. 1-7	Jan. 8-12
Ms. C, Dr.	Editing Ms. C's		Call to discuss a		Beth bringing a	

BL, Dr. BE, DS and others at University	concept paper		"straw man" proposal and other documents		group together to assist with research to inform 1/12 Discussing sensitive issues Discussing program needs	
Ms. C		Organizing 1/12 meeting Developing new concept paper	Organizing 1/10 and 1/12 meetings. Revising concept paper and sending to 1/12 attendees. Planning document to capture information being uncovered.	Organizing 1/10 and 1/12 meetings.	Organizing 1/10 and 1/12 meetings. Connecting team members to resources	Organizing 1/10 and 1/12 meetings.
Ms. C, DS, CM, JP, Dr. BE, LM, MP, SN						Pre- Meeting 1/10
All						Face-to-Face Meeting 1/12