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TEACHER PROFESSIONAL DEVELOPMENT IN THE CONTEXT OF SCHOOL CHANGE: A QUALITATIVE CASE STUDY OF TEACHERS INTEGRATING ACADEMIC AND VOCATIONAL EDUCATION

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of the Ohio State University

By
Heather L. Boggs, M.S.

Dissertation Committee:
Professor Helen M. Marks, Adviser
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ABSTRACT

Teachers and their professional development play an essential role in the success of school reform efforts, including the integration of academic and vocational education. Integration requires that teachers learn to think in new ways about the subject matter they teach, collaborate with other teachers across subject matter areas, and relate content to real-world contexts in ways that are meaningful for students. This study describes three qualitative case studies of teams of teachers integrating academic and vocational education. Methodology includes individual and small group interviews, field observations, and document review. The data are analyzed according to a conceptual framework derived from a review of literature on school reform, professional development, and integration. The framework includes four broad categories: the policy environment, organizational conditions, human and social resources, and school culture.

Conclusions drawn from the findings in the case studies indicate that in order to support teacher professional development policy should take a systemic approach, striking a balance between themes of control and commitment. Organizational conditions such as teaming, common space and planning time, a common group of students for teacher teams, and access to a variety of formal learning experiences enhance teachers’ ability to integrate. Human and social resources—including district and building administrators, business, industry, community members, and colleagues—contribute uniquely to teachers’ ability to continually improve and try out new approaches in the classroom. The cultural environment of the teams forms around common beliefs about teaching and learning, an ethic of caring,
and a strong sense of collegiality and teamwork. This type of culture develops over time with attention to resolving conflicts and building a sense of trust and respect for others. In these cases, efforts to integrate academic and vocational education result in improved student achievement, attendance, and classroom behavior. Teachers find a supportive environment for professional development, adopt new teaching practices, and increase their sense of efficacy.
To my parents, my husband, and my children
ACKNOWLEDGMENTS

I am the third generation of teachers in my family. Since I grew up hearing about school and talking about education issues at family gatherings, it is little wonder that my professional career and my doctoral study have centered on the lives and work of teachers. My family not only shaped my career, they serve as a constant source of support, inspiration, and much needed renewal and respite. It would have been impossible to complete my graduate work or this study without them, especially my parents, my husband, and my children. They were unwavering in their support and made a number of sacrifices to help me achieve my goals. I am forever grateful.

I was very fortunate to have excellent mentors and role models during my graduate studies, including two wonderful advisors. Dr. Kenneth Howey enriched my understanding of teacher professional development and challenged me to design a research study that would reflect the complexity of the school change context. Dr. Helen Marks was my advisor during the research process. Her experience and commitment have contributed greatly to my development as a researcher. I counted on both these advisors to stretch my understandings and take on the role of critical friend—and they always met that challenge. In addition to the support of my advisors, I also appreciate the help of my committee members. Dr. Deborah Bainer and Dr. Janet Laster guided me through my candidacy examination and spent long hours helping me synthesize and apply what I learned in my coursework. Dr. Antoinette Errante and Dr. Janet Henderson assisted on my dissertation
committee, reviewing the proposal, looking over drafts of chapters, and providing feedback and suggestions. I am grateful for their expertise and encouragement.

I also appreciate the help of my colleagues, Dr. Joanna Kister, Dr. Michael Loyd, and Sheila Thompson, who reviewed the findings and conclusions. They generously gave of their time to carefully read my drafts and provided thoughtful suggestions that helped me thoroughly analyze and clearly report the findings. They also served as a source of continuing support and encouragement.

Finally, and perhaps most importantly, I am grateful to those teachers and administrators at the three research sites who made the commitment to share their experiences, feelings, and ideas with me in the interviews and site visits. Their commitment to exemplary practice was an inspiration to me throughout the entire study. They have truly achieved what it is we are all about in education—they have made a difference in the lives of their students.
**VITA**

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PUBLICATIONS


FIELDS OF STUDY

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Teacher Education and Professional Development

Studies in Teacher Education and Professional Development

- Dr. Kenneth Howey
- Dr. Deborah Bainer

Studies in Research Methodology

- Dr. Laurel Richardson

Studies in Educational Administration

- Dr. Helen Marks
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CHAPTER 1

INTRODUCTION

Background for the Study

The decade of the 1980s produced a plethora of school reform initiatives, more than any comparable time period in our nation’s history (Goodlad, 1991). A common theme among these reform proposals is the notion that schools do not prepare students with the knowledge and skills needed for the many dimensions of life in a diverse, global society. Students need to be able to think critically and creatively to solve problems, to work with others in diverse workplace and community settings, and to be able to adapt to change. Consequently, most reform goals are characterized by a more ambitious vision for student achievement—one that goes beyond merely conveying information and declarative knowledge to developing meaningful connections between knowledge and real-life roles and problems (Newmann, 1993).

At the same time education is attempting to focus on improved student achievement, profound changes are occurring in the nation’s economy. Intense international competition, a proliferation of products, the acceleration of product cycles, and rapidly changing technologies are altering the nature of work and the skills required for the workforce (Berryman & Bailey, 1992). The evolving high performance workplace demands workers who have a broad understanding of workplace context, can solve problems and initiate action, work effectively with others, and possess higher-order
cognitive skills that allow them to learn rapidly (U.S. Department of Labor, 1991). How should our society prepare young people for their roles in a high performance workplace?

Driven by a number of school reform initiatives, the way in which schools prepare students for their future in the workplace is changing. The traditional approach is for schools to make clear distinctions among students, tracking them into college preparatory, general, or vocational education courses. This practice creates an inequitable system. College preparatory students learn rigorous academic knowledge without the benefit of real-world context and vocational students experience rich work-based learning that often lacks academic rigor (Berryman & Bailey, 1992). Negative student effects include lower achievement, a lack of work readiness skills, an inability to apply theory to practical problems, a lack of engagement in school activities, and poor transition from high school to college or the workplace (Oakes, Selvin, Karoly & Guiton, 1992; Bodilly, Ramsey, Stasz & Eden, 1993). Reform initiatives from Goals 2000 to the 1990 Amendments to the Carl Perkins Act to the School-to-Work Opportunities Act of 1994 call for changes in this traditional approach and demand better preparation for all students. The goal of these reform initiatives is to integrate the best of both academic and vocational education—rigorous academic standards as well as career-focused learning experiences—thereby broadening students' opportunities and preparing them for both higher education and a high performance workplace.

There are a variety of models for integrating academic and vocational education, but actual efforts vary greatly with regard to the degree to which curriculum and instruction are modified, the intended audience, and the level of change in organizational structure (Stasz, Kaganoff, & Eden, 1994). Approaches to integration may be as simple as individual teachers infusing academic content into their vocational courses, or as complex as structural reforms like career academies, career paths or clusters, or magnet schools (Grubb, Davis, Lum, Plihal, & Morgaine, 1991). These efforts are characterized by rigorous academics for
all students, instruction that incorporates the context of real-world problems and tasks, and a broad understanding of knowledge and skills needed for the workplace. Though integration is not necessarily an end in itself, it represents a vision of education common to most school reform initiatives and is seen as yet another way to overcome the deficiencies of traditional American schools. Attempts to change the long-standing dichotomy between vocational and academic education make such integration a challenging component of school reform.

As with any reform initiative, the integration of academic and vocational education makes significant demands on teachers and their classroom practice. Teachers are required to think about their subject matter in new ways and to reach across the lines of disciplinary content, creating collaborative relationships across long-held barriers of school departments and subject matter specialties (Little, 1992a). In addition to changes in the ways teachers work with their subject matter and their colleagues, integration also requires significant changes in classroom practice. While traditional instructional approaches focus on learning specific knowledge and skills, integration involves understanding relationships among subject matter and making connections to the world beyond school. Consequently, integration suggests the use of more student-centered rather than the traditional teacher-centered instructional strategies. Problem-based learning and project-based learning are instructional methods often associated with integration. These strategies represent a major shift from the traditional instructional methods of lecturing and independent practice which have characterized classroom instruction for decades.

There is little disagreement that the professional development of teachers is fundamental to achieving such educational change. "Every modern proposal to reform, restructure, or transform schools emphasizes professional development as a primary vehicle in efforts to bring about needed change" (Guskey, 1994, p. 1). Professional development is defined as a continuum of formal and informal professional and personal
growth experiences engaged in throughout one’s career for the purpose of improving or informing professional practice (Howey & Zimpher, 1990). Yet there are different perspectives of professional development that influence the design of professional development activities, the resulting impact on teachers, and ultimately, the success of school reform efforts. For example, the traditional approach to professional development focuses on designing formal experiences—workshops, seminars, and training programs—to help teachers develop the skills needed to implement desired classroom changes. This approach has been criticized because it often ignores teachers' existing beliefs about teaching and learning as well as the influence of their prior experience, and may not support the significant changes necessary for complex initiatives such as integration.

Lessons learned from early school reform initiatives including efforts to integrate academic and vocational education suggest that enhancing teacher professional development involves much more than merely planning and conducting formal learning experiences (Little, 1995; Hargreaves & Fullan, 1992). The contextual perspective is an emerging view of professional development that seems to fit well with the ambitious goals of school reform initiatives such as the integration of academic and vocational education. "The process and success of teacher development depends very much on the context in which it takes place" (Hargreaves & Fullan, 1992, p. 13). Case studies of schools engaged in the integration of academic and vocational education highlight the complexity of teachers' professional development needs and the ways in which these needs vary as a function of school setting (Finch, Schmidt, & Moore, 1997). Consequently, professional development is supported or constrained by the school environment, the work teachers do, and the relationships they form with their colleagues (Little, 1995). Enhancing professional development, then, involves more than merely planning workshops and training programs. It involves careful consideration and attention to a wide variety of factors that exist as part of the school environment.
It involves careful consideration and attention to a wide variety of factors that exist as part of the school environment.

What is needed is an optimum mix of structural, cultural, and policy conditions that support teachers as they develop professionally (Guskey, 1994; Hargreaves & Fullan, 1992; Little, 1995). Though each school context is unique, research suggests there are common structural, cultural, and policy conditions that may support teacher professional development, particularly among high schools integrating academic and vocational education (Little, 1995). Schools that are successful with integration efforts have made fundamental changes in the school environment—formulating new staffing configurations and responsibilities, providing common space and planning time for teachers, and nurturing cultural norms of collegiality and experimentation—in order to achieve true integration. These organizational and cultural changes enhance teacher professional development and support the fundamental changes in teaching practice essential for integration.

Purpose and Significance of the Study

Though schools across the country are beginning to see the value of academic and vocational integration, very few schools are moving beyond simple levels of integration into the areas of fundamental organizational change—career academies, career paths, or magnet schools. Yet research findings suggest the more complex changes in organizational structure have the best potential for creating and sustaining meaningful reform (Grubb, Davis, Lum, Plihal, & Morgaine, 1991; Grubb, 1995). A review of the literature indicates very few studies that provide rich descriptions of individual cases of schools successfully integrating academic and vocational education. As more and more schools become successful, there is a need to record their experiences and develop model cases from which to study and learn.
The ability of teachers to meet the challenges of integration—working with colleagues from other subject areas, viewing curriculum development in new ways, and implementing student-centered instructional practices—depends largely on their continued professional development. Since school change environments are highly contextual, there is a need to study those factors that support or constrain teacher professional development in varying contexts. In-depth, personal accounts of the experiences, frustrations, and successes of teams of teachers integrating academic and vocational education will help clarify and describe these factors. It is essential that when teachers engage in fundamental reform efforts such as these and achieve some measure of success, we record, study, and learn from their experiences.

The purpose of this study is to describe the experience of teams of teachers who are integrating academic and vocational education in an exemplary way. This in-depth analysis is intended to enlighten the context for teacher professional development and broaden understanding of the school change process. Specifically, the following questions will frame the study:

1. What factors support or constrain academic and vocational integration as pursued by teams of teachers?
   a. Federal, state, and local policies?
   b. Organizational conditions?
   b. Human and social resources?
   d. School culture?

2. What specific changes have occurred as a result of the efforts to integrate academic and vocational education?
   a. Teacher professional development?
   b. Classroom teaching practice?
   c. Student learning and classroom behavior?
Findings from this study could inform schools seeking to initiate, redirect, or further support reform efforts to integrate academic and vocational education. Since these cases are representative of exemplary programs, the findings of the study could hopefully be adapted to similar settings. It is also my intention that these cases contribute to further understanding of the factors that underpin the integration of academic and vocational education as a particular school reform. The experiences described in these cases can further the knowledge base for school leaders by providing a deeper understanding of the factors influencing teacher professional development. In the hands of school leaders, such knowledge could increase the likelihood of successful school change.

Assumptions

Assumptions guide practical decisions and therefore shape choices researchers make in the design, data collection and analysis, and reporting of inquiry. There are several assumptions that undergird my work in this study. First, meaning is situated in context. Each school environment represents a unique set of cultural, political, and structural factors and those factors shape the experiences of those who work within that environment. Consequently, one important purpose of research is to describe and interpret that context—how the school operates; how it is influenced by situational factors; what those in the school see as the advantages and disadvantages of their context; and how the context affects students.

Since this study focuses on describing the experiences of teachers in unique school change contexts, there is also an assumption that teachers are an important source of knowledge about their practice. Teaching is a complex, intellectual activity in which the teacher is the central decision-maker. Teachers make a multitude of choices that shape the classroom environment and impact student learning. Solutions to classroom problems, such as how to integrate academic and vocational education, cannot be developed outside
the practical situations in which teachers work. Teachers have insights into their practice and should not be viewed as docile and compliant, accepting without question the advice of those external to their school environment. Consequently, it is important to describe and interpret the teachers' experience in school reform.

A third assumption is that teachers learn and grow based on their prior knowledge and experiences, as well as who they are as people. Describing teachers' professional development must include a consideration of their history as well as their present experiences. Consequently, this study examines the multitude of factors influencing the process of teacher professional development and seeks to describe that process through the teachers' voice.

An Overview of Methodology

Educational change efforts tend to be highly complex and greatly influenced by context. Consequently, naturalistic methods of inquiry are a useful research tool when describing these efforts. Naturalistic inquiry allows an atmosphere "within which people can respond in a way that represents accurately and thoroughly their points of view about the world" (Patton, 1990, p. 24). As one such method of naturalistic inquiry, qualitative case studies seek to holistically describe a phenomenon in depth, detail, and context. Since a need exists to understand the complexity and contextual nature of what goes on in classrooms and schools, qualitative case studies seem a suitable approach for describing how teams of teachers have negotiated the change process.

In order to provide a variety of contexts and foster a cross-case analysis, this study includes three cases of teaching teams. These teams were selected through a state-level nominating process. Several criteria were used for their selection: fundamental changes in the organizational structure of the school, collaborative planning and instructional delivery, and the support of a broad, coherent program for career-focused education. Over thirty
the organizational structure of the school, collaborative planning and instructional delivery, and the support of a broad, coherent program for career-focused education. Over thirty teams were nominated for the study. Telephone interviews were conducted with a representative from each nominated program, usually an administrator or lead teacher, to clarify the degree of academic integration and the criteria exhibited. Once three cases were selected, all participants signed a consent form that outlined the purpose of the study, procedures for maintaining confidentiality, and the voluntary nature of participation.

Three data collection methods were used in the study: individual and small group interviews, field observations, and document reviews. The primary method of data collection was in-depth guided interviews with the teachers on the teams. In addition to the interviews, I observed for two days at each of the three school sites and conducted small group interviews with the teams during these visits. Data collection also included review of documents such as program materials, instructional plans, and grant proposals or reports.

Several techniques were used to provide a framework for the data analysis. First, broad categories were identified from the review of literature and a conceptual framework was designed. This conceptual framework influenced the development of the interview guide as well as the conceptually clustered data matrices (Miles & Huberman, 1994). Interview transcripts and field notes from observations and document reviews were transcribed into word processing files and the data were read and coded according to themes in each of the categories of the framework. Coded data was organized into the data matrices, which guided the writing of the case studies. After each of the cases was developed, a cross-case analysis was done to identify emerging themes. Accuracy of the participants' meaning and my interpretations were verified through member checks of the interview transcripts and the drafts of the case studies. The cases and cross-case analysis were also reviewed by three peer debriefers.
Organization of the Study

This study is presented in six chapters. Chapter 1 outlined the background for the study, the purpose and significance of the study, an overview of the methodology, and assumptions underlying the study.

Chapter 2 presents a review of literature and conceptual framework for the study. Following a brief overview of the conceptual framework, there are four major sections in the chapter. The first section includes a description of the recent calls for school reform and their relationship to preparing students for the workplace. A second section examines the integration of academic and vocational education as a school reform strategy. The third section focuses on the role of teachers in integrating academic and vocational education. Finally, the fourth section provides a description of the cultural and organizational conditions that support teacher professional development and advance school reform efforts such as the integration of academic and vocational education.

Chapter 3 describes the methodology of the study. The rationale for qualitative methods is presented, as well as an explanation of the selection and use of the case study method. The chapter also explains my role as a researcher and examines issues of subjectivity. The next three sections of the chapter outline the selection of cases, data collection procedures, and techniques for data analysis. The chapter closes with a discussion of trustworthiness and authenticity.

Chapter 4 presents the results of the data collection. It includes three case studies, each describing one of the teams of teachers integrating academic and vocational education. Each case study highlights a brief description of the school setting then describes the case according to the four broad themes of the conceptual framework—the policy environment, organizational conditions, human and social resources, and school culture. The case studies also include an explanation of the outcomes of integration in relation to the school, the students, and the teachers.
Chapter 5 summarizes the findings of the study through a cross-case analysis. The purpose of this analysis is to identify similarities and differences among the three cases. The cross-case analysis, like the case studies themselves, is organized according to the themes of the conceptual framework.

Building on the cross-case analysis and findings described in Chapter 5, Chapter 6 outlines conclusions and implications for practice. The chapter also includes recommendations for further study.
CHAPTER 2

REVIEW OF LITERATURE AND CONCEPTUAL FRAMEWORK

There is little disagreement that the professional development of teachers is central to educational reform. School reform proposals call for more ambitious outcomes for all students—deeper, more rigorous academic competence as well as preparation for future roles in families, communities, and the workplace. In order to help students achieve these outcomes teachers must make fundamental changes in their teaching practice. Rather than traditional teacher-centered, independent learning strategies, more authentic instruction is needed involving higher levels of student engagement in rigorous content and tighter connections between what is learned and how that knowledge is used in the real world. Teachers need opportunities to develop professionally in order to make the significant changes that transform their practice and support successful school reform.

Conceptual Framework and Overview of the Review

Three areas of literature guided the development of this study: school reform, teacher professional development, and the integration of academic and vocational education. As I studied the literature, I noticed the emergence of common themes and a pattern of relationships between factors influencing teacher professional development and hence, the success of challenging school reform efforts such as the integration of academic and vocational education. Consequently, I developed a conceptual framework, presented in
Figure 1, which depicts four important factors and their relationship to teacher professional development and integration—the policy environment, organizational conditions, school culture, and human and social resources. The policy environment shown at the top of the figure represents the climate of school reform as framed by national reform proposals, federal and state legislation, and local policies. It is these policies that have called for better preparation of students for the world of work and a more integrated system of instructional delivery. Supporting integration from the bottom half of the figure is teacher professional development. Teachers and their practice are at the heart of implementation because integration calls for significant change in classroom instruction, challenges traditional beliefs about students, teaching, and learning, and requires collaboration across traditional boundaries of school departments and subject matter areas. The three boxes at the bottom of the framework represent aspects of the school context essential to teacher professional development. Characteristics of the culture of the school, human and social resources present, and the organizational structure can support or constrain teachers as they develop professionally and integrate academic and vocational education. These three components directly support teacher professional development, but also interact to influence one another. Note that in addition to calling for integration, the policy environment impacts the organizational structure of schools through stipulations for funding and program requirements. The policy environment can also impact human and social resources by providing funding for leadership, delineating roles of business, parent, or community partners, or requiring collaboration among stakeholders.

This chapter reviews the literature that discusses and supports the conceptual framework. The first section addresses the policy environment. It includes a summary of school reform themes as well as the specific policies that have focused on the need to improve students' preparation for the world of work. The second section examines
Figure 1. A Conceptual Framework: Enhancing Integration Through Teacher Professional Development
integration as a school reform strategy. This section reviews the definition of integration, approaches to integration, the effects of integration on students, teachers, and teaching practice, and barriers and supports for integration. The third section examines the role of teacher professional development in integrating academic and vocational education. It begins with the examination of varying perspectives of professional development—the technical view, the developmental perspective, and the contextual view. Given the lessons of early school reform and integration efforts, I contend that the most appropriate view of professional development is the contextual view. In the final section of this review, I describe three essential components of a school context supportive of teacher professional development—school culture, organizational conditions, and human and social resources. The school culture that supports professional development is described as a learning community reflected through a commitment to student learning, a commitment to exemplary practice, and an ethic of caring, as well as norms of collegiality and teamwork. Organizational conditions supportive of professional development include common space and planning time, participatory problem solving and decision making patterns, and access to ideas and experiences. Finally, this section outlines human and social resources important to professional development such as administrative leadership, support of colleagues, parent and community involvement, and business and industry support.

Policy Environment: School Reform and Preparation for the World of Work

Since the publication of *A Nation at Risk* in 1983, legislators, business executives, governors, parents, community members, and school administrators themselves are calling for school reform. These cries have been answered with a variety of policies designed to create change: national standards for curriculum content and a set of national education goals; statewide mandates for accountability ranging from tightened standards for teacher preparation to student proficiency testing; and local efforts to change the organizational and
decision-making patterns of schools, such as site-based management and strategic planning. This section of the literature review will examine the nature of this policy environment and focus specifically on policies designed to enhance students' preparation for the world of work. First, the evolution of the last 15 years of reform strategies will be reviewed according to three themes—policies of control, policies to build commitment, and finally, policies to support systemic reform. Then the section will turn to the policies that have supported systemic reform leading to better preparation for the workplace.

Policy Themes in School Reform

**Control.** One way to characterize school reform strategies of the past fifteen years is through common themes and objectives. The first "wave" of reform efforts reflected a theme of control and was characterized by increased bureaucratic policies designed to impact curriculum and teaching (Rowan, 1990). Such efforts included increased graduation requirements, tighter control on teacher licensure, and mandated tests at various grade levels to heighten accountability for student outcomes. The control strategy, however, was criticized for failing to bring about significant student achievement (Sizer, 1992). "The cheap, easy policy of requiring students to take more core academic subjects passed over the nation's classrooms with hardly a ripple" (Lewis, 1990, p. 534). If, as Theodore Sizer described, the goal of schools is to help students use their minds well, then the inner workings of schools must be changed (Coalition of Essential Schools, 1990). The control strategy failed to address two important factors related to increasing student achievement—the nature of classroom instruction and the organizational environment to support that instruction.

**Commitment.** A second "wave" of reform policies focused on commitment as opposed to control (Rowan, 1990). Policies aimed at facilitating site-based management and fostering other changes in the decision-making and organizational patterns of schools.
These strategies gave teachers, community members, and parents a greater hand in making choices about the governance of schools at the local level. Hierarchical structures were replaced with structures that would foster collegiality and teamwork. Yet there was some concern about whether participatory decision-making and other commitment strategies would ultimately lead to improved student achievement. Giving teachers a voice in just any decisions did not necessarily lead to change in teaching practice (Elmore, 1992). Perhaps these reform efforts failed because there was essentially "voice without vision" (Hargreaves, 1994).

In the early 1990s, it became clear that neither increased external controls nor policies to build commitment were bringing about a marked difference in student achievement. Schools were criticized for engaging in incremental restructuring—making small changes in organizational functioning to avoid the upheaval that results from fundamental change (Conley, 1993). In addition, these early reform efforts seemed fragmented and marginalized. Were schools just "tinkering toward utopia" (Tyack, 1990)?

Systemic reform. In response to this criticism, a third wave of educational change focused on systemic reform—aligning all aspects of the educational system to focus on student learning and achievement (Smith & O'Day, 1991; Fuhrman & Elmore, 1990). The fundamental question guiding systemic reform is, "How will it help students learn?" All reform strategies are filtered through this screen, hopefully aligning the development of standards, the way school leaders make decisions, changes in school organization, and curriculum and instruction around student achievement. Systemic reform permeates most of the successful reform efforts currently underway in schools (Conley, 1993). It is characterized by several themes: authentic learning—teaching for meaningful learning rather than merely conveying information and declarative knowledge; success for all students; new roles for teachers as facilitators of learning in the classroom as well as participants in the decision-making of schools; and the development of learning communities of teachers,
students, and parents that support the difficult quest for more powerful educational content (Newmann, 1993).

One of the major goals of systemic reform is authentic pedagogy—teaching for meaningful learning rather than merely conveying information and declarative knowledge (Newmann, 1993). Though this view does not deny the importance of teaching basic skills and information, the point is to move beyond the "basics" and help students make connections to real world problems—to know how to interpret and apply knowledge. Authentic pedagogy actively involves students in the learning process through student-centered teaching strategies. In order to facilitate authentic learning, the teacher must assume a new role as instructional coach or facilitator of learning, which is markedly different from the traditional role of teacher as expert and giver of knowledge. This pedagogy represents a paradigm shift from traditional teacher-centered classrooms and thus challenges teachers to make significant change in teaching practice.

Another goal of systemic reform is to build learning communities—"school cultures that support students and staff in the difficult quest for more powerful educational content" (Newmann, 1993, p. 7). Members of a learning community share a common intellectual vision focused on student learning and good teaching. Within the learning community, policies and practices support learning and build a collaborative school culture. These policies and practices are quite different from those traditionally used within a bureaucratic school culture. Technical, functional, and individualistic methods such as technical training for teachers, a focus on competitive performance, and an emphasis on administrative efficiency have actually deflected a sense of community because they tend to isolate people and weaken actions for the good of the school community. A learning community is characterized by norms of collective responsibility for student learning, ongoing inquiry into the improvement of teaching practice, and commitment to collegiality and teamwork. These norms are nurtured through school structures that allow for participatory decision-
making, as well as flexible use of time and student groupings. Consequently, systemic reform requires profound changes in school culture.

Preparation for the World of Work

Changes in the workplace. While the school reform efforts of the past fifteen years have evolved into systemic change strategies, the world of work has also been undergoing sweeping change. Intense international competition, a proliferation of products, the acceleration of product cycles, and rapidly changing technologies have altered the nature of work and the skills required for the workforce (Berryman & Bailey, 1992). In light of the need to make continuing adaptations to a rapidly changing economic environment, the workplace must operate under a cycle of continuous improvement, with workers at all levels participating in goal-setting and problem-solving activities (Raizen, 1989). Often referred to as high performance workplaces, these organizations are characterized by flattened organizational structures significantly different from the top-down structures that typify the traditional workplace. In traditional business environments, workers were required to follow orders, were trained narrowly in only one aspect of the company’s operation, and were rarely involved in the improvement of organizational functioning. High performance workplaces demand workers who have a collective rationality about the organization in which they work—workers must see the big picture, contribute to continuous improvement and problem solving, and actively work to achieve the mission and goals of the organization.

Interestingly, many of the characteristics of high performance workplaces are similar to the classroom conditions important to fostering meaningful learning. Authentic pedagogy, a common theme in systemic school reform, is characterized by criteria such as higher order thinking, substantive dialogue, depth of knowledge, and connection to the real world (Newmann, Secada, & Wehlage, 1995). During authentic instruction, students are
often engaged in solving real world problems, using thinking skills to apply knowledge, and working with other learners as they construct meaning and reflect on their learning (Newmann & Associates, 1996). In high performance workplaces, employees work in cross-functional teams to establish goals for the company, access information for problem solving, and generate solutions to workplace problems. It is not surprising then that “strengthening the educational system so that it conforms more to the ways that people learn will also directly enhance the ability of that system to prepare students for the types of workplaces that are emerging throughout the country” (Berryman & Bailey, 1992, p. 44).

Skills for the workplace. In order to clarify the kinds of skills the evolving high performance workplace demands of workers, The Secretary of Labor’s Commission on Achieving Necessary Skills (SCANS) published the report *What Work Requires of Schools* (U.S. Department of Labor, 1991). This widely read report makes the case that a contemporary workplace requires far more of students than the basic skills of reading, writing, and mathematics. To be competitive in a global economy, high performance workplaces need workers who possess higher order thinking skills such as problem solving, knowing how to access resources for continuous learning, being able to manage those resources to take reasoned action in the workplace, and being able to work with others to achieve common goals. SCANS also calls attention to the need for workers with certain personal qualities such as responsibility, sociability, self-management, integrity, and honesty.

The role of schooling. In addition to outlining the skills required for the high performance workplace, the SCANS report also suggests the need to change instructional delivery, thereby linking what employers want to the demands of educational reform (Berryman & Bailey, 1992). Since the skills identified by the SCANS report are not well taught through the traditional educational approach of individual students learning factual information out of context, the report calls for new teaching strategies. According to
SCANS, classroom instruction should situate what is being learned in the context of real problems, allowing students to see how information is applied in real life settings.

How should the educational system prepare students for high performance workplaces? Indeed, the concern that schools are doing a poor job of preparing students for the world of work is a common theme among reform proposals. Beginning with *A Nation at Risk* in 1983, the academic performance of American students has often been compared unfavorably with the performance of students in other countries. These critics warn that if our students are not well educated, America will not be competitive in a global economy. Indeed, the need to make “public education more ‘relevant’ to our country’s economic future is widespread” (Grubb, 1996, p. 535).

Compounding the concern over students being generally ill-prepared for the world of work are criticisms of the educational practice of placing students in series of courses commonly called “tracks.” For nearly a century in American education, preparation for work has been focused solely on those students who were not planning to pursue a college education. Schools have provided two separate tracks of curriculum—one for students destined for further education leading to managerial or professional careers and one for students bound for entry-level, working-class jobs (Grubb, Davis, Lum, Plihal, & Morgaine, 1991). Vocational education, which typically focuses on preparing students for specific entry-level occupations, has often been viewed as a “dumping ground” for those students who were believed unable to make it in the academic or college-bound track. This has created an inequitable system in which academic students learn knowledge without the benefit of real-world context and vocational preparation lacks academic rigor (Berryman & Bailey, 1992). To compound the problem, the negative effects of such tracking are well researched, showing clearly that lower achievement is most common among students who view themselves as being in a lower track (Oakes, Selvin, Karoly, & Guiton, 1992). Students who graduate from the existing divided system have poor basic and generic work-
related skills, an inability to apply theory to practical problems, and a lack of engagement in school activities, as well as poor transition from high school to college or the workplace (Bodilly, Ramsey, Stasz, & Eden, 1993).

The duality of this system has also had grave consequences for the culture of schools. In one study of teachers' professional identities and collegial relationships in urban and suburban high schools, findings revealed "two worlds" of school culture in which teachers and students had completely different experiences—the world of vocational and the world of academics (Little, 1992a). Vocational courses were often viewed as "nonsubjects," and held marginal status. As a result, the resources in the schools were distributed in a way that favored academic departments and college-bound students over vocational programs and students. Vocational teachers also had fewer opportunities than academic teachers to form coherent professional communities which support continuous improvement in teaching practice. These findings reflect competing assumptions and beliefs about the purpose of secondary curriculum, subject hierarchies, and uneven support for academic and nonacademic pursuits. Consequently, one must ask whether a school's preoccupation with the "college-bound" undermines both academic education and work preparation (Little & Threatt, 1994).

The role of legislation. Two significant pieces of legislation, the 1990 Amendments to the Carl Perkins Act and the School-to-Work Opportunities Act have created opportunities for a more equitable educational system designed to prepare all students broadly for the world of work. The Amendments to the Carl Perkins Act, legislation which funds vocational education, calls for programs to integrate academic and vocational education through "coherent sequences of courses so that students achieve both academic and occupational competencies." Based on the fact than half of American high school graduates were not going on to graduate from college (The William T. Grant Commission on Work, Family, and Citizenship, 1988), the law intends to prepare students
for both higher education and for the demands of a high performance workplace. The School-to-Work Opportunities Act of 1994 is also designed to ensure the success of youth entering the workforce. This law calls for the integration of academic and vocational education through restructured programs. In addition to school-based learning activities, schools are encouraged to provide work-based learning experiences and to connect those activities to what students are doing in school. Finally, the law seeks to promote changes in instructional delivery such as applied teaching and team-teaching strategies.

These two pieces of legislation have fueled what has been termed the “new vocationalism” (Grubb, 1995). The tenets of the new vocationalism are grounded in more rigorous academic education for all students. By helping students achieve higher academic standards, the new vocationalism hopes to expand students’ options for work and higher education. The new vocationalism is also about creating closer ties between academic and vocational preparation. As John Dewey proposed nearly 80 years ago, “education through occupations combines within itself more of the factors conducive to learning than any other method” (Dewey, 1916, p. 309). When instruction is focused around the way in which knowledge is used in careers it provides a meaningful context, circumvents didactic, passive teaching, and prepares students broadly for their future roles as adults. Finally, the new vocationalism aims for a broader conception of the world of work. Since students will undoubtedly hold a wide variety of jobs throughout their adult lives, they should be well prepared with those knowledge and skills important to all work, specifically those skills outlined in the SCANS report. Through integrated instruction—academics taught through a career focus and technical skills taught with an emphasis on the application of academics—the new vocationalism seeks to prepare students for their role in a high performance workplace.

State and local policies. This federal legislation, along with a wide variety of state and local policies, can create two fundamentally different types of policy
environments. Little (1995) describes these two environments along the dimensions of control and commitment. One policy environment reflects a reliance on mechanisms of control, emphasizing stipulations for program implementation. These policies can provide clarity, focus, and uniformity of efforts, but may constrain modifications necessary to make the basic program design successful. For example, states may provide specific guidelines for programs integrating academic and vocational education. To access funding, local districts are required to follow the guidelines and in some cases, to demonstrate certain performance standards related to student achievement, graduation rates, and career or college placement. While the control strategy may drive initial implementation more quickly and efficiently, local districts may be restricted in making modifications important to successful implementation in their specific context. The other type of policy environment relies on professional commitment, involving teachers and school leaders in the design and implementation at the local level. This environment allows for consideration of the local context and rich possibilities for innovation, but places a heavy burden on local implementers to succeed and sustain that success. Ultimately, a balance between the interests of individuals and the interests of institutions is needed when creating a policy environment for school change (Little, 1993). From a local perspective, the goal is to mediate and coordinate policies regarding curriculum and instruction to support a total systemic approach to improved teaching practice and educational change (Wood & Thompson, 1993).

Preparing students for the world of work through the integration of academic and vocational education coincides with other more broadly undertaken initiatives in the systemic reform of secondary education because it challenges the structure and organizational cultures of comprehensive high schools (Grubb, 1995). Though such integration is not necessarily an end in itself, it represents a vision of education common to most school reform initiatives—high academic expectations, meaningful learning, and
preparation for future adult roles. Integration efforts require thinking about curriculum across the traditional subject matter boundaries, using authentic instruction designed around real world problems, and collaboration among teachers. Attempts to change the long-standing dichotomy between vocational and academic education make such integration a challenging component of school reform.

Integration as a School Reform Strategy

Legislation calling for the integration of academic and vocational education provides very little guidance with regard to the definition of integration. The 1990 Perkins Amendments simply require integration of academic and occupational disciplines to better prepare all students for the workforce. In practice, most who write about integration define it by describing what it might look like in practice. For example, Bottoms and Sharpe (1996) identify five characteristics of good integration: challenging content, teachers working together, teaching in a meaningful context, setting clear performance standards, and getting parent and community support and resources. In an analysis of the School-to-Work Opportunities Act, Brustein and Mahler defined an integrated program as one that “will provide students with applied and contextualized learning opportunities in both an academic and an occupational environment and in a manner that has direct relevance to a career major and occupational outcomes” (1994, p. 27).

Approaches to Integration

Because of the lack of a clear definition for integration, the numerous efforts underway are fueled by a wide variety of purposes. Integration efforts can be designed to increase the rigor of vocational and general track programs commonly thought to be less academically challenging, link what is learned in school to the way in which that knowledge is used in the world of work, provide a context for academic content that may
otherwise seem irrelevant, and help students think about their future in a career (Stasz, Kaganoff, & Eden, 1994). Since these purposes are varied, the approaches to integration are varied as well. Integration approaches can include everything from the simple alignment of curriculum among academic and technical courses to the reorganization of schools around career pathways or clusters.

Integration approaches can be categorized in a number of ways, based on the degree to which curriculum and instruction are modified, the intended audience, and the level at which change in organizational structure is required. One of the most helpful systems for categorizing approaches to integration was designed by Grubb, Davis, Lum, Plihal, and Morgaine (1991). They outlined eight approaches to integration which range from individual teachers infusing academic content into their vocational courses to structural reforms such as academies, magnet schools, and the creation of career clusters or paths. These approaches are represented in Table 1. All the approaches are characterized by rigorous academics for all students, instruction that incorporates the context of real-world problems and tasks, and a broad understanding of knowledge and skills needed for the workplace. These categories can be thought of along a continuum, with approaches at the top of the table representing the smallest degree of systemic reform needed and approaches at the bottom of the table requiring the greatest degree of change in organizational structure.

Another approach to categorizing integration is to classify integration activities into three groups: curricular, pedagogical, and organizational (Stasz, Kaganoff, & Eden, 1994). Curricular approaches focus on developing workplace skills and higher order thinking so students will be more competitive in a global economy. These activities include integrating more academics in vocational classes, integrating vocationally relevant concepts into academic courses, and modifying both academic and vocational curricula. Pedagogical approaches involve academic and vocational teachers sharing teaching methods to improve both academic and vocational classrooms. Examples include interdisciplinary delivery,
<table>
<thead>
<tr>
<th>Approaches</th>
<th>Curriculum Changes</th>
<th>Teacher Changes</th>
<th>Students Targeted</th>
<th>Institutional Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Incorporating more academic content in vocational courses</td>
<td>Vocational courses include more academic content</td>
<td>Vocational teachers modify courses</td>
<td>Vocational students</td>
<td>None</td>
</tr>
<tr>
<td>2. Combining vocational and academic teachers to enhance academic content in vocational programs</td>
<td>Vocational programs include more academic content, in either vocational courses or related applied courses</td>
<td>Academic teachers cooperate with vocational teachers</td>
<td>Vocational students</td>
<td>None</td>
</tr>
<tr>
<td>3. Making academic courses more vocationally relevant</td>
<td>Academic courses include more vocational content; sometimes new courses (e.g., applied academics) adopted</td>
<td>Academic teachers (usually) modify courses or adopt new ones</td>
<td>Potentially all students; in practice, vocational and general-track students</td>
<td>None</td>
</tr>
<tr>
<td>4. Curricular alignment; horizontal and vertical</td>
<td>Both vocational and academic courses modified and coordinated across courses and/or over time</td>
<td>Vocational and academic teachers cooperate; numbers range from two to all</td>
<td>Potentially all students; actual targets vary</td>
<td>None necessary; curriculum teams may foster cooperation</td>
</tr>
<tr>
<td>5. Senior projects</td>
<td>Seniors replace electives with a project; earlier courses may change in preparation</td>
<td>None necessary; teachers may develop new courses or modify content to better prepare students</td>
<td>All students</td>
<td>None necessary</td>
</tr>
<tr>
<td>6. The academy model</td>
<td>Alignment among academy courses (English, math, science, vocational) may take place</td>
<td>Vocational and academic teachers may collaborate on both curriculum and students</td>
<td>Usually potential dropouts; sometimes students interested in specific occupational areas</td>
<td>School-within-a-school; block rostering; smaller classes; links to employers</td>
</tr>
<tr>
<td>7. Occupational high schools and magnet schools</td>
<td>Alignment among all courses may take place, emphasizing the occupational focus</td>
<td>All vocational and academic teachers assigned to an occupational school or magnet within a school; collaboration facilitated</td>
<td>Students interested in specific occupational areas</td>
<td>Creation of a self-contained occupational school or magnet school</td>
</tr>
<tr>
<td>8. Occupational clusters, &quot;career paths,&quot; and majors</td>
<td>Coherent sequences of courses created; alignment may take place among courses within clusters</td>
<td>Teachers belong to occupational clusters rather than (or in addition to) conventional departments; collaboration facilitated</td>
<td>All students</td>
<td>Creation of occupational clusters; enhancement of career counseling; possible cluster activities</td>
</tr>
</tbody>
</table>


Table 1: Approaches to Integrating Vocational and Academic Education
thematic projects or units, and senior projects. Organizational approaches transform school structures to increase access to academic and vocational programming for all students, eliminating tracking. Organizational changes include integrating more academic courses into vocational programs, organizing around occupational clusters or academies, and merging vocational and academic tracks into a single program for all students.

These two systems for categorizing integration approaches—by Grubb et al. (1991) and Stasz, Kaganoff, and Eden (1994)—have several ideas in common. Grubb et al. (1991) organize the approaches by the degree of change in organizational structure; the first five approaches require little institutional change, while the last three require some fundamental change in the way in which schools are organized. The effects of the approaches on curriculum, teachers, and targeted students are then noted. Stasz, Kaganoff, and Eden (1991) include organizational approaches as one of their three categories, along with curricular approaches and pedagogical approaches. The advantage to the Grubb et al. (1991) system is the assertion that fundamental change requires systemic reform as well as the reform of curriculum and instruction. Stasz, Kaganoff, and Eden (1994), on the other hand, have provided a menu of approaches from which schools can choose.

Effects of Integration

With lack of a standardized approach, most research on integration is theoretical or anecdotal. In addition, the approaches requiring more fundamental change in organizational structure take years to design and implement. Many integration programs, including those that have seen some measure of early success, are still in their infancy. Yet findings are beginning to emerge on the effects of integration. A common theme among these findings is that the more complex and formal integration approaches, such as those making organizational changes as well as curricular and instructional changes, have the best potential for creating and sustaining meaningful reform (Grubb et al., 1991).
**Impact on students.** One of the major effects of programs integrating academic and vocational education seems to be an impact on student retention and attendance. The most promising of this evidence comes from occupationally oriented high schools and career academies—schools that have organized all academic and technical courses around career clusters such as the health professions, industrial and engineering technology, or business and management. In one study of nine California academies, findings revealed the academy approach, including integrated curricula, had substantially reduced dropout rates (Stern, Raby, & Dayton, 1992). Research on four magnet schools in New York City found students in the programs had greater motivation to stay in school (Heebner, 1995). These successes are most often attributed to students' sense of a more tightly connected learning community and a greater sense of connection between school and later life. Both studies found students in academies or magnet schools had more positive attitudes toward school and more optimistic views of their future. Some of these effects may also be attributed to less separation of vocational and academic students. In another study, vocational students had greater self-esteem when they were being treated as equals to academic students (Watkins, 1990).

In addition to the effects on student retention, attendance, and motivation, the integration approaches requiring more fundamental organizational change also seem to be affecting student achievement. Bottoms, Presson, and Johnson (1992) evaluated the effects of integration approaches implemented through the Southern Regional Education Board's (SREB) High Schools That Work initiative. High Schools That Work seeks to raise academic expectations through more challenging academic and vocational courses, provide a coordinated system of career guidance, and encourage students to select a career focus for their high school course work. Research on these schools shows increased student achievement in mathematics, reading, and writing as measured by the National Assessment of Educational Progress (NAEP). Similarly, increased student achievement was also
documented as a result of the integrated approaches used in New York City's career magnet schools (Crain, Heebner, & Si, 1992). In this study, students were found to have significantly higher math scores at the end of 10th grade.

**Impact on teachers and teaching methods.** The effects of integration approaches extend beyond students to teachers and teaching methods. As one might imagine, successful integration of academic and vocational education often results in change in teaching practice. "Work-centered approaches are more conducive to active and meaning-centered forms of teaching than most other current school reforms" (Grubb, 1995, p. 256). Consequently, integrated approaches are most likely to include project-based methods, teaching in context, and an emphasis on tutoring or apprenticeship over lecturing. Since integration approaches often place emphasis on the higher order capacities and skills required for success in a high performance workplace—problem solving, working in teams, and other interpersonal skills—classrooms tends to be more student-centered, collaborative, and problem-based (Stasz, McArthur, Lewis, & Ramsey, 1990).

In addition to the effects on teaching methods, integration also provides an opportunity for teachers to work collaboratively, plan jointly, and team teach (Bodilly, Ramsey, Stasz, & Eden, 1993). These opportunities to work with other colleagues, however, have both advantages and disadvantages for teachers involved in integration efforts. Working with others can lead to an increased sense of professional community (Little & Threatt, 1994). Teachers typically isolated with little time during the school day to discuss professional practice may feel a sense of renewal and support when the structure of the school enhances collaboration. But there is also a negative side to integration from the teachers' perspective. They usually experience increased responsibilities such as new procedures for developing curricula, different students to teach, and new subject matter (Grubb, Davis, Lum, Plihal, & Morgaine, 1991; Bodilly, Ramsey, Stasz, & Eden, 1993).
Barriers and supports for integration. Research on integration has also identified many potential barriers and sources of support. While the legislative mandates mentioned earlier in this review have created a policy environment for integration, they are only one component in the school reform picture. If schools do not have the local vision, leadership, and sustained support, including financial and other resources, they may be unable to achieve the type of integration mandated by legislation (Stasz, Kaganoff, & Eden, 1994). In a study of eight schools implementing integration efforts, Bodilly, Ramsey, Stasz, and Eden (1993) reported several major barriers to reform. These included existing regulations in conflict with integration such as teacher certification and graduation requirements, inadequate funding, lack of adequate existing materials, and a lack of support for teachers' efforts. This study also noted two key elements to transition efforts: the involvement of parents and members of the business community and the degree to which curricular and pedagogical reforms made school experiences resemble adult work. Given the complexity of these barriers and supports, along with the challenges teachers face in making the necessary changes in teaching practice, teacher professional development plays an important role in the success of integration. The next section of the review describes professional development and explains why it is essential to integration as a school reform strategy.

The Role of Teacher Professional Development in Integrating Academic and Vocational Education

Teacher professional development is vital to the integration of academic and vocational education for several reasons. First, the kinds of instruction important to integration require significant change in teaching practice. Since authentic learning is at the heart of integration, there is a need to move students beyond memorizing factual information to fostering their abilities to construct, interpret, and apply knowledge to real world problems. "The teacher's job is no longer to 'cover the curriculum' but to enable
diverse learners to construct their own knowledge and to develop their talents in effective and powerful ways" (Richardson, 1990). Secondly, integration challenges teachers' traditional beliefs about students, teaching and learning. "Meaningful change will occur only when those who work in and with schools have the opportunity to develop the attitudes, beliefs, knowledge, and skills necessary to translate these new ideas and concepts into meaningful and specific plans for change and to incorporate them into their day-to-day routines" (Hixson & Tinzmann, 1990, p. 1). Finally, integration requires teachers to collaborate with others—crossing traditional boundaries of school departments and thinking in unfamiliar ways about their subject matter (Little, 1995). This means building new norms of collegiality and cooperation and bridging gaps of status and purpose. Consequently, successful integration depends on professional development that builds the capacity of teachers to create and sustain fundamental change.

Given that professional development is essential to school reform efforts such as the integration of academic and vocational education, questions then begin to arise about the types of professional development appropriate to support systemic reform. Unfortunately, teacher professional development remains a “crucial but relatively unexamined element in efforts to reform work preparation specifically, and secondary education more broadly” (Little, 1993). This section will focus on the strengths and limitations of three professional development perspectives—technical, developmental, and contextual. These perspectives each represent a set of assumptions about how teachers learn and the source of knowledge about teaching practice, and those assumptions guide the nature of professional development activities recommended under each approach.

The Technical Perspective of Professional Development

The technical perspective, historically the dominant approach to professional development, aims to expand teachers' repertoire of well-defined skills, thereby improving
classroom practice. There are several assumptions underlying this view. First, the technical
rational view holds that there are basic solutions to the practical problems of teaching and
these solutions can be developed outside practical situations—usually by experts such as
university researchers or consultants (Hargreaves & Fullan, 1992). This essentially
represents a traditional model of innovation in which researchers produce the theoretical
background, this research is applied to solve a practical problem in general terms, and the
results are disseminated through training, administrative policies or directives, or
publications (Altrichter, Posch, & Somekh, 1993). A second assumption underlying this
view is that teachers can change their teaching practice through training and learn to
replicate behaviors in their classroom that were not previously in their repertoire (Sparks &
Loucks-Horsley, 1989). Typical training options include workshops, special courses, and
inservice days that are designed to convey to teachers a set of ideas, practices, or materials.

Research grounded in the technical perspective on professional development has
focused on training programs and their effectiveness. Proper sequencing of training
activities increases their effectiveness. For example, when training includes exploration of
teachers are more likely to retain the skills they have learned (Joyce & Showers, 1988). Other researchers
have established the importance of follow-up assistance and coaching to transfer learning

Teachers need opportunities to practice the new skills with feedback and follow-up
sessions to resolve problems they may be having with implementation. Training sessions
followed with peer coaching and sessions that are spaced several weeks apart so that
teachers can practice new skills in the classroom have been shown through research to be
more effective than one-shot training sessions (Loucks-Horsley, 1987). There is also
significant research to indicate teachers make valuable trainers of their peers (Sparks, 1983;
Wu, 1987; Wood & Kleine, 1987), although experts who have critical qualities that teachers value can also be effective trainers (Crandall, 1983).

These findings indicate that when well designed and executed, the training model is a cost efficient strategy for helping teachers develop new skills. When clearly focused, it is easily organized and evaluated and results in an increase of teachers' knowledge, proficiency in teaching strategies, and greater flexibility in use of a variety of strategies (Hargreaves & Fullan, 1992). These reasons may explain why the training model is so popular, and in fact for many educators, synonymous with professional development.

Though informative and effective in modeling certain teaching practices, the technical perspective has often been criticized for failing to bring about fundamental and lasting change in teaching practice because it "is not adequate for the ambitious visions of teaching and schooling embedded in present reform initiatives" (Darling-Hammond, 1993). Merely introducing new practices "ignores an important source of knowledge (what practitioners already know), does nothing to enable practitioners to build on these insights, and views practitioners as docile and compliant" (Gitlin, 1990). The training perspective may fail to enhance professional development because it does not consider teachers' different and conflicting perspectives in thinking and decision making, foster creative strategies for organizing and using ideas to solve practical classroom problems, or accommodate the needs of diverse groups (Howey, 1985). Critics assert that professional development is not simply about engaging in activities to learn new knowledge and skills, but includes personal growth and the development of a context that supports that growth, attitudes reflected in other perspectives of professional development.

The Developmental Perspective of Professional Development

Moving beyond the notion that professional development is merely about gaining new skills to provide improved opportunities for student learning, the developmental
perspective focuses on the process of personal development and the close connection between behaviors and beliefs. This perspective is based on the assumption that teachers change and grow on the basis of who they are and what experiences they have had. The ways in which teachers develop as people interact with and in fact, shape their professional practice (Hargreaves & Fullan, 1992). "The developmental level of the teacher may well provide insight not only into how one is teaching, but also how one is able to teach" (Willie & Howey, 1988, p. 30).

The developmental perspective is based on a broader definition of professional development than the training perspective. From the developmental view, professional development is characterized by "any activities to enhance professional career growth" (ERIC, 1995). These may include a wide variety of activities that have an impact on teachers' growth and development, such as individual development, continuing education, and training, as well as curriculum writing, peer collaboration, study groups, and peer coaching or mentoring. This is also consistent with the view of professional development as an integrated and planned continuum of professional and personal growth experiences including preservice, induction, continuing certification, and experienced phases (Howey & Zimpher, 1990). Professional development is not an objective to be achieved, but rather a journey teachers travel throughout their professional careers. Within this perspective, there are a variety of models for thinking about how teachers develop. This review will examine several cognitive perspectives, an approach focusing on teacher concerns, and a model of the professional life cycle of teachers.

Cognitive developmental perspectives. Cognitive development can be classified into three domains: cognitive complexity, ego/self development, and moral/ethical development. The cognitive complexity theories are rooted in the work of Piaget and best characterized by Hunt (1974). Hunt's theory of conceptual level is concerned with the pattern of beliefs, attitudes, and values through which one interprets
experience. Levels of conceptual development vary according to degrees of abstractness to more concrete functioning. More abstract or advanced conceptual systems have been associated in a number of studies with creativity, greater cognitive flexibility, a wider range of coping skills, and a greater tolerance for stress (Witherell & Erickson, 1978). Teachers at a more advanced stage of conceptual development demonstrate a number of these desirable teaching behaviors more often than do teachers at less complex stages (Willie & Howey, 1988). The research of King and Kitchener (1994) builds on Hunt's theory and indicates that adults do exhibit stage and sequence growth in reflective judgment, though growth in adults is slow. They also found that age is not a factor in stage. Stage growth was most important for adults who continued their education through informal and formal professional development opportunities.

Theories of ego/self development are best characterized by Erikson (1982), who postulated eight universal stages of psychosocial growth, each representing a major crisis faced in the normal course of life. Each crisis calls for a central developmental task. His theory describes three comprehensive tasks for adults: early adulthood as intimacy versus isolation, adulthood as generativity versus stagnation, and old age as integrity versus despair. Each adult stage may be resolved with a basic strength, love, care or wisdom, or a basic antipathy, exclusivity, rejectivity, or disdain. Yet Erikson's stages are largely derived from qualitative analysis, and the empirical evidence to support them can be ambivalent (Sprinthall, Reiman, & Thies-Sprinthall, 1996). Archer (1990), for example, found that certain life circumstances can trigger the process of identity formation anew, even though other studies (Waterman & Archer, 1990) indicate adulthood is a time of relatively stable identity formation. This ambivalence raises questions for teacher development: Should teachers be considered as having achieved their identity? and What external influences might create a need to reestablish their sense of identity? Further research is needed to determine if development proceeds in a specific sequence, to establish the role of external
forces, and to determine how an individual interprets those forces in influencing his or her development.

Loevinger's (1976) theory of ego development identifies ten stages and transitional levels from presocial to integrated. The conformist stage through the autonomous stage reflect the normal range of adult ego development, with most adults stabilizing at the conscientious-conformist level. This stage, for example, is characterized by an increase in self awareness and the capacity to imagine multiple possibilities in situations. Research supports the strong relationship between ego stage and teaching (Cummings & Murray, 1989). For example, findings suggest the concept of caring for students has different meanings according to ego level. At the lowest level, the teacher merely likes children. At the highest level, the teacher serves as a model and facilitator of growth.

The third domain of cognitive development is moral/ethical in nature and is rooted in the theories of Lawrence Kohlberg (1969). Kohlberg postulates six different stages of moral reasoning, from punishment-obedience to the formation of universal principles. His research suggests that very few people reach the universal principles stage (1984). These stages have ramifications for teacher behavior. According to Kohlberg, teachers who are more advanced in their moral development are more likely to initiate structural changes in their schools that would encourage student participation and leadership, thus providing opportunities for students to develop moral principles. Lee and Snarey (1988) conducted longitudinal studies of moral development and conceptual development and determined that adults demonstrated a pattern of slow growth in both domains, that cognitive stages should be conceptualized as representing a series of interrelated domains (ego, moral, conceptual, and so on), and that growth varies by age, with ego preeminent during early adulthood and moral judgment preeminent much later. These findings may provide empirical support for Erikson's theories and "concurrent validity to connect the cognitive-developmental stage
theory to Erikson's psychosocial framework and vice versa" (Sprinthall, Reiman, & Thies-Sprintnall, 1996, p. 674).

**Teacher concerns.** Frances Fuller researched concerns of student teachers in the 1960s and 1970s, conceptualizing three distinct phases: concerns regarding teaching (framed in terms of one's experience as a student), concerns about ability to teach, and finally a concern for the pupils themselves (Fuller, 1969). This original work was extended to include concerns of teachers across the career life cycle and refined to explore the concerns of teachers engaged in adapting educational innovations. Hall and Rutherford (1990) reviewed studies and determined that the stages of concern model is a reliable assessment of teachers and teacher educators involved in the change process. Though there are some problems with the concerns measurement instrument, there have been successful adaptations (Sprinthall, Reiman, & Theis-Sprintnall, 1996), resulting in effective assessment of phases of concern for change facilitators such as principals, staff developers, and lead teachers.

**Professional life cycle of teachers.** Reviews of literature and research on the career development of teachers revealed several trends across studies: survival and discovery at career entry; a period of stabilization in which an individual makes a commitment to a defined professional role; experimentation/activism in which teachers attempt to increase their impact; a period of taking stock when experimentation gives way to self-doubt; a feeling of serenity characterized by confidence and self-acceptance; a period of conservatism in which there is resistance to innovation and nostalgia for the past; and disengagement that occurs as a teacher withdraws at the end of a profession (Huberman, 1989). The first two stages, survival/discovery and stabilization, occur for most teachers, then the middle stages vary for each teacher but converge into a similar path at the end of a career in the disengagement phase. Huberman warns, however, that many of the studies regarding teacher career development underrepresent the variable of school context. "It just

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may be the case that there are institutional environments in which teachers do not disengage, do not end up tending uniquely their own gardens, do not feel the stale breath of routine after only 8-10 years into the profession, and in which teachers only hear about mid-career crises in other buildings or other districts" (Huberman, 1989, p. 54).

Huberman (1993) continued his research by conducting a study to describe how teachers' lives are affected by the passage of time as well as the normal crises that are part of the social and cultural milieu. This research supports the notion that human development is influenced by both social and maturational factors.

An awareness of the ways in which teachers develop—cognitively, concerns-based, or career—is merely a starting point. The next question is whether or not what is known or can be learned about teachers' development will help predict their behavior. In fact, there is now a "large body of research evidence that consistently indicates that various domains of cognitive-developmental stage do predict behavior in complex situations" (Sprinthall, Reiman, & Thies-Sprinthall, 1996, p. 676). An analysis of the current research base indicates two major findings:

In problem solving situations requiring complex and humane response, adults in general and teachers specifically who process experience at higher stages of development are more competent, effective, and efficient. Adults in general or teachers specifically who process at lower stages of development perform at increasing levels of incompetence when faced with complex tasks (Sprinthall, Reiman, & Thies-Sprinthall, 1996, p. 677).

There are, however, limitations to this perspective. When schools are attempting to foster professional development as a means of achieving school reform goals, a developmental perspective can be slow, time-consuming, and have unpredictable outcomes (Hargreaves & Fullan, 1992). When planning strategies to enhance development, schools run the risk of neglecting the subtle but critical difference between developing and "being developed." It can also overemphasize the teachers' personal responsibility for change, placing undue pressure on teachers to drive change efforts by designing and monitoring
their own professional development. The fundamental problem with this perspective is that it ignores the importance of context in enhancing or constraining professional development (Hargreaves & Fullan, 1992). Teacher development includes acknowledging not only the influence of teachers’ life—background and biography and career—but the surrounding context in which the teacher works as well. That assertion leads to yet another perspective of professional development.

The Contextual Perspective of Professional Development

The contextual perspective is based on the assumption that “the process and success of teacher development depends very much on the context in which it takes place” (Hargreaves & Fullan, 1992, p. 13). The conditions of the working environment support or constrain teacher development. This perspective assumes that teachers are professionals who develop through critical reflection (Altrichter, Posch, & Somekh, 1993). Recognizing the complexity and specificity of teaching, solutions to problems must be developed in the context in which the problems arise and are not necessarily generalizable to other situations. This perspective is quite different from the technical view, which suggests solutions to teaching problems should be developed by experts and disseminated to teachers through training or published materials. From the contextual perspective, enhancing professional development should be focused on creating a rich working environment that supports teachers in exploring the implications of change for their own educational setting and finding out how to make any necessary alterations to the routines of their practice (Richardson, 1990).

The contextual perspective is consistent with the type of professional development many theorists and researchers see as important to achieving school reform goals. Little (1995), for example outlines six principles for professional development, highlighting the importance of context, meaningful engagement with ideas, inquiry, and a means of seeing the connections among students’ experiences, classroom practice, and schoolwide
structures. Corcoran (1995) concurs with Little, but also suggests professional development strategies stimulate and support site-based initiatives, demonstrate respect for teachers as professionals and adult learners, provide sufficient time and follow-up support, and be accessible and inclusive. Since the contextual perspective views teachers as professionals who must be actively engaged in their own learning, the context in which teachers must work should afford teachers three essential opportunities—to inquire into their practice, to reflect on beliefs and attitudes about teaching and learning, and to engage in substantive interaction with colleagues.

**Opportunities for inquiry.** Through inquiry teachers have the ability to formulate questions or problems related to their practice and pursue answers or solutions (Sparks & Loucks-Horsley, 1989). Inquiry, rooted in the work of Dewey (1933), promotes a cycle of continuous improvement. Action research is one systematic process that supports teachers' examination of issues and problems relating to their practice (Altrichter, Posch, & Somekh, 1993). This process involves identifying a question, concern, or problem, gathering information to clarify the problem, taking action, and finally, evaluating the results of the action. Through the final evaluation, a new question or concern is raised and the act-observe-evaluate cycle begins again. Using an inquiry process like action research has several benefits for teachers, including increasing self-esteem and career satisfaction (Strickland, 1988), promoting flexibility of thinking (McKay, 1992), encouraging risk-taking, and raising the status of the educator to scholar-practitioner (Miller & Pine, 1990).

**Reflection on beliefs and attitudes about teaching and learning.** Teachers' beliefs about the purpose and content of schooling are the most influential factors in their daily decisions about what to teach and how to teach it. Changes in these fundamental beliefs do not occur through technical inservice presentations or workshops that instruct them on "how to" teach. A change or innovation seen as appropriate by
researchers, outside consultants, or administrators may not fit teachers' practical theories of what they should be doing in the classroom. Instead, the improvement of teaching requires acknowledging, building upon, and promoting reflection on teachers' experiences, beliefs, and attitudes (Richardson, 1990). Good professional development provides opportunities for teachers to examine, question, and debate new ideas in order to integrate them into their repertoires and classroom practice.

**Substantive interaction with colleagues.** Finally, professional development must focus on helping teachers learn together. Collegiality can set the stage for teachers' self-examination, risk-talking, and critical reflection. Research findings indicate that collegiality can lead to improved learning (Rosenholtz, 1989), an improved change process (Fullan, 1991), a greater sense of efficacy (Ashton & Webb, 1986), and change in teaching practice (Little, 1982). True collegiality is characterized by a felt interdependence and a moral obligation to work with others (Lieberman, 1994). It is this kind of collegiality, along with reflection and inquiry, that is essential to a context that enhances professional development. The next section of this chapter will summarize aspects of the school context that support these important components of teacher professional development.

**School Context and Teacher Professional Development**

The focus of the contextual perspective is on creating a working environment for teachers that fosters each of the components of professional development—inquiry, reflection on beliefs and attitudes about teaching and learning, and substantive interaction with colleagues. The literature suggests that, in addition to the policy environment described earlier in this review, several other components of the school context have an important impact on teacher professional development—the school culture, the organizational structure, and human and social resources.
**School Culture**

School culture is commonly described as a set of norms, values, and beliefs that give the school an identity and manifest themselves in the commitment and interactions of the school (Hoy & Miskel, 1996). All schools have cultures that reflect ways of behaving, beliefs about learning and teaching, and values that are the foundations for actions and these cultures can enhance or constrain teachers' professional development. "There is growing evidence that the development of collaborative school cultures, where teachers routinely support, learn from, and work with each other, is related to successful implementation of educational change, a strong record in school-fostered improvement, good practice in professional development, and positive outcomes in pupil achievement" (Hargreaves & Fullan, 1992).

One study identified two elements of school culture that exert particular influence on efforts to reconstruct the relationship between academic and vocational education, thereby reforming the comprehensive high school (Little, 1995). First, teachers held beliefs about the purposes and content of schooling through which they expressed their support, indifference, or opposition to the integration of academic and vocational education. When teachers shared common beliefs about integration, change efforts were more likely to move forward. Secondly, norms of collegiality and experimentation are the hallmarks of a culture that can implement successful innovation. Teachers need to interact with one another and provide support for one another, particularly in times of change. These norms are necessary to replace traditional norms of privacy and noninterference (Little, 1990), which can constrain professional development and educational innovation.

These findings about the importance of school culture to professional development support the need to develop school cultures as learning communities (Little, 1995). A learning community is a group of people who share common values and goals and take
action to engage in meaningful learning. Learning communities hold values similar to those of teaching as a profession:

1. A commitment to exemplary practice. Members of the learning community investigate the effects of their practice through inquiry and continue to improve.

2. A commitment to valued social ends. Members of the learning community value students and their learning.

3. A commitment to collective practice. Members of the learning community respect the professional expertise of others and realize that their work is not isolated. All members of the community contribute to student learning.

4. A commitment to an ethic of caring. Members of the learning community care and are cared for. Caring extends to students and staff alike (Sergiovanni & Starratt, 1993).

The concept of a professional community, also relevant to a school culture that fosters professional development, goes beyond the notion of a learning community to include focused support for teachers' professional practice. In a study of teachers who were successful with today's students and who differed across a number of dimensions (age, experience, subject area, assignment, and even conceptions of pedagogy), the teachers shared one characteristic: membership in some kind of a strong professional community (McLaughlin, 1994). This sense of professional community was the reason the teachers gave for being successful in adapting to today's students, for feeling supported and motivated as a professional, and for being able to avoid a feeling of "burn out" in the face of exceedingly demanding teaching situations. These professional communities, whether they existed as part of a teacher network, a department, school, or district, had several common characteristics. The communities embrace diversity, maintain problem solving structures, have strategies for critical review and reflection, involve high levels of
trust and teamwork, and pay active attention to the ongoing renewal of community (McLaughlin, 1994). Certainly these characteristics would be important to the culture of a school seeking to implement educational change.

Building on the notion of professional community, Louis, Marks, and Kruse (1996) describe such a community in relation to a specific school context. Schoolwide professional community exists when, “an entire faculty comes together around meaningful, shared issues irrespective of teachers' individual disciplines . . . It entails staff members' taking collective responsibility for achieving a shared educational purpose for the school as a whole and collaborating with one another to attain it” (Louis, Marks, & Kruse, 1996). A schoolwide professional community has five essential elements: shared norms and values, a focus on student learning, reflective dialogue, deprivatization of practice, and collaboration. Shared norms and values are reflected in the language spoken and the actions of teachers, students, and others in the school. A focus on student learning means working to provide instruction that promotes students’ intellectual growth and development to enhance their achievement. Through reflective dialogue, teachers gain a deepened understanding of the implications of their practice on students and the opportunities they have to change and improve their teaching. Deprivatization involves teachers through team teaching, peer coaching, and classroom observations of their colleagues to improve practice and promote a spirit of collegiality. Finally, professional community involves collaboration—sharing expertise to improve the competence of everyone on the school staff. A study of eight elementary, eight middle, and eight high schools that had made substantial progress in restructuring found that professional community has a significant effect on the organization of classrooms for learning and the academic performance of students (Louis, Marks, & Kruse, 1996; Louis & Marks, 1998; Marks & Louis, 1997).

Educators must be cautious, however, in their efforts to establish professional community. Though there are certain human and social resources and organizational
conditions that can promote schoolwide professional community, this type of culture cannot be managed or created "top down." If teachers are forced into collaboration, expected to meet unrealistic timelines, or directed toward administrative rather than teacher concerns, a contrived collegiality occurs (Hargreaves, 1994). But given time and the right set of reform activities in a school, professional communities can be a way to help teachers work together to improve student achievement. "The only way to make professional development an ongoing, satisfying, challenging part of teachers' lives is to make the tending and support of teachers' professional community a number-one priority. Indeed, all else is arguably of secondary importance" (McLaughlin, 1994).

Human and Social Resources

In addition to school culture, the human and social resources of a school can support or constrain teacher professional development. Leadership, whether from administrators or teachers, can focus school change efforts on essential goals and purposes (Fullan, 1991). Since the classic Rand Change Agent study done in the 1970s, there has been growing evidence of the important role that principals and district administrators play in the success of change efforts (Sparks & Loucks-Horsley, 1989). When principals were involved in teachers' professional development activities, there were longer-term changes than when principals were not involved (Fielding and Schalock, 1985). Though it is sometimes important for principals to exert pressure for implementation of new teaching practices (Huberman, 1983), they can also act as gatekeepers of innovation overload (Anderson & Odden, 1986).

The role of local administrators is particularly important in the integration of academic and vocational education (Bodilly et al., 1993; Grubb, 1991). When administrators encourage risk taking, yet recognize that failure is possible, an environment conducive to innovation is created (Beck, Copa, & Pease, 1991). It is possible, however,
for administrators to hinder the process as well. Administrative mandates can create a hostile environment, particularly if the integration program will result in job loss or major role changes for teachers (Bodilly et al., 1991). This type of environment can be overcome by long-term planning for a smoother transition and meaningful involvement of teachers in the decision-making process.

Another aspect of human and social resources in enhancing professional development is the support of parents and other community members. Based on evidence that student learning will be enhanced if parents see education as a shared responsibility (Henderson, 1987; Stevenson & Stigler, 1992), schools are moving in the direction of involving parents and that involvement can provide a supportive environment for teachers and educational change. Conley (1993) suggests several ways in which parents can be involved including becoming active in site-based decision-making, advocating and supporting change in schools, and accepting education as a shared responsibility. When efforts are made to integrate academic and vocational education, parents may have important questions as to how the integration will effect students' opportunities to learn. Their support for these efforts will be extremely important as teachers work toward systemic change.

Particularly important to efforts to integrate academic and vocational education are the support of business and industry. Effective involvement of outside groups, particularly the business community, supports long-term planning and successful integration (Schmidt, Beeken, & Jennings, 1992). Business support can provide opportunities for students to learn about and through the world of work in the form of job shadowing, mentoring, or volunteering to work with students in the classroom. Businesses may also provide externship experiences for teachers to learn about the world of work, informing ways in which they connect what they are teaching to the real world. Increased business involvement may also result in financial support, contributions to site-based decision-
making, and advocates for fundamental change in education, all of which may support teachers in their change efforts.

Organizational Conditions

The organizational conditions within a school also play an important role in creating a context for teacher professional development that supports school reform. Traditionally, schools have been organized as bureaucracies with top-down authority, contributing to less autonomy for teachers and routinized practice (Sergiovanni & Starratt, 1993). Such models of school organization may foster a sense of isolation and thwart experimentation with new teaching practices, as with those important to authentic instruction (Elmore, 1992). Changing these organizational conditions to be more supportive of teacher professional development greatly enhances the change process. In a study of three urban high schools integrating academic and vocational education, each context challenged the traditional organizational structure of subject matter departments, time, and space (Little, 1995). Strategies such as regular meetings, common planning time, and new departmental structures energized the teams even though the teachers still face issues of curriculum coverage, subject matter stereotypes, and the loss of independence. Four structural conditions seem central to the success of these programs: interdependence (shared responsibility for a cohort of students), common space and planning time, configuration of staff and responsibility, and access to external ideas, experiences, and other resources.

Shared interdependence involves restructuring staff configurations and the way decisions are made to better support teachers in the change process. Shared decision-making involves teachers in making decisions about the environment in which they work. Research suggests that teachers who have a voice in making decisions that will influence instruction are more likely to feel that they are part of a professional community (Louis, Marks, & Kruse, 1996; Marks & Louis, 1997). Lieberman (1994) also supports shared
decision-making in empowering teachers and describes a learning community as one in which the traditional structure of "power over" is replaced with "power to accomplish." Along these same lines, differentiated staffing roles are another way to support learning communities. Teachers who have roles as teacher leaders, curriculum developers, or beginning teacher mentors, for example, would have reduced teaching loads to perform other tasks that are an important part of professional work and stimulate teacher development.

Teacher involvement is important in creating a context for professional growth. Rowan (1990) postulates that teachers' participation in school decision-making can enhance teachers' commitment, expertise, and ultimately, student learning. Specifically involving teachers in decisions about staff development programs influences their success (Lambert, 1984). Professional accountability places teachers in the role of making the intellectual and ethical decisions important to their professional roles in reform efforts (Darling-Hammond & Snyder, 1993). Though empowering teachers to make decisions is an important step to "professionalizing" teaching, there are certain types of empowerment that might foster change in teaching practice. If the goal is to create professional communities, "empowerment should focus on decisions that effect mid-level policies regarding school functioning: those that are broader than a single classroom, but which are still clearly related to the improvement of learning environments" (Marks & Louis, 1997). Some examples of these are issues related to grouping of students or discipline policies.

Common space and planning time are essential organizational considerations to the integration of academic and vocational education (Grubb et al., 1991; Stasz et al., 1990). Since the traditional model of schooling calls for teaching as relatively independent and isolated work, there is little time for collaboration in most school schedules. In addition, students' time, particularly at the middle and high school levels, is divided into pieces dedicated to particular subjects. This arrangement may not enhance meaningful learning.
Looking at different ways to group students, to distribute larger amounts of time, and to provide for collaborative work among teachers is a possible strategy for supporting learning communities. The belief that a teacher who is not teaching is a teacher who is not working needs to be critically examined as we think about how to use time in schools.

Finally, in order to foster meaningful professional development, the organizational conditions of the school should provide access to external ideas, experiences, and other resources. It is important for teachers to have ties to individuals outside the school, other innovating schools, or to state and national projects in order to widen the pool of ideas and provide a point of reference for their own progress (Little, 1995). If these opportunities are not present, teachers have a tendency to become overwhelmed with the intensity of their work. These experiences, taking the possible forms of conferences, professional networks, and university courses, help teachers extend and challenge their work.

Summary

The professional development of teachers is essential to school reform. This review analyzed several factors influencing professional development and thus educational change efforts, particularly the integration of academic and vocational education. Working within the conceptual framework presented at the beginning of this chapter, the review began with an analysis of the current policy environment and described themes in school reform proposals since *A Nation at Risk* was published in 1983. Themes of control, commitment, and finally, systemic reform were explored, specifically focusing on the call to better prepare students for the world of work. A second section dealt with the integration of academic and vocational education as a school reform strategy. The meaning and purposes of integration, approaches to integration, and effects of integration on student learning and behavior, teachers, and teaching practice were examined. The next section explained the importance of professional development in creating school change and outlined three
perspectives of professional development—technical, developmental, and contextual. Making the case for the contextual perspective, the final section described three aspects of school context supporting professional development including school culture, human and social resources, and organizational structure.

The next chapter explains how the conceptual framework derived from this literature review guided the methodology used in this study. Researching a complex phenomenon such as professional development suggests a need for qualitative methods. Using three exemplary cases, this study describes factors influencing teacher professional development in the midst of school reform efforts. The four factors identified in the conceptual framework—the policy environment, organizational conditions, human and social resources, and school culture—are used to develop the case studies and guide the data analysis.
CHAPTER 3

METHODOLOGY

re search /ri-ˈserch/ vt 1: to search or investigate exhaustively
Webster's New Collegiate Dictionary

Educators continually strive to improve student learning—to create the conditions, the opportunities, and the relationships that will support children as they reach for their full potential. Educational research should inform educators and other stakeholders as they work toward this goal. Most importantly, educational research should inform practice—the daily decisions teachers make based on the unique needs of children and unique school contexts. Since meeting children's education needs is extremely complex, situational, and particularistic, a research methodology is needed that considers the many human, cultural, social, and contextual elements of the educational process. For this study, an investigation of teams of teachers engaged in the process of educational change, a qualitative research methodology is used. This chapter describes that methodology, including the rationale for qualitative research, a description of the case study method, my role as a researcher, the selection of cases, data collection and analysis techniques, and criteria for judging trustworthiness and authenticity.

Rationale for Qualitative Research

Since educational change efforts tend to be highly complex and contextual, the study of such efforts suggests a need for qualitative methods of inquiry. Qualitative
methods allow an atmosphere “within which people can respond in a way that represents accurately and thoroughly their points of view about the world” (Patton, 1990, p. 24). Such methods involve understanding the meaning of an experience and striving to see how all the parts work together to form a whole. Qualitative research allows the researcher, as the research instrument, to adapt to the situation, to see a holistic context, to cope with complexity, to ask for amplification or clarification, and to explore anomalies (Guba & Lincoln, 1989). Since this study sought to provide an in-depth analysis of the experiences of three teams of teachers integrating academic and vocational education, qualitative methodology seemed most appropriate. There are several reasons to support this methodological choice.

First, qualitative methods can lead to an understanding of the complexity of what goes on in classrooms and schools. The researcher’s challenge is “to do justice to that complexity, respecting it in its own right” (Glesne & Peshkin, 1992, p. 7). Efforts to integrate academic and vocational education seem to be influenced by a variety of organizational, cultural, and policy factors. The challenge of studying these efforts is as much about uncovering a process—how teachers grow and change over time—as much as it is about the outcomes of that change process. Presented with such an array of complicated factors woven within a fluid process, the subtleties of what makes change efforts successful may initially go unrecognized. A qualitative research approach, focusing on interdependencies and interrelationships, presents an opportunity to study the whole phenomenon as a complex system that is more than the sum of its parts (Patton, 1990). In addition, it allows for an open-ended, discovery-oriented, and developmental look at the process of educational change.

Second, qualitative methods are an appropriate way to reflect the contextual nature of educational innovations such as the integration of academic and vocational education. Each school system, each classroom, and each teacher represent unique and special cases
with specific contexts. In qualitative research, findings are situated within the settings of each unique case. These settings influence the perceptions of those involved and must be considered purposefully in order to allow relevant details to surface throughout the study. Rich “stories” emerge, highlighting the particular circumstances of successful educational change efforts, including the physical, psychological, social, and cultural contexts surrounding the change.

Finally, in addition to placing attention on individuals and groups in their lived situations, qualitative methods focus on the way in which people perceive their daily lives. The outcomes of these methods “are not descriptions of the ‘way things really are,’ . . . but instead represent meaningful constructions that individual actors or groups of actors form to ‘make sense’ of the situations in which they find themselves” (Guba & Lincoln, 1989, p. 8). Research methods such as in-depth interviews provide opportunities for individuals to reflect on past experiences, reconstruct events and situations, and draw conclusions about their perceptions. An understanding of the phenomenon of educational change would certainly be incomplete without an understanding of the teachers’ perspectives on that process. Their constructions truly represent the realities of educational change.

The Case Study Method

Qualitative case studies seek to holistically describe a phenomenon in depth, detail, and context. When a study seeks to provide a description of a complex phenomenon, it may be more desirable to have a few carefully done case studies than to aim for large, probabilistic, and generalizable samples (Patton, 1990). In addition, the study of complex circumstances such as educational change efforts makes it difficult to identify all the important variables ahead of time. With a case study approach, results emerge through the development of rich descriptions. Consequently, a case study approach seems best suited for this study.
A case study is defined as "a phenomenon of some sort occurring in a bounded context" (Miles & Huberman, 1994, p. 25). In a qualitative case study, the case serves as a unit of analysis and the researcher must define the boundaries of the case, so as to determine what will not be studied as well as what will be. Cases may represent individuals, groups, organizations, and communities or can even be oriented toward a place or a particular event.

Qualitative case studies should have four essential characteristics (Merriam, 1988). First, they are particularistic. Each case study represents a specific situation, event, program, or phenomenon. Secondly, case studies are descriptive. They provide rich, thick description of the phenomenon under study. Case studies are also heuristic in that they illuminate the reader's understanding of a particular phenomenon. Finally, case studies are inductive in nature. The generalizations, concepts, and hypotheses emerge from an examination of data grounded in the context of the case.

The selection of multiple cases provides an even deeper understanding of the findings in a particular case. Choosing several cases to study places no less emphasis on the development of each individual case study, but leads to important connections between the findings (Stake, 1995). Multiple-case sampling also adds confidence to the findings. By comparing similarities and differences between cases the researcher can gain a better understanding of why each individual case functions as it does, hence strengthening the precision, validity, and stability of the findings (Miles & Huberman, 1994).

The Researcher's Role

In qualitative research, the researcher is the instrument. The nature of this role calls into question issues of subjectivity. As a state-level consultant who provides leadership and technical assistance to teachers and programs seeking to integrate academic and vocational education, I risk criticism that my familiarity with many of the experiences in this study
might make it difficult to interpret the data. My responsibility as a qualitative researcher is to make those biases explicit and grasp the place of subjectivity in the research process. Subjectivity, in fact, can be a strength.

My subjectivity is the basis for the story that I am able to tell. It is a strength on which I build. It makes me who I am as a person and as a researcher, equipping me with the perspectives and insights that shape all that I do as a researcher, from the selection of topic clear through to the emphases I make in my writing. Seen as virtuous, subjectivity is something to capitalize on rather than to exorcise (Glesne & Peshkin, 1992, p. 104).

Given my experience and research interests, I approached this study with what Patton (1990) calls empathetic neutrality. Rather than setting out to prove a particular perspective or manipulate the data, I sought to understand the phenomenon under study and to carefully reflect on, deal with, and report potential sources of bias. This neutrality was not detachment, but rather an empathetic approach to understand the positions, feelings, and experiences of others. My knowledge and experience regarding the process of integration have supported my role of empathetic neutrality during this study. Participants seemed comfortable talking with me as a former teacher and one who works with schools engaged in reform efforts. I found myself able to understand the nuances of the language of those who work in schools. In the analysis of the data, my professional expertise allowed me to uncover subtleties and interrelationships that may not have been evident to one with little educational experience.

Just as subjectivity can be a useful tool in the qualitative research process, it also calls into question issues of credibility. The responsible qualitative researcher is careful to establish credibility in several ways. In this study, I used several methods to support the credibility of the findings. First, I became as fully immersed as possible in the context being studied. I observed for two days at each site and made other visits to observe staff meetings, to conduct interviews, and to talk with administrators. Through these visits I confirmed that my engagement as a researcher was of sufficient length and persistent
enough to fully interpret the context of each setting. Finally, I asked participants and peers to review the emerging case studies and cross-case analysis to check the adequacy and completeness of my interpretation.

It is also important for the researcher to be committed to qualitative research and to be passionate about what is being studied. Data analysis in qualitative inquiry demands "intellectual discipline, analytical rigor, and a great deal of hard work" (Patton, 1990, p. 14). My responsibility was to do everything possible to make sure the data were analyzed to the depth possible. Although there are no hard and fast formulas or rules for qualitative research, there are guidelines that I applied to this research context. The decisions I made about the selection of cases, data collection, and data analysis and the justification for those decisions are described in the following sections of this chapter.

Selection of Cases

Case study research involves selecting cases that are "likely to lead us to understandings, to assertions, perhaps even to modifying of generalizations" (Stake, 1995, p. 4). In this study, I used an extreme or deviant case sampling technique to find cases that had outstanding success in integrating academic and vocational education. Extreme or deviant case sampling "focuses on cases that are rich in information because they are unusual or special in some way" (Patton, 1990, p. 169). Exemplary cases of integration could best inform those seeking to initiate, redirect or further support such integration efforts in other contexts.

Given the research questions in the study, I defined a case as a team of teachers integrating academic and vocational education. Setting the case as the teaching team rather than a school or program focused the data collection and analysis appropriately on the role of teacher professional development in the change process. I also chose to select multiple cases. The selection of three cases not only provided an opportunity to develop three in-
depth descriptions of exemplary teams of teachers, but also to conduct a cross-case analysis. To enrich the opportunities in the cross-case analysis, the cases were selected to include a variety of contexts—the size of the school, the nature of the community, and the type of school (e.g., vocational or comprehensive high school).

The first task in case selection was to establish criteria for an exemplary case. Information-rich cases for this study needed to be well advanced in the change process and have achieved a complex level of integration. Using the continuum of approaches to integrating curriculum described in the review of literature for this study (Grubb, 1995), I sought to identify teams working at the more complex levels of integration. Thus, I identified two major criteria. First, a school structure that supports integration, such as career pathways, magnet schools, or career academies. Second, collaborative planning between academic and vocational teachers as evidenced through common planning time, team teaching, and integrated project-based or problem-based learning experiences. A full description of the criteria for case selection along with key indicators for the criteria are included in Appendix A.

The identification of the three cases began with an informal nominating process by the staff of the state department of education. These stakeholders were asked to use the established criteria to nominate exemplary teaching teams in the state. Thirty-one nominations were received. Some cases received a nomination from more than one person. Telephone interviews were conducted with a representative from each nominated program, usually an administrator or lead teacher, to clarify the degree of academic integration and the criteria exhibited. Once three cases were selected, initial contacts were made with the districts to seek permission to participate in the study. With district-level permission in hand, the teams of teachers were contacted to determine their willingness to participate in the study. All participants signed a consent form, a sample of which is included in
Appendix B, that outlined the purpose of the study, procedures for maintaining confidentiality, and the voluntary nature of participation.

The process of case selection and gaining entry to the teaching teams in each district resulted in the following cases for the study:

**Maple Hill Electronic Communications Team.** The Maple Hill team includes four teachers who share three laboratory classrooms in a technical school serving a large urban district. As part of a Tech Prep program, the team serves junior and senior students. Team members work collaboratively to plan integrated instruction, make decisions about classroom time and space, and deal with student progress and disciplinary issues.

**Kennedy Career Center Business Technology Team.** Kennedy Career Center is organized in career academies in which academic and vocational teachers work on teams. The Business Technology team consists of seven teachers who share common planning time to design integrated projects, monitor student discipline issues, and evaluate the program. Kennedy is one of several buildings in a large vocational school district serving urban, suburban, and rural communities.

**Sycamore High School Tech Prep Team.** The Tech Prep team includes six teachers and a program director who serve approximately 125 freshman students in a “school-within-a-school” design. Sycamore is a comprehensive high school in a small community located near a large urban area. The Tech Prep team selects students for the program, coordinates their instruction across subject areas, plans extended learning experiences in workplace and community settings, and tracks student progress over time.
Data Collection

Three data collection methods were used in this study: individual and small group interviews with teachers and administrators; observations of classrooms and school environments; and document review. Data collection began on June 10, 1998 and continued until October 2, 1998. In the months of June, July, and August, the data collection focused on individual teacher interviews and document review. Teachers were more readily available for interviews since schools were not in session. In September and October the focus of the data collection turned to classroom observations, small group interviews, and further document review.

Twelve individual interviews and three small group interviews were audiotaped and transcribed into word processing computer files. These included nine interviews with teachers from the teaching teams, one interview of a project director, and two interviews with administrators who had played a key role in the support of the teaching teams. The majority of the interviews were one hour in length, with some lasting as long as two hours. Individual interviews were conducted prior to the two-day observations at the school sites. Small group interviews were conducted during the two-day school site observation period. Using the conceptual framework that emerged from the literature review, an interview guide (Patton, 1990) was developed and provided to participants prior to the interview. The interview guide, included in Appendix C, served as a checklist to ensure certain topics were covered in the interview, ultimately allowing for cross-case analysis. Teachers chose to talk about the questions in the order in which they were comfortable. Most individual interviews progressed in an unstructured way, with teachers encouraged to explore their feelings and concerns around the general topics of the interview guide. The small group interviews were also unstructured, with questions centered on the same themes used in the individual interviews. The small group interviews, however, allowed for further clarification of data from individual interviews, document reviews, and observations.
In addition to the interviews, observations of meetings, classes, and informal conversations from the school settings were recorded through field notes. These notes included not only what was said, but nonverbal communications as well. Notes on insights gleaned from the field notes were written in the margins and provided ideas for further questions during the small group interviews. Each school setting was observed for a minimum of two school days. Other visits to the schools resulted in observations of staff meetings, open houses, and common planning time.

During the initial contacts with the school districts, the interviews, and the classroom observations, I collected documents related to the work of each teaching team. These included program brochures, curriculum materials, grant proposals and reports, student handbooks and materials, and program evaluation reports. The document review provided insight into how the teachers’ programs are portrayed to the public, to other staff members, and to students.

As the case studies were developed, I attempted to maintain the highest standards of confidentiality. Participants chose a pseudonym under which interview data were analyzed and reported. The schools and districts represented in the case studies were also given fictitious names. Finally, I made every attempt to write the case studies in such a way as to keep the identity of the school districts anonymous.

Data Analysis

In an effort to make analysis an ongoing, energizing process in this study, I used several levels of techniques to provide a framework for deep analysis. The first level of data analysis included the identification of broad categories developed for the conceptual framework—the policy environment, organizational conditions, human and social resources, and school culture influencing teaching professional development. These categories, representing major themes related to the integration of academic and vocational
education that emerged from the literature review, drove the development of the interview guide. They also framed the first summary data displays used to organize initial responses from the interview transcripts related to each case and established opportunities for cross-case analysis.

Once each interview was transcribed into a word processing file, the transcripts were reviewed line by line. After the first reading, I developed an initial list of codes in each of the four categories—policy environment, organizational conditions, human and social resources, and cultural conditions—that emerged from the interview responses. For example, “CTL” represented cultural factors related to teaching and learning. These codes are identified and defined in Appendix D. Using these codes, I read the interviews a second and third time and assigned each interview response one or more codes. Through the process of coding, some codes were eliminated while others were combined into one code. The process of ongoing coding allowed real or potential sources of bias to be uncovered and identified incomplete or equivocal data that could be clarified with subsequent interviews and observations (Miles & Huberman, 1994). All individual interviews were transcribed and coded prior to the two-day site visits and small group interviews. This allowed opportunity for the ongoing analysis to inform the observations as well as the questions asked of participants in the small group interviews.

The next level of data analysis included the development of data matrices and word processing files focused on each of the four broad categories. Data from the interviews, observations, and document analysis related to each case were represented in a conceptually clustered matrix organized according to the categories from the conceptual framework (Miles & Huberman, 1994). These data displays included coded data to capture the context and support conclusions. In addition, word processing files were developed for each of the four categories and all data from each interview, field notes, and document reviews relating to the categories were entered into the file. Each of the three case studies was developed
working from the conceptually clustered matrix for each set of data and the word processing file for each category. I read the matrices and word processing files to identify broad themes that guided the case studies. As I wrote the case studies, I supported the conclusions with data from the matrices and word processing files.

Following the development of the three case studies, a cross-pattern analysis of the cases was conducted (Patton, 1990). I first developed a cross-case matrix as a tool to observe and interpret the details across cases and to support the observed patterns. I reviewed the matrix to search for underlying similarities, associations that appeared constant, differences, and general explanations. I wrote the cross-case analysis using the themes and patterns that emerged and supported them with data from the matrix.

**Trustworthiness and Authenticity**

Traditional criteria for judging the rigor of quantitative research, such as validity, reliability, and objectivity, have been applied to the assessment of qualitative research as well. There are several parallel criteria to those within the conventional paradigm of quantitative research (Guba & Lincoln, 1989). These include: transferability; confirmability (through the arguments put forth and by means of an audit trail); dependability (through an inquiry audit); and credibility as established through prolonged engagement, persistent observation, peer debriefing, negative case analysis, progressive subjectivity, and member checks.

Although transferability ultimately rests with the reader’s judgment, I have attempted to support transferability with the use of thick description. I have also given particular attention to documenting my decisions and actions as a researcher in order to meet the criteria of confirmability and dependability. As to the credibility criteria, I have used the following strategies:
Prolonged engagement and persistent observation. Data collection occurred over a period of four months, during which time there was substantial involvement with teachers at their work site. My goal was to establish what Glaser and Strauss (1967) describe as theoretical saturation. Through two days of intensive observation at each site and numerous interviews and informal contacts with the teachers, I sought to find the patterns and themes that were emerging again and again. For example, two of the teachers at Kennedy mentioned in their individual interviews how frustrating it was to have classroom space at a significant distance from others on the team. This same theme emerged again in the observations, when I watched one teacher race between classes to talk briefly with another teacher whose classroom was located down a long hallway. I then brought up this topic during the small group interview at the end of the site visit. The teachers on the team explained they were better able to work with the teachers who had classrooms nearby. When I saw these kinds of themes recurring again and again, I felt I had achieved sufficient engagement to analyze the data and compare the cases.

Member checks. Member checks are perhaps the most critical test for verifying data and interpretations (Guba & Lincoln, 1989). I used member checks at two different points during the data collection and analysis. First, I gave the teachers and the two administrators I interviewed the opportunity to review the transcripts from their individual interviews. (Correspondence with teachers explaining this first member check is included in Appendix E.) Although most teachers made no changes to their responses to the questions, several teachers wrote clarifying comments on the transcripts and returned them to me. I also received several comments from teachers about how participating in the interview and reading the transcript was an opportunity for professional growth. They were able
to pause and reflect on their experiences with the team, something they rarely take
time to do.

The second member check took place once I had written the first draft of the
case studies. Each teacher and administrator I interviewed, as well as two
administrators I had interviewed informally during the site observations, was given
an opportunity to read the case study for their team. (A letter explaining this process
to teachers is included in Appendix F.) I asked each of them to check the accuracy
of information, suggest any other pertinent information I may have left out, and
note any part of the case that might inappropriately reveal the identity of the
participants. Most of the responses I received made no suggested changes. Two
administrators made suggestions to ensure the anonymity of the district. I thought
their points were well taken and I made changes accordingly. Two teachers further
clarified quotations from the interviews and I also made those changes. None of the
responses suggested changes to the overall themes identified in the case studies or
disagreed with any of the descriptions.

Peer debriefing. Drafts of the findings for each case study as well as the
cross-case analysis were shared with three professionals who work with efforts to
integrate academic and vocational education. (A letter describing this process to peer
reviewers is included in Appendix G.) These three professionals posed searching
questions, tested working hypotheses, and confirmed interpretations of the data. I
received positive comments on the conceptual framework and its effectiveness in
organizing the case studies for interpretation as well as the significance of the
findings regarding the similarities and differences among the cases.

In addition to these parallel criteria, I used additional considerations to assess the
rigor of my findings in this qualitative study. While the parallel criteria seem to focus on
ensuring a researcher has carried out the process correctly, I believe it is also important to
consider authenticity criteria, which focus on the validity of the qualitative findings. Guba and Lincoln (1989) suggest the following authenticity criteria:

1. Fairness (the extent to which different constructions and their underlying value structures are solicited and honored within the process);

2. Ontological authenticity (the extent to which individual respondents’ own constructions are improved, matured, expanded and elaborated, in that they now possess more information and have become more sophisticated in its use);

3. Educative authenticity (the extent to which individual respondents’ understanding of and appreciation for the constructions of others outside their stakeholding group are enhanced);

4. Catalytic authenticity (the extent to which action is stimulated and facilitated by the research process);

5. Tactical authenticity (the degree to which stakeholders and participants are empowered to act).

Certainly the judgment about these criteria can be as much in the hands of the reader as it is in the hands of the researcher. Nevertheless, these criteria guided my decisions and actions during the entire qualitative research process—design, case selection, data collection, data analysis, and reporting.

Summary

This chapter provided a rationale for using a qualitative research design for this study and a description of the case study method. Following a review of the researcher’s role in qualitative case study research, the selection of cases was outlined. Procedures for data collection and analysis were then explained. Finally, a discussion of trustworthiness and authenticity included criteria for evaluating qualitative inquiry and the methods used to meet that criteria in this study. The next chapter, Chapter 4, presents the findings of the
study. These findings are presented in three case studies, organized according to the categories of the conceptual framework.
CHAPTER 4

CASE STUDIES

This chapter presents the results of the data collection and analysis. The report of the data is divided into three case studies, each describing one of the selected teams of teachers integrating academic and vocational education. Each case study begins with a vignette that typifies the classroom environment created by the teaching team. Following a brief description of the school setting, the case study is organized according to the components of the conceptual framework identified in the review of literature presented in Chapter 2—the policy environment, organizational conditions, human and social resources, and school culture. Finally, each case study concludes with a discussion of the outcomes of integration for the school, the students, and the teachers on the team.

Though the broad categories of the conceptual framework provide a way of thinking about the data with regard to each case, it is important to note that these categories are not mutually exclusive. In several instances, a particular descriptor within a case could fit into two different categories of the framework. As I developed the cases and considered the overall context, I placed descriptors in the category in which they seemed to have the greatest impact. Through the cross-case analysis I present in Chapter 5, I will further discuss these interrelationships and the interaction among categories within the conceptual framework.
Case Study 1: The Maple Hill Electronic Communications Team

The only sound you hear in the Computer Aided Design (CAD) lab at Maple Hill Technical School is the almost imperceptible hum of the computer system. The twenty students in the classroom are intensely focused on their work—the design of a kiosk that will be used to display cellular phones on sale in a retail store. Two teachers roam the lab, stopping to talk to students as they go. “Can you explain to me how you just did that?” one of the teachers asks as she leans over the computer screen to view a student’s work. “It’s a wonderful way to extend your knowledge... to be able to explain it to another person.” The student launches into an explanation of the way in which she constructed the kiosk. The teacher asks several questions for clarification then moves on to another student. About halfway through the one-hour class, one of the teachers takes a few minutes to explain a computer function. The students and the other teacher take notes on the procedure. When the mini-lecture is completed, the teacher who has been listening with the students reminds them, “Now by my notes, you should have definitions for solid line, dotted line, and the way you move and extend drawings.” Both teachers return to helping students individually as they continue to work on their projects. At the end of the class, one teacher closes by saying, “I am really pleased that you can explain what you are doing so well. You’re using good communication skills.” So ends a typical class in the Electronic Communications program at Maple Hill—a program where teachers share the responsibilities of classroom instruction as they integrate the teaching of academic content and technical skills.

The School Setting

Newtown City Schools serves a diverse student population of about 15,000 students from urban, suburban, and rural areas. The various elementary, middle, and high schools in the district reflect this diversity, with some buildings experiencing a transient rate as high as 87 percent, while other schools in the district have very little student
turnover. As with many districts on the edge of a large urban community, steady growth in
the past ten years has created a problem with physical space. With a recently approved
bond issue the district soon plans to move forward with the construction of additional
school buildings.

Although about 40 percent of students graduating from Newtown City Schools go
to college, administrators are skeptical about the number of students completing an
associate or baccalaureate degree. As one district administrator suggests, "Probably about
10 percent of students going to college from our district don't make it past the first semester
or first year of college. And probably another 10 percent don't finish the degree
requirements. That means we need to graduate our students with a diploma that prepares
them to make some choices—college, technical school, and work." Consequently, many
administrators and teachers in the district feel school-to-work and career preparation
programs are very important for student success. The district has a business and industry
advisory council that guides the development of curricula and programs designed to help
students succeed beyond high school, whether they attend college or enter a career.

In response to this need, the district offers a multitude of experiences and courses
designed to prepare students for the workplace. Two particular kinds of programs—
vocational programs and Tech Prep programs—are designed to prepare students with
specific career skills. The vocational programs in the district focus on the skills needed to
enter and succeed in an occupation. Vocational programs are offered in the areas of
business, marketing, trade and industrial, agriculture, and childcare. Tech Prep programs
prepare students for high technology, math, and science careers requiring at least a two-
year associate degree. High school Tech Prep courses articulate to associate degree
programs at local colleges and technical schools.

Though vocational and Tech Prep programs are housed in secondary buildings
throughout the district, not all programs are offered in each location. Maple Hill Technical
School focuses solely on workforce development for eleventh and twelfth grade students and houses most of the trade and industrial programs and three of the four Tech Prep programs. If students are enrolled in one of the vocational or Tech Prep programs offered at Maple Hill, they spend half the school day at the technical school, then return to their home high school for further academic instruction and elective courses. Though many of the laboratories at Maple Hill have been refurbished, there is a need to update and expand the facilities and this is one of the district's goals.

Maple Hill is home to the Electronic Communications team comprising one academic teacher in language arts and three technical teachers representing graphics, business applications, and computer-aided design (CAD). The team occupies three computer lab rooms and one office shared by all four teachers at the end of one wing of the Maple Hill building. In its fourth year of implementation, the program was designed in response to federal and state policies calling for better integration of academic and vocational education and a local policy environment calling for raised academic standards and the elimination of the general track curriculum.

The Policy Environment

The roots of the present school reform effort in Newtown date back to the early 1990s when both state and federal legislation called for the modernization of vocational education. The district administrators involved with vocational and career education in Newtown City Schools responded by leading efforts to better prepare students for the workplace. Early initiatives included a greater emphasis on career education at all levels—elementary, middle, and secondary. The district also worked to update the facilities and equipment at Maple Hill Technical School based on input from local business and industry representatives. The vocational programs were reorganized to include applied academics—math, science, and language arts courses taught in the context of the technical skills
students were learning. Though these early efforts were well intended and teachers and administrators felt they were moving in the right direction, there were some problems with planning and implementation. As a vocational education supervisor explains, "What happened was there was virtually no staff development with this and it was very, very difficult. And it hurt a great deal. And it’s taken a few years to come back and get stronger. Without staff development, collaboration, and communication, nothing works. So it’s a major struggle." These initial experiences shaped the change efforts the district would initiate over the next seven years.

Fueled by the policies and funding opportunities of the statewide Tech Prep initiative, the district began the development of a Tech Prep program. Working with the area Tech Prep consortium of postsecondary institutions, high schools, and vocational schools, teachers and administrators designed a series of career-focused courses, experiences, and programs. The Tech Prep offerings began with integrated learning through academic courses at the ninth and tenth grade and were followed by Electronic Communications and several other Tech Prep programs with integrated academics at the eleventh and twelfth grade. Each of these programs was designed to articulate to associate degree programs at several local colleges and postsecondary technical schools. Much of this work, particularly in the design of integrated learning at the ninth and tenth grades, was targeted toward students in the "academic middle." Typically unfocused in the college prep or general track curricula, it was believed these students would reap the greatest benefit from a Tech Prep program—learning within a career context, developing specific technical skills leading to a career, and achieving a level of academic competence that would prepare them to succeed at the postsecondary level.

Yet even with these efforts to better serve the academic middle underway, there was a feeling among administrators and teachers that many students in the district were still unfocused in their selection of high school courses and graduated unprepared for their
future. During the 1994-95 school year, a team of administrators and teachers began planning a new approach. As one administrator explains, this new approach grew from “a strong belief that we needed to have every student ready to move on and be prepared to take that next step, whether it be an interview for college or an interview for work or both.”

New criteria were established for all students in the district including increased graduation requirements and a college prep or college tech focus to coursework. All students are required to select high school courses related to either a college prep or college tech focus. Courses are offered based on their relationship to career clusters such as: environmental; health; social services; business management; arts and communications; and industrial and engineering. Depending on their career objectives, students choose and sequence academic courses and vocational or Tech Prep programs related to one of the career clusters. Establishing these guidelines eliminates the general track and requires all students to have a focus in their selection of courses.

In 1996, the district seized an opportunity to apply for a School-to-Work Systems Building Grant, funded through the School-to-Work Opportunities Act. District leaders realized that many initiatives were underway—vocational programs, Tech Prep, and career development activities—but were concerned that these efforts were not well connected. When the district received the grant, they used the resources to connect many of their school reform efforts. This resulted in the design of a continuum of school-to-work activities from pre-kindergarten programs through elementary, middle, and secondary programs. They also outlined the roles of various staff members in implementing these activities including advisory committees, school-to-work coordinators and facilitators, core teams, and teachers. Finally, they established a timeline for evaluating the effects of school-to-work activities. As Carol Stacy, a district administrator explains, such change efforts are never easy. “It’s our first time through with this. With all these pieces, we always keep
doing things. We try to do what’s right for students, so we take ten steps forward. Sometimes we have to go five steps back, and then we move forward and that’s reality.”

In the spring of 1998, the district took one more step in their efforts to better prepare students for both careers and higher education. They joined the High Schools That Work reform initiative sponsored by the Southern Regional Education Board. High Schools That Work supports raising academic standards so that all students are prepared for work and continued education beyond high school. Many of the principles guiding this reform effort were already in place at Newtown, such as a required career focus, increased access to programs that teach technical skills, and increased access to academic courses that teach for college readiness. The district’s involvement in this initiative provides additional data collection and professional development resources to continue their efforts to raise academic expectations, eliminate general track courses, and prepare students for careers.

Explains Carol Stacy, “We believe the whole school must raise expectations. Courses like general English require less reading, and because they do, what happens? The students get further and further behind. You’ll not see the word ‘general’ in our materials anymore because that is a bad word in our district. We believe that students will rise to our expectations.”

Each of these local policy initiatives has affected the development and implementation of the Electronic Communications Tech Prep program at Maple Hill Technical School. The modernization of Maple Hill vocational programs, the district Tech Prep initiative, the required career focus, and High Schools That Work reform efforts have all created a seamless pathway of courses including those related to careers in electronic communications. The Electronic Communications program serves eleventh and twelfth grade students. Each grade-level group of students attends three classes at Maple Hill and returns to their home high school for the other half of the school day for further academic courses and electives. Electronic Communications students receive four course credits, one
each in English, graphics, business applications, and computer-aided design. The program has the capacity to serve approximately 60 juniors and 60 seniors. Upon completing the high school program, students can continue their study by attending one of several associate degree programs at local colleges. They are also prepared to apply to other four-year institutions or to seek an entry-level position in the field if they choose.

Organizational Conditions

The Electronic Communications team operates under several organizational conditions that empower them to make choices about curriculum, instruction, assessment, and student discipline, supporting the integration of academic and vocational education. The team includes four teachers—language arts, computer-aided design (CAD), graphics, and business applications—who share three classroom laboratories at the end of one wing of the Maple Hill building. In the morning, they have the juniors for a three-hour time block. The team has authority to use time and laboratory space as they see fit. They developed a regular schedule in which the students are divided into three groups that move through three one-hour "rotations," one in each laboratory. There is no bell to signal the end of a rotation. Teachers are cognizant of the time and remind students to move to the next classroom. In the afternoon, the team runs the same type of schedule for the seniors in the program. The team members share a common lunch time and a common planning period at the end of the day. Randy, the CAD teacher, explains the importance of having contiguous space and time to meet together as a team.

They set us up to succeed. I've seen other programs that didn't have common planning time, didn't have the resources close together and without that you can't form that bond. If you are not teaching with that person every day and changing rooms with them every five minutes, I just think it would be very hard to do especially if you had to meet on your own time after school. Being close together has nurtured a relationship and we're committed to it. They set us up right in that sense.
With four teachers and three classrooms, one team member serves as the “integrator” every fourth day. When in this role, the teacher can assist other teachers in the three labs, work with students individually, or deal with inappropriate student behavior. In the graphics lab one day, the language arts teacher was the “integrator” and took the responsibility of playing the customer. She roamed the classroom, stopping to talk individually with students and critique their work on a project to design a greeting card.

“Now if I were the one paying you to do this design for me, I’d have some concerns about . . .” Though she was specifically looking at grammar, word usage, and sentence structure, she occasionally questioned students about the components of their design. This structure allows the teachers to clearly understand what other team members are teaching and illustrates the importance of the relationship of the team for the students.

With this structure, the team has the ability to use time flexibly and more efficiently. This is possible when all the teachers on the team communicate their needs and see the benefits of altering the regular schedule. With the team members in agreement about the schedule for rotations, the team set a goal of regrouping students to allow them to complete projects that need more time. Olivia describes the importance of flexibly using time.

If I had a major project and I said, ‘Hey I really need more time,’ I think that . . . [because we share the same] philosophy it would be easy to regroup. Elizabeth and I, we’ve just completely been together all week because the kids are doing a PowerPoint presentation and a speech and fliers for their campaign for [Business Professionals of America] and we’ll have our elections on Friday, so Elizabeth and I have just teamed all week together.

Similarly, students who have finished work in one rotation and wish to complete work in another laboratory might do so. Randy’s goal is to have students moving between the labs when work in one lab is finished.

I think we have the option this year that students ought to be able to specialize or do extra time. If they are finished with an activity in my room there is no reason why I need to give them busy work. If they say, ‘Hey, can I go to Mr. Roberts’ lab and finish working on such and such?’ or ‘Can I go work on my CAD?’ If there is a computer available, there is no problem with that now.

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Another area of responsibility for team members that builds their interdependence and fosters the sense of team is the selection of new members. Team members participate in the interview process to select new teachers for the team. The principal feels this gives the team “ownership” in the process and provides an opportunity for the teachers to focus on “looking for a team player.” Randy describes the experience of interviewing and making a connection with one candidate’s views on technology.

We had two candidates, because it’s pretty unique, a computer graphics person, so we did two candidates and one person... he just wasn’t a fit. And Alan, well he said technology is like teaching a tool. It’s like a software application, it’s a computer, it’s a backhoe. Those are all tools. Alan is a great technology person. I was a little intimidated because I was like the big techno geek. But in a very different arena. So in talking with him, I think we are going to play off each other really well.

The Electronic Communications Tech Prep team has also had access to a wide variety of external experiences, ideas, and networks. In the summer of 1998 alone, members of the team attended a state Tech Prep Summer Academy for teachers, a state vocational education conference, a Model Schools conference in Atlanta, a national High Schools That Work conference, and a retention conference in New Orleans. In addition to the team members themselves, other teachers in the building have had these opportunities as well, broadening the team’s professional network within the school building. As Olivia describes, “We really have the opportunity. And we are getting more people in our building to take advantage of that. We are getting people out and they’re hearing what’s going on.”

The district also supports parents and counselors in attending external conferences with the teachers when appropriate. “It is very important to bring counselors, parents, and other teachers on board with what it is you are trying to do,” shares the vocational administrator. These professional development experiences are supported through grant funds from the regional School-to-Work office, state school reform grants for professional development, and vocational education or Tech Prep funds.
In addition to professional development workshops and conferences, team members also have the opportunity to participate in business externships in which they shadow someone in a local workplace. Olivia was placed in a local business and describes how that experience will impact the learning experiences she provides for students.

What an educational-centered factory system that is! They offer tutoring for their employees, offer coursework, they have divided their factory into teams, into little businesses within the whole organization. That team is in charge of how their production gets done. They have team meetings on company time. So we do a lot with teamwork and everything in the classroom.

In spite of all the support the team has had in creating a structure that fosters their interdependence, they still have ideas for improvement. For example, the location of the program limits opportunities to integrate with other academic areas besides language arts. Since students take other academic subjects back at the home high school, there is no effort to relate that content to the technical skills the students are learning in the Electronic Communications program at Maple Hill. Ultimately, the computer-aided design teacher would like to integrate other academic subjects into the team. “I’d like to be a self-contained entity here. I think it would be so neat to have a math instructor who taught CAD with me and then I could roll my CAD lesson right into a geometry lesson because they go hand-in-hand.”

Human and Social Resources

Several human and social resources support the integration efforts of the Electronic Communications team. These include administrative support, business and industry partnerships, and linkages with local colleges and technical schools. These relationships enhance the work of the team and provide a supportive framework for their integration efforts. Some factors related to human and social resources, however, constrain the work of the team. These constraints include an occasional misunderstanding of vocational education on the part of some teachers and counselors in the district. At times, these
misunderstandings make it difficult to recruit students for the program. When students are inappropriately placed in the program, they can also be a constraint to the team’s integration efforts.

“One of the keys to reform is having that support from your superintendent,” states Carol Stacy, a district administrator. “We have been very fortunate that whoever our superintendent has been we’ve had that support.” During the implementation of their school reform efforts over the last eight years, Newtown City Schools has had several superintendents. Yet each seems to have been supportive of the district’s efforts to better prepare students for the workplace by raising academic standards and requiring a career focus in coursework. Carol Stacy explains this support.

Our current superintendent this spring went into every one of [our programs] in each of the buildings and talked to the students to help support that buy-in by other staff members, which I thought was wonderful and he volunteered to do that.

The visibility of the superintendent in attending significant events and showing appreciation for such programs also seems to be very important to the teachers on the Electronic Communications Team. “Our superintendent . . . is absolutely wonderful,” explains Olivia. “He is an advocate of vocational education . . . He came to our Career Passport ceremony that we had last spring and spoke to the kids and really is an advocate.”

In addition to the support of the superintendent, the teachers on the Electronic Communications team also value the help of the building principal at Maple Hill and the supervisor for career and vocational programs. Olivia describes the principal’s role. “She has a strong vocational background and she’s been very supportive.” Such support is usually evident in making sure the team has the resources they need to accomplish the goals they have for students. Olivia explains how important the building administration support was, particularly as the Electronic Communications program was first initiated. “Even to set [the program] up initially with two complete IBM labs. There are 22 computers here, 22
next door, I think we have 26 Macintosh. I mean to make that type of financial investment before we even have the first students recruited.”

At the outset of the program, the support of the curriculum specialist was a key element in recruiting the type of teachers needed for the Electronic Communications team. Olivia, satisfied with teaching language arts courses to several different vocational programs at Maple Hill, probably wouldn’t have joined the team had it not been for the encouragement of the curriculum specialist at Maple Hill.

I was kind of torn because . . . I didn’t have any technical background or anything. So I kind of sat on the fence. And finally our curriculum specialist, who was in charge of getting this program on board, she convinced me that what they really needed was somebody who was flexible, that was willing to go with the flow with the change and whatever. And she really thought that my strengths fell in that area.

With the support of the district, the Electronic Communications team carefully cultivates the support of business and industry for the program. Business and industry stakeholders are purposely involved in district planning at all levels beginning with the district’s business advisory committee. Carol Stacy, a district administrator, engages business and industry representatives in decisions such as the selection of a new career assessment. “We brought all kinds of stakeholders together to decide whether this is the career assessment we needed. So we truly do try to talk with each other.” Similarly, when the district was trying to coordinate all types of reform programs under the School-to-Work Systems Building grant, business and industry were consulted. Explains Stacy, “What we did was we looked at the pieces we had in place in our district, and we called in our 32 business and industry stakeholders and said, ‘What do you think we need?’ And they shared with us and we wrote the grant to try to fit the pieces.”

Since business and industry have this level of involvement, the Electronic Communications program reaps the benefits of the support in several ways. First, the teachers have business sites at which they can experience externships. These externships provide opportunities for teachers to observe and participate in current workplace
environments and ultimately, to design their instruction to prepare students for those types of environments. Secondly, business professionals in the community support the Electronic Communications program by serving as mentors for students. All juniors in Tech Prep programs are assigned career mentors with whom they must spend 20 hours each year. These mentors help students chart their career goals, see how the information they are learning is used in the real business world, and establish networks within the field.

As a Tech Prep program, the Electronic Communications team must also have the support of local colleges and universities that provide associate degree programs in which students can continue their education in computer technology. The district has formal articulation agreements with three local postsecondary institutions. Yet there are continued challenges. The number of students attending these institutions is not always as high as the institutions would like them to be. Some students choose a four-year college instead of an associate degree program, while other students find a position in their field immediately following high school graduation.

There are several factors related to human and social resources that serve as constraints to the work of the Electronic Communications team. Perhaps the biggest obstacle is the lack of understanding about the program on the part of some teachers and a few guidance counselors in the comprehensive high schools in the district. “I don’t think everybody in our district is completely sold on vocational education,” Olivia explains. “They just don’t realize what we have to offer at Maple Hill.” Olivia feels that the attitudes on the part of other staff may stem from a lack of knowledge about the programs offered at Maple Hill, particularly Electronic Communications.

There needs to be some, you know, some communication back and forth. Because I’ve had people come visit me over here and they’ve said, ‘We never dreamed what you’re doing over there.’ Even some of the counselors. I had an opportunity to talk to a Clearview counselor when we were [at a conference] and she kind of hit me with a couple of things and I said, ‘Well now wait a minute, let me explain this to you.’ And she said, ‘I had no idea.’ And you know, by the same token, I don’t know what innovations they’ve got in their classrooms over there either. And I
think our time schedule during our day puts that constraint on us. We really can’t go visit them and they can’t come visit us.

Teachers on the Electronic Communications team occasionally deal with a negative image of vocational education, which serves as a constraint to their work. Olivia describes her own feelings about working with vocational education and what she has experienced in terms of attitudes within the community.

I think when I first came over here it bothered me a little bit. And another teacher and I said we almost felt like we’d lost . . . the respect that people have for you when you tell them you are a teacher. And here’s a couple of examples. My mother was talking to someone. They said, ‘Oh where’s Olivia teaching now?’ and she said, ‘Oh, she’s at a vocational school.’ And mom said they looked at her and said, ‘Oh, how long will they make her stay there?’ And I was having a conversation with a lady one day at the tennis court and mid-way in the conversation she said, ‘Now where did you say you taught?’ and I said vocational school in Clearview. And she physically picked her chair up and turned her back on me. And didn’t talk to me the rest of the time. And then the third one was this man who said to me, ‘Well you know I didn’t used to think we should vote for these bond issues and stuff for vocational schools, but after I got to thinking about it at least it does keep a few of them out of jail.’ And like I say, that maybe bothered me for the first year and then after that I just became so involved with everything I thought you know, if they don’t have an appreciation then that’s their loss. If they can’t see that college is not for everyone and if they can’t be realistic and say, hey, where does the auto mechanic that fixes my car get his training, well then they’ve got some real difficulties. That’s their problem not my problem. I love what I’m doing.

Such attitudes may also be pervasive among guidance counselors or teaching staff not directly involved with the Electronic Communications program or other programs at Maple Hill Technical school. Staff members have heard that students may be advised against enrolling in vocational or Tech Prep programs. But the administrators at Maple Hill and the teachers on the Electronic Communications team have used several strategies to overcome these barriers and build the understanding and support of other school staff, parents, and community members.

One of the things that we learned when we reached January of 1998 and the students are six months away from graduating is that we still had some non-believers in [what we were doing]. They believed when the first superintendent left that it would go. And then certainly when the second superintendent left it would go. And we developed . . . a guidebook. These went to counselors and principals and assistant principals at middle and high school level to help share the understanding. So in this guidebook, it helps them see some of the questions, some of the pieces that need to be in place for [this initiative] to come on board.
In addition to this guidebook, building-level committees of teachers at the comprehensive high schools are consulted about decisions such as participating in the High Schools That Work initiative. "We have a very tight teacher contract and we have [a site-based management team] in each building and they make those decisions," Carol Stacy explains about the involvement of the teachers in the decision about High Schools That Work. "And they said, 'Okay, we'll listen to this.' And they approved it. Without that we could go no further." Once the decision had been made and site visits were arranged to learn more specific information about how to implement High Schools That Work reforms, those teachers, as well as parents, were included on the visiting teams.

The student population enrolled in the Electronic Communications program is another factor that can either constrain or enable the work of the teaching team. The student population is very diverse and that creates challenges in motivating the students to do quality work as well as in meeting their learning needs. At first, there were some problems with recruiting the kind of student whose needs would best be met by the program. "The first year, that was a disaster class," Olivia describes. "[We] needed numbers to get this program running and [the students] were rebellious. They didn’t buy into Business Professionals of America. They fought us every inch of the way on everything.” Randy explains how this diversity creates a challenge.

That’s tough in delivery because it’s not a class recruited solely like those who just want to draft. Some students have a very hard time learning visually like this and it’s so visual they have a hard time visualizing how you see a floor plan, visualizing what that space would look like as three dimensional. That’s kind of tough. Designing lessons, that’s a challenge because we have some kids who have basic computer skills coming in and we have some kids who have amazing amounts of knowledge. We have one of our graduates, when he came into our class he [had a lot of technical experience]. . . . I learned so much from this kid. And I taught him tons of stuff about Auto CAD, too.

The most recent group of students represent “various cultural groups,” explains Randy. “I mean we’ve got the skaters, we’ve got the skate boarders. We have athletes that are prominent. We have the computer nerd group. We have the artists.” “We have a good
sampling of people from all different cultures within that home school,” adds Olivia. “And I think that our best recruiters this year are going to be our students.” The teachers and the building principal hope to design an effective marketing program to recruit next year’s students so that those entering the program will be well matched to what the program is designed to do.

School Culture

The Electronic Communications team works within a culture that fosters the integration of academic and vocational education. That culture is best characterized by four factors. First, the team shares several beliefs about teaching and learning, including a commitment to connect student learning to the real work world, an expectation of high quality in student work, and the teachers’ role in modeling lifelong learning and collaboration. Second, the culture in which the Electronic Communications team works reflects a commitment to teamwork and a strong sense of collegiality. Third, the team believes in collective practice and continuous improvement. Finally, their interactions as a team and with students illustrate an ethic of caring.

Beliefs about teaching and learning. The teachers share a common vision for student achievement—students should come out of the Electronic Communications program with more than merely knowing how to run graphics or computer-aided design software applications. As Olivia describes, “We believe that when students work through problems they retain information better. Plus, it allows them to learn to think outside the box—an absolute necessity in the workplace.” Randy echoes this view of learning.

I could teach you Microsoft Word 6.0 and if you memorized every command in there, that would be valuable for six months until the next version comes out. Now granted some of that would transfer. What you want to teach is that ‘with-it-ness,’ those people that can go into any computer package and just learn it instantly. It’s a style of thinking, it’s a type of problem solving and that’s what we do in here. I think we teach that. I really hope we do, because that’s what’s valuable, that’s what’s going to make kids money. If you teach them to learn.
The teachers believe the way in which they integrate the content of the program contributes to this type of learning. "When we take the disciplines and mesh them together, the students don't just see English as living out there in isolation, CAD in isolation, and business and graphics all in isolation," Olivia explains. "They see how all these kinds of things can work together. Because when they get out in business and industry they are not going to have just one little niche to work with, they are going to have to be able to combine all of the tasks."

There is a high level of student engagement in the Electronic Communications program. In the classrooms, students are intent on their work, sometimes talking with each other to share information or help each other. Perhaps this is because students are routinely expected to apply what they are learning to real-life tasks and problems as opposed to merely practicing discrete skills. The graphics teacher asked students to design a greeting card for a teacher who was ill. "I chose the get-well card because it allows the students to apply all the skills of 'layering' rather than just doing those skills as part of a regular tutorial." As students work on such assignments in class, the teacher circulates to provide technical help, answer questions, and check student progress.

One of the most important considerations the team makes as they design instruction is how students can relate what they are learning to the world of work. "Our students are hands-on and they really need to see a relevance," Olivia explains. "They need to see a purpose and everything that I teach I try to show them a reason for it." To achieve such relevance, the Maple Hill team commonly designs instruction around projects. The teachers plan projects that are focused on real workplace problems, require students to demonstrate knowledge in an applied way, and culminate in authentic assessment of student work. Early in the year, the senior students were presented with a cellular phone project. They were asked to design a box front design, banner graphic, side panel, kiosk, and product packaging for a new brand of cellular phone entering the local market. In addition, they
were to write a news release to announce the new product. The team worked on making the project as authentic as possible by stating client requirements for the work including stipulations for text and graphics. To accomplish the project, students used knowledge and skills from graphics, computer-aided design, and Language Arts. The team also designed a project in which students created a children’s magazine and another in which the students wrote and published safety manuals for various lab settings at Maple Hill.

Ultimately, the way in which the team assesses student performance is also designed to prepare students for the workplace. Their assessment practices illustrate the expectations they have for high quality student work. The teachers frequently use authentic assessment strategies such as oral presentations, real life products, or portfolios. Randy explains why traditional paper and pencil assessments seem insufficient.

I’m not a big test person per se. I guess I believe what I want to see is application. If you go to work drafting for any company in the world it’s not, ‘Welcome to your first day at work, put your books beneath your table and go ahead and start.’ Almost every evaluation I give is going to be open-notes because if they spent the time working to record that information they should be able to use it. There are some things that have to be memorized or I guess if they aren’t familiar with the content enough that just the volume of the test would be too much to have to flip through a thousand pages to learn it. So you can always forget a couple of little points, but if you aren’t with it, you don’t have the hang of the test. I do a lot of things that can be resubmitted.

The members of the team frequently work together to assess student work. “When students do presentations, we’ll all sit here and listen to the presentations and kind of make our own notes,” explains Olivia. “Then we’ll work together on compiling a grade.” The assessment practices are also designed to prepare students for the workplace. At the end of the program, students complete a career passport that illustrates the competencies they have achieved through the program. Parents and employers have responded positively to the passport and some students have taken the passport to their college interviews as evidence of their accomplishments.
During classroom instruction, the teachers model lifelong learning and collaboration. As Randy explains it, teachers need to convey to students that everyone, including teachers, is a lifelong learner.

I guess with my teaching style they know I'm human... I will say, 'I don't know how you do that. Let's figure it out together.' And I think that's really important. I've seen some teachers who are a bit more rigid and they need to be the authority and that's very difficult because if you are communicating 'I know everything' that means you can't learn any more. Does that mean you can train them to this level where they know everything? Well no, that's impossible. And I think modeling that openness, willingness to communicate, discussing things with students is important.

As the teachers integrate their curriculum, the actual classroom teaching reflects their level of collaboration. Olivia explains a recent class in the computer-aided design lab.

The other day Randy and I divided the period. The first part of the period I taught note-taking skills and the second part of the period he taught an introduction to Auto CAD and they were utilizing the skills that I taught them at the beginning of the period. And when I did my communication module, he jumped in and used an analogy about how the communication model really tells how a computer works, with the keyboard and the virus being interference and all that kind of stuff. So we just tag team so much.

Working this closely as a team requires much organization in instructional planning, as well as the flexibility to change the course when things aren't working. The teachers are pleased that the students are able to witness a team in action. "So [the students] see how these relationships form and how you use your strengths to help out others," Olivia explains. "They see how things are filled in. The modeling means a lot." Their ability to blend instruction so that it relates to the world of work as well as to model the kind of collaboration and lifelong learning important to success in the workplace ultimately rests on yet another aspect of the culture in which the team works, their commitment to teamwork and collegiality.

**Teamwork and collegiality.** One of the reasons the team has such a strong commitment to teamwork is the belief that their participation in the team makes them better teachers. Randy explains the impact other team members have on his own development as a teacher.
Teaching in a team is incredible. You get to see how other teachers work day-to-day. Just through all the planning and all the interaction, it was very easy to learn different teaching styles. It definitely showed me things that I could do to improve how I taught. I definitely had a lot of support when I first came in, as far as just the little things—how the paperwork works, you know, how all these different types of things work. You just can't beat day-to-day interaction with another teacher right there either next to you or in the next classroom.

Similarly, Olivia "loves the interaction with other teachers." As a language arts teacher, she feels being with the vocational teachers gives her an opportunity to pick up some technical expertise along the way. Working as a team also results in more effective handling of student discipline problems. "If someone is having difficulty with a student, someone else is always available to say, 'Well, let me go talk to them.'" Olivia explains. "And then, a potentially serious problem is gone."

This sense of teamwork is not something that happened automatically when the team was established. Rather, the sense of teamwork that presently exists has been forged through working together over the early years of implementation, including learning how to work through problems, conflicts, and disagreements. As Olivia states, "It's to our credit that we've been able to create a strong team. Being forthright and willing to talk is very important." Team members feel most problems can be resolved with good communication skills, carefully developed over time. At first, the team relied on their own patience and persistence with continuing to make things work. There were some disagreements about how to regroup students to work on special projects and how best to design some instructional units. Yet in spite of these differences the team members have established a close rapport.

One of the best examples of this kind of rapport is evident in the relationship between Randy and Olivia, the members who have been with the team for the longest period. Randy describes the way in which he and Olivia can openly express disagreements and yet continue to respect each other as professionals.
I tell you Olivia and I have become very close through the four years. And it’s amazing. She is the only person I would say in my life that I can have a heated, really upset argument and then within 30 minutes or so de-escalate that. It’s like ‘Well I hate to see we don’t agree but...’ We’re just really able to let that go and that is truly unique. I’ve never really experienced that before. And I think we have a similar personality type like that. We can get some of that emotional frustration out through the discussion, but then step back from it and not hold on to that. It is really unique and I’m really happy that exists.

Olivia describes the same situation and arrives at the same conclusion as Randy.

Randy and I we really had [an argument] one day after school about a student. I mean I just saw this student in one way and he saw this student in the other way and I mean we went at it for probably 20 minutes. And then when we thought we’d said everything there was to say, I said, ‘You know, you want to go down to the pop machine and get a Coke now?’ And we walked out the door and there were a couple of teachers standing out there and we said, ‘Could you hear us in there?’ And they said, ‘No what’s the matter?’ I said, ‘Well, we were really having quite a tiff in there.’ Then the other teacher looked at Randy and said, ‘Oh, you just decided to agree with her?’ He said, ‘No, we agree to disagree.’ And the next day, I’m not still aggravated at Randy or anything or he’s not aggravated at me. We just say it like it is and we have that rapport with each other that we don’t take it offensively when one of us has a different opinion than the other.

For this team, it’s not that they agree on everything, but that they work their conflicts through and maintain respect for the members of the team. “It’s a balance,” explains Randy. “I think anybody can be a team player if they work at it. They have to be invested in it. I think that’s a humbling experience a lot of times. Just kind of stepping back a little bit and maybe not worrying about your own ego as much. It’s just something I value and I think we all do.”

The collegiality shared by the team members has allowed them to assimilate new teachers on the team and to strengthen their capabilities. “We’ve always made it a point that if there is something going on we put it on the table and we talk about it,” describes Olivia. She feels the team members have grown to enjoy and respect each other as people, and that has fostered better working relationships. “We’re friends... truly liking each other makes flexibility and open mindedness easier.”

**Collective practice and continuous improvement.** The teachers plan and deliver instruction collaboratively. During instruction, the teachers move freely between the
three computer laboratories that serve as classrooms for the Electronic Communications program. Consequently, they are aware of what is happening in each classroom and are integrally involved in instruction. On one particular day, the Language Arts teacher explained, “I am the integrator today. I am in and out of all three classes, emphasizing the notetaking, emphasizing the communication skills. For the past three weeks, I’ve been teaching pretty straight English classes and this week I’m glad to be rotating around the labs asking students to apply what we’ve been talking about. In the graphics lab, I’m the ‘picky customer’ who looks at their work in progress and says, ‘Don’t like it. My concern is . . . .’” The Language Arts teacher has often been asked, “Who’s in charge in that program?” She enthusiastically answers, “No one. We all take responsibility. We have an emotional investment in this program and we want to make the team work.”

One example of the team’s sense of responsibility for collective practice is reflected in their strategy for dealing with the absence of a team member from school. First the team assesses what the substitute teacher is qualified to do. This is particularly important because of the sophisticated level of technology content taught in the courses within the program. Then the team will consider the content being taught and the kinds of learning activities they have originally planned for students. Taking these things into consideration, they will modify the lessons, regroup the students, and even change the rotation schedule to accommodate for the absence of the team member, build on the capabilities of the substitute teachers, and continue to offer rich learning opportunities for the students.

When planning instruction, the team reflects on past practice and revises or creates new ideas based on their experience and their knowledge about the students. “Every year has been different. This is the fourth year and we start over again,” Olivia explains. “You assess the kind of kids you have and you realize that some of the things you did before, they’re not going to work with this particular group.” Randy describes the team’s experience with reflecting on their practice as they introduce and refine a project.
The kids might not even know it happens, because we play off each other so well, but we might, we'll spend eight hours developing this cool project that we think the kids are going to love and we think they are going to get hold of this concept and run with it. And you introduce it and five minutes later the students are like, 'What's going on?' And you have to kind of think, 'Well, what happened here? What did we do wrong?' And when you involve four instructors it's not like just an issue of going back and redoing your lesson plan. You have to re-engineer this delicate rotation and balance of everything that was going on with your other instructors.

To accomplish this balance and persevere through a sequence of planning, taking action, and reflecting, the team relies on a strong sense of caring about each other and about the way in which their actions will affect the students. This sense of caring is another important aspect of the culture surrounding the Electronic Communications team.

**Ethic of caring.** Through their interactions with each other as a team, the teachers have created a culture that reflects an ethic of caring. They are sensitive and responsive to each other's needs. "We're such good friends that if somebody comes in and they are down, somebody else picks them up," explains Olivia. "You don't stay in a bad mood around here. When I lost my father last year, they were just absolutely wonderful. I mean, some days I'd be upset and they'd say well, 'Why don't you just rotate in with me so that you don't have to have total responsibility for the classroom today.' Everybody is very concerned about others in that way."

This sense of caring also extends to the commitment teachers make in their time and effort. For example, Olivia is the only teacher on the team who does not have an extended contract for service during the summer. Each of the other teachers is on an extended contract because they are vocationally funded. But since she feels that the team planning is so important, she often comes in on her own time during the summer. Olivia explains why this is important to her.

Because if I'm not there, there's a step missing if you are trying to create an integrated project. If I'm not there to get my two cents worth, well then I've lost out, the team's lost out, and so I try to come in at least two or three days of the extended time anyway, regardless of whether I get paid or not. But that is a constraint, and I think it bothers some people more than others in an integrated system. But that would be a contractual thing, you know, you'd have to go back
through the contract, say how can you get certain academic people on ... so it
would never fly. So you just learn to work around it and say, 'Oh well what the
heck.'

This caring attitude also extends to the team's interactions with students. "I guess we are
just always thinking about the kids," states Olivia. "It's not the curriculum that's in the
back of my grade book, it's the kids that are the center. And I think we can meet their needs
more individually. A kid can get whatever they want out of this program."

Randy reflects his caring attitude and empathy in describing how important it is to
establish an environment of safety and trust in the classroom.

I think keeping a safe environment in the classroom, you know the no put-down
thing and sticking to that. The kid who overhears a comment, he feels
uncomfortable because those kids are a little intimidating and that plays back into
my own high school years because I know I was kind of a shy, reserved person in
a lot of ways. You know, I remember little things that would make me feel
uncomfortable.

Ultimately, the team's ethic of caring with regard to students is illustrated by the way in
which they deal with behavior problems. They work together to de-escalate conflict and to
guide students toward more positive behavior. A hallway bench between the classrooms
serves as a place for students to reflect and signals other teachers to assist in resolving a
problem. Randy explains this process.

It's consistent and even discipline. We almost never send a discipline referral down
to the office. A lot of times if it escalates and a student is not going to respond you
might put them out on the bench. In the process what will happen is that another
teacher will just kind of walk out there and say, 'Hey what's going on, can you tell
me a little bit about what's up?' 'Oh, Mr. Wise was so mean to me.' 'Are you sure
it happened that way?' And then your team member can also help de-escalate you,
because you get hot and your vision gets a little blurred by things. Even though you
try, it's difficult to see what really may be the source of the problem. And I know
we've all been in situations where hearing a perspective that was a little different,
having a mediator allows both sides to back down. So it helps all ends.

As Olivia describes it, "The kids just feel like they always have a port in the storm. That
there is always somebody that they can go to. If one of us isn't explaining something just
the way they need, they have somewhere else to turn."
Outcomes of Integration

The efforts the Electronic Communications team at Maple Hill has made toward integrating academic and vocational education have resulted in several outcomes for the school, the students, and the teachers themselves. In terms of the total school program, the Maple Hill principal sees the Electronic Communications program as a model for all other programs in the school. "If we could move the whole building like Electronic Communications," she states, "it'd be great." The Electronic Communications program is also attracting a more academically inclined student, creating a more diverse student population at Maple Hill. "We're having a lot of kids who are now in Algebra II as opposed to having just a geometry class," Randy relates. "We're getting some more skilled kids into the program." Yet these are students who may not have been well served in a traditional college preparatory program. "One of our star students did not do well in college prep at the home high school," explains Olivia. "But when he came over here and got in this program that was hands-on and you've got four people always looking over your shoulder, you know, urging you on and everything, he did wonderfully."

There are several student outcomes as a result of the integration of the Electronic Communications program. The building principal cites the high level of technical expertise students have when they finish the program and the types of jobs they are getting. Many students attend college, with some going on to four-year institutions as well as to the two-year institutions that articulate with the Electronic Communications program. Last year, more students went on to college than in any previous year of the program. She also feels the students are more focused and seem to have better "goals in mind as far as where they want to be."

Indicators of student achievement are also high. Last spring, the Electronic Communications students scored higher on the placement examination given by a local community college than students in any other program at the school. While the principal
would like to see some improvement on the composition area of the college placement examination scores, the scores on technical writing were excellent. In addition, students are scoring well on other standardized tests which indicate they are ready for college-level courses. "I've been having kids take the competency test at (a local college)," explains Olivia. "I've had three or four of them come back and tell me they’re testing at English 111. And that I really highly prize."

As a result of the close relationship between the teachers and students in the Electronic Communications program, the students frequently return to visit the classroom and to express appreciation for what they learned. "I have a senior that graduated last year, he calls me every other day. He ran away from home this summer and I was the first person he called," Olivia describes. "So you really establish a bond with these students. You really get to know them on a deeper level." When two students who completed the program last year stopped by to visit on their way to class at a local college, they were asked what they liked about the Electronic Communications program. One young man replied, "The teachers know us. They care about us and they work together as a team."

The students have a variety of ways of expressing their appreciation. When Olivia received flowers from a former student on the first day of school, she explained, "That's the kind of thing our kids would do because they really see us as family."

Yet there are some problems with retaining students between the junior and senior year of the program. The principal feels the retention problem may be due to students being inappropriately placed in the program, and plans a better marketing campaign. The teachers also attribute the poor retention rate to a large number of the students having substance abuse or family problems. Ultimately, however, they stress the importance of recruiting students who are well-suited for the Electronic Communications program. "It doesn’t work for every kid," explains Olivia. "I mean we’ve had some failures. We’ve had some kids fail
last year and couldn't come back. We don't claim to work miracles. We don't reach everybody.”

In terms of the outcomes of integration for the teachers on the team, they have created a working environment which they would be reluctant to give up. “You would have to drag me out of here kicking and screaming to put me back into a traditional classroom,” states Olivia. “I don’t think I could do it.” When asked how she has changed as a teacher as a result of her work with the team, Olivia describes, “I am much more relaxed. And much more willing to try new approaches. And now I mean the sky’s the limit. I mean if you come up with an idea of ways to get something across to kids, we give it a shot.” Olivia and other team members have experienced a sense of support for improving their practice and their commitment to continuous improvement has heightened their sense of efficacy. “I just feel so much better about what I do,” relates Olivia. “I just feel like I am reaching kids better than I did before.” For Randy, the team has finally evolved to the point where they can begin to achieve their goals. He holds much hope for the future of the team and the program. “We have such a new horizon, it’s just kind of opened up,” he explains. “Now I feel like we can really take a lot of project ideas and expand on them.”

Ultimately, those outside the program can see the evidence of the level of integration achieved by the Electronic Communications team merely by visiting the classroom on any given day. As one administrator observes, “When you walk in there, you would never know when English is going on, because they have done those integrated projects so well. Those students are learning so much. And whether it is the literature component or the technical writing component, the students don’t even realize this is English. And that seems to be so much more powerful than when you have your technical class and then you go to English.”
Case Study 2: The Kennedy Career Center Business Technology Team

On a field trip to a local museum, the students gaze intently at the display of a 19th century garrison while one reads the description aloud, "Though townspeople worried that the drunken and disorderly behavior of some soldiers hindered the development of a civilized society..." After hearing about the attitudes of early settlers toward the soldiers and seeing reproductions of their early houses, the students record their reflections as part of a written assignment. Later in the museum, the students will view a replica of a riverboat dock and the shops and buildings that line the water, similar to the very settlement that stood in their community nearly two centuries ago. This museum is just the first stop on this day-long field trip for the Business Technology students from Kennedy Career Center. Following their tour of the museum, they will have lunch at a riverboat restaurant then tour one of the largest riverboats in the world, in port between cruises. This field trip has been carefully planned by the Business Technology teaching team as one learning experience during the Life on the Mississippi project. During this project, students will read the Mark Twain novel, study the history of their city in relation to the riverboat industry, research and develop travel itineraries for riverboat tourism, establish pen pals with students who live in communities along the Mississippi River, and create historical displays on music and food from the early 19th century. As a culminating experience, they will organize a dinner featuring foods from the period with a dramatization of the novel as the entertainment. In addition to geography, history, and literature content, the students will practice their skills in research, organization, and locating new information. The project represents weeks of planning, preparing materials, and making arrangements on the part of the Business Technology teaching team. They originally planned the project as part of a summer professional development seminar on project-based learning. It is one of four major projects the team has planned for this school year to integrate the Business Technology and
Travel and Tourism vocational programs with the academic areas of social studies, language arts, and mathematics.

The School Setting

The Westfield Vocational School District provides career training programs for over 3,000 high school students from a number of local school districts in their service area. The mission of the district is to prepare “students with the knowledge, skills, attitudes, and values that lead to success on the job, in school, and in life.” Career training programs are offered in several different buildings to students in their junior and senior year of high school. Students may enroll in full-day programs for one or two years. Their typical school day includes studies related to their career field, academic courses, classes in employability skills or continuous quality improvement strategies, and courses taught on the job or in a laboratory setting that focus on occupational skills. Some programs offer a half-day schedule in which students return to their home school district for academic and elective coursework.

The area served by the district includes rural, suburban, and urban settings. Therefore, the student body is diverse. In order to enroll in programs, students must have seven high school course credits and be able to demonstrate ninth grade proficiency in reading, writing, mathematics, science, and citizenship. Each year, nearly 75 percent of the graduates of the district’s career training programs secure employment in the field in which they were trained. Another 10 percent enroll in full or part-time postsecondary education programs. Approximately 10 percent serve in the military.

Kennedy Career Center is one of the buildings in the district and is located in an urban setting. The Kennedy staff developed their mission statement by consensus in 1996, “Our mission is to develop productive citizens prepared to enter, compete, and advance in a chosen career path.” The building offers many vocational programs, including Business
Technology and Travel and Tourism. Students can enroll in the Business Technology program for one or two years. In addition to lab and related occupational courses, they take English and technical algebra as juniors and social studies and technical communications as seniors. Students who have been through the first year of the Business Technology program can specialize in the Travel and Tourism program their senior year. This one-year program includes lab and related studies as well as social studies and technical communications. The academic and vocational teachers serving students in these two programs comprise the integrated teaching team that is the subject of this case study.

The Policy Environment

As the dean of instruction describes it, the reform efforts at Kennedy began with a belief among the district administrators that instruction was not as effective as it could be. Even though the district had implemented an applied academics approach as part of a statewide initiative to modernize vocational education in the late 1980s, there was still a feeling that students were not reaching their full academic potential. "We were working as hard as we could as individual teachers," explains Mr. Hardin. "But we were still having trouble with retention. We felt like students were falling through the cracks." In the spring of 1997, Mr. Hardin was part of a team of administrators pulled from their regular duties for two months for the purpose of researching a new direction for the programs involved in the Westfield Vocational School District. The team was identified by the highest levels of the district administration and charged with reviewing literature and research studies on increasing student achievement, whole school reform, and integrating academic and vocational education.

As they studied the literature, the team was intrigued by the success of organizing students according to "schools within a school," particularly around a career theme. They reviewed studies to determine the optimum number of students, scheduling suggestions,
and teacher characteristics. Flexible student grouping and block scheduling emerged as important components to successful reform. The team read for suggested policies guiding teacher selection, curriculum, staff development, and student support. They studied how best to involve business and industry through work-based learning experiences for teachers and students. Finally, they found an important link to continuous improvement and using student and program data to evaluate and drive the successful implementation of innovations.

This intense period of research and analysis resulted in a recommendation from the team to create "systemic change by establishing learning organizations around career clusters focused on making every student successful." A new environment would be designed to focus on improved student motivation, performance, and success. Three factors seemed to drive the team's recommendation. First, their research had guided them toward the need for smaller, caring learning communities within the larger school environment. Students and teachers needed to feel connected to each other in meaningful ways. Secondly, the team wanted to create an environment that would emulate a high performance workplace—the kind of workplace in which most of the students would eventually be working. A high performance workplace is focused on a vision of success and empowers the members of the organization to use their expertise to achieve that vision. Finally, the team felt the need to maximize teachers' effectiveness through the use of teaching teams. If the teachers were organized in teams and allowed to use their expertise cooperatively, they would have a greater impact on student performance than if they were working in isolation from each other.

The research team recommended a school structure in which academic and vocational teachers would be organized around career cluster teams such as Business Technology, Health, and Industry and Engineering. At Kennedy Career Center these career cluster teams would comprise two academies. The goal of each academy was to build a
sense of community, enhance teacher professionalism, integrate curriculum, and facilitate students’ transition from school to career. “Through this broad-based approach,” the district’s materials describe, “students acquire skills for the career of their choice while at the same time receiving academic training that can help them in any occupation.” According to the team’s report, the academy structure would be designed to “personalize relationships and focus on curriculum to support success for all students. The career clusters will have demanding educational programs and strong work-based learning experiences with local businesses which prepare students for the dual role of work and continuing education.”

In addition to the academy and career cluster structure itself, the research team suggested several ideas for supporting the success of the teaching teams. First, a Student Readiness Center would be needed to support students in maximizing their learning performance. This center was designed to support students in developing self-management skills and to assist them in creating outside career placement. Secondly, an Associate Development Center would be created to enhance each teacher's effectiveness and expertise. Working on the principles of adult learning and constructivist theory, the center would provide learning opportunities, assistance to teams, and resources for teachers. Finally, the research team emphasized the importance of strengthening the student mentorship program which links students with business and industry mentors, trains mentors, and evaluates the effects of the program on students.

Once the research team had made its recommendations, the district moved immediately forward in implementing the plan at Kennedy Career Center, with successive implementation to follow at other buildings. Early in the summer of 1997, a management team was formed at Kennedy for the purpose of organizing the cluster teams, identifying cluster leaders, and creating a building-level design team that would carry out the implementation process. The management team also established several success indicators.
and made a commitment to collect data around each indicator. Success would be measured by retention and attendance rates; the number of students completing the program; the number of students placed in employment, military service or postsecondary education; program enrollment; and learning gains as measured by standardized competency tests and career skills assessments.

It was at this point that the management team made a controversial decision. Working under the understanding that teams were best formed with teachers who volunteer for the assignment and value the opportunity to work on a team, they asked teachers to apply and interview for the positions on the cluster teams. This meant that teachers who were currently working in existing programs no longer held those positions. Though it created a level playing field and allowed the management team to build the best combination of teachers for the cluster teams, it fueled an uncomfortable situation for teachers already working at Kennedy, many of whom had held their positions for a number of years. As Jacqueline, a teacher on the Business Technology team describes, “That did not sit too well with a lot of people. So there was negative feedback from the onset, based on just that.” The administration, in an effort to select the best staff for the teams, recruited some teachers and also transferred teachers to other school buildings within the district. “So there were teachers out and there were teachers transferred in who had not applied,” Jacqueline explains, “Which made the application approach seem like, ‘How did that happen?’” This created some negative feelings and made it difficult to initially establish a strong sense of community and commitment to the team. “I would have done it differently,” Jacqueline suggests. “To me, you can’t do team building with some people unhappy about something. You have to start with everyone on the same page.”

This policy environment represents a fast-track approach to school reform. Once the district perceived a need for change, they engaged in a brief, yet intense period of research and based their action plan on those findings. Diving into whole school reform at Kennedy,
the management team wanted to create effective teams and sought to find those teachers best qualified. With little time to absorb the meaning of the cluster team approach, the teachers were asked to apply. This created anxiety. Yet in spite of this rocky start with the selection of the teachers for the cluster teams, the management team moved ahead to build an organizational structure that would support the development of learning communities and smooth over any initial discomfort on the part of the staff. By mid-summer of 1997, the cluster leaders and design team met to begin working out the details of the redesign at Kennedy and began to plan how they would maximize student performance under the newly formed academy structure.

Organizational Conditions

According to the recommendations of the research team, the career cluster teams at Kennedy Career Center were specifically designed to include a "small number of teachers with complementary skills who were committed to a common purpose, performance goals, and an integrated instructional approach." The organizational structure was designed to support such teams. First, it includes cluster teams who have common planning time and are empowered to make decisions about instruction, discipline, and scheduling. Secondly, there is a school-wide design team that makes decisions affecting all the clusters. Finally, teachers have wide access to external ideas, activities, and networks to support their professional development.

The Business Technology cluster team consists of the vocational teachers in the Business Technology and Travel and Tourism programs as well as the social studies, mathematics, and language arts teachers who provide academic instruction to students in those two vocational programs. There are seven teachers on the team who work with approximately 90 junior and senior students. The team members have common planning time from 2:30 to 3:30 each school day. Through mutual agreement, the team selected a
cluster leader. Jacqueline has served in the cluster leader role and describes her duties. “Being the cluster leader means leading the meetings, staying on target, doing the agenda, and then making sure the minutes are typed.”

One of the issues that continued to plague the implementation of the cluster approach at Kennedy is what the dean of instruction calls “cluster purity.” A pure cluster means that the teachers on the cluster team serve only the students in that cluster and no other, allowing the team to develop a collective responsibility for those students and coordinate instruction in all classes. The Kennedy staff hopes to achieve 100 percent purity in all the clusters, but two teachers on the Business Technology team—the social studies and mathematics teachers—serve students in more than one cluster. That means those teachers must be up to speed on what is happening with two different cluster teams at the same time. Unfortunately, the purity of a cluster may vary each year, depending on the number of students enrolled in various programs. This creates a lot of pressure on the teachers. Vicki, the social studies teacher, serves three clusters. She expresses her frustration on several levels. First, she has less flexibility in her time.

One of the problems that I have for me is that I see these kids first and second bell and I don’t see them again. And I don’t have the freedom in my schedule to say, ‘Okay, I need them one, two, three hours in a row.’ Last year I had that freedom, because I had Business Tech kids first, second, and third, then lunch and planning and then afternoon. But now I have first and second. Third is off. And then fourth is electronics. So if I want to give up my planning bell, which I’m sure I will be doing before the year is over, and do special things like that, I can, but then I lose time that I can’t gain back.

It also restricts her ability to be in other classrooms and teach as a team with other members of the cluster. “One of the key components of integration is being able to be in other classes,” she explains. “More of an interchange as opposed to, ‘Okay, everybody is going to be with Vicki this period.’”

As the Business Technology team has evolved over the first year of implementation, they have changed the way in which they use their common planning time to better meet their needs. At first, the team met daily. “We started meeting every day for a
minimum of a half an hour to make sure how did things go today, were there any discipline problems, trying to keep the behavior of the students as one,” describes Jacqueline. “So that you could all know on a daily basis what everyone was doing.” But these sessions, held during their time at the end of the school day, became too long. Teachers became frustrated about wasting time. Julie, one of the Business Technology teachers, was having trouble getting her work finished.

We did all of our meetings and stuff after school. That became a problem, because we all talked too much and before we knew it was 7 o’clock. Finally, I said my New Year’s resolution was to be out of here at a decent hour. Because even if we don’t have cluster meeting, I can’t sit at my desk because you walk around and you talk to people and you don’t get anything done. You leave here at 7:00 and still have two hours of grading to do when you get home. So if I start to get ready at 3:30 and get out of here by four, then I can go home and grade for two hours and be done. Everyone kept saying, ‘I don’t know how you are leaving at four.’ And I said, ‘Look at all the stuff I’m taking home. It’s quiet at home and I can get it done.’ We are all too gabby.

“So we decided that three days a week was probably okay. And then by the end of the year, we were meeting maybe twice a week, by that time,” Jacqueline explains. “Because we could actually interact and there were some things you could do by memo.” This year the team is meeting once each week. On other days, team members use that time to plan instruction or to attend other committee meetings in the school.

Since the change process at Kennedy was built on the principle of empowering teachers to make decisions about those things that affect their instruction and day-to-day work with students, the cluster teams were asked to determine how they would handle student discipline. This turned out to be one of the more difficult tasks of the first year, particularly for the Business Technology team. Jacqueline describes the struggle the team had with establishing student discipline policies.

Well we were having to do our own discipline—detentions and that kind of stuff. But that was very confusing. At what level do I not have that responsibility? I do not have that title, certainly, so who is going to believe that I can enforce a Saturday school on a student, if in fact he knows that I am not an administrator? That was the whole year, chaos, confusion. So by the end of the year I think, we got to the point where we understood. Things were rewritten, handbooks were rewritten, all kinds of stuff.
There were also problems with different cluster teams treating similar discipline situations differently. That became a problem with parents. Julie describes such a situation.

But what we ran into, we didn’t have this problem in our cluster but I know quite a few other ones did. Let’s say for example, somebody in our cluster went out to lunch with somebody from [another cluster]. They got caught. We gave one punishment and the kid from [another] cluster got another punishment, and the parents are upset because our’s was more lenient that her child’s. And a lot of other clusters got into big trouble with the parents.

The teams had to determine where their responsibility ended and where the dean of instruction’s responsibility would begin in relation to student discipline. Julie explains, “By the second semester, we had a flow chart of discipline that we used and that helped. I think over this last summer we came up with who did what and core rules for the entire school. So everybody will handle absence and tardies in the same way. It’s not really taking power away from the cluster, but the consistency, it just helps the kids a lot more.”

In order to resolve the discipline issue and other issues related to all clusters, Kennedy has created a design team. The design team consists of representatives from the administration, each cluster, and student support services teams. The regular meetings of the design team are conducted in such a way as to discuss and resolve concerns that emerge from the team. To accomplish this task, the agenda always opens with “parking lot issues.” Prior to the meeting, the members write their concerns on post-it notes and place them on sheets of newsprint. As the meeting begins each issue is addressed and the team decides who will take responsibility for getting further information or taking action steps to resolve the concern, hence getting the issue out of the “parking lot.” A typical agenda also includes such items as program marketing and recruiting, open house, staff and student dress, and bus information. Members are asked to volunteer to facilitate the meeting or to serve as scribe. Design team members then communicate information back to their cluster teams. Minutes are always recorded and distributed. “If it is important enough to meet,” explains the dean of instruction, “it is important enough to share minutes and information.”
The cluster teams at Kennedy also have control over the way in which they use instructional time. Occasionally, the Business Technology team will group the students differently depending on project work, field trips, or teacher absences. But this occurs between two or three teachers rather than with the team as a whole. Usually, the cluster follows the class schedule used by the rest of the building. Classes are approximately 50 minutes long and a tone signals the end of each class. The dean of instruction feels the team has not fully realized the potential they have to rearrange instructional time to meet their needs. Vicki echoes that feeling. “We’re not ready to play with time because we can’t seem to come to an understanding about that. I don’t ever intend to show another movie two or three days in a row. I won’t do it. So when I show a film now, I’m going to be blocking time.” Though there seem to be no real objections to doing this on an as-needed basis, the team has no immediate plans to alter the present class schedule.

One factor that constrains the academic and vocational teachers from working more collaboratively in classroom instruction is that their classroom space is not contiguous. The Business Technology area is the heart of the team’s space and includes a large, open instructional area with several classrooms across the back. These classrooms have large windows overlooking the open area. Such an area facilitates collaborative work. Julie explains, “The open concept is out here and the junior teachers meet at the same time. They did a lot of teaming.” Since the language arts teacher uses one of the classrooms facing this open area, she is the only other teacher on the team located next to Business Technology. The Travel and Tourism classroom is down a set of stairs and a hallway. The social studies and mathematics teachers are further down that same hallway among many other academic classrooms. Other than the Business Technology teachers, the team is too far apart to talk between classes or to informally step in and observe what is going on in another class. “It’s hard when we are this spread out,” states Julie. For Vicki, the location of her classroom
makes it impossible to even have a conversation with the other teachers. "I can't seem to find the time to get upstairs to Business Tech."

An unwavering source of support for the Business Technology team in their efforts to integrate academic and vocational education, is the district's support for access to external ideas, activities, and networks. Building a community in which teachers are continuous learners themselves is one of the goals of the systemic reform efforts in the district. Consequently, a Staff Development Center was designed to foster collaboration of teaching teams, facilitate teaming with business and industry, and enhance each teacher's performance. Several professional development seminars, planned in cooperation with area universities and the local professional development committee, are held in the district. One of the most valuable of these experiences for the teachers was a week-long project-based learning workshop held during the summer. When the Business Technology team attended this workshop, they were able to plan four major projects for the following school year. "Well, I think the project-based learning workshop was a big one," Julie describes. "That was a lot of fun. It was a lot of work for one week, but we already had in our minds what we wanted to do. So it was taking the time to sit down and regurgitate everything. And so we did a pretty good job." In addition to these local workshops, the teachers feel supported in attending other conferences and seminars. Vicki explains what this means to her as a teacher.

They don't hesitate to send you to places that are going to enhance your teaching. The most amazing thing, I got to go to the national social studies conference this year, you know, I never had the opportunity to go before. They paid for me to go. I came away so charged and excited. It's just wonderful the kinds of things they do to support you, to keep you charged for the classroom. I've been teaching 18 years, and there are times that I just get really burned out. And the [district] is so good about allowing you and really supporting that opportunity.

Teachers on the Business Technology team have also attended seminars on using technology in the classroom, mentoring new teachers, continuous quality improvement strategies, and integrated curriculum.
Human and Social Resources

A variety of human and social resources support the Business Technology team in their efforts to integrate academic and vocational education. These resources consist of a network of interpersonal relationships that establish a supportive environment for change, provide assistance in building team effectiveness, and create linkages with resources beyond the school environment to enhance the success of the program. For the Business Technology team, supportive human and social resources include the building and district administration and business and industry partners. The greatest source of human and social resources for the team, however, comes from the individual contributions each team member brings to the work of the team including prior experience and personal qualities.

Since the systemic change efforts to promote the integration of academic and vocational education were driven largely by the district and building administration, the administrators are an important human and social resource for the team. As the leaders of the change efforts, they created an organizational structure that they believe will foster integration, encourage the teachers on a daily basis, and provide assistance in working out problems or constraints. Jacqueline describes what it is like to have such a supportive relationship with administrators in the building.

Last year, Frank Shaw and Ted Bergen . . . the two of them were very close, they work very well together and they are open to suggestions. They are not on the power trip where someone would want to be afraid to go to them and say, 'Here is my idea.' For example, Frank was my mentor when I was doing my Masters'. He was encouraging all the way to go on and get this, to do this and so forth. I think for the whole cluster, it was a comfortable thing for us. Because they knew I could go to him and say, 'Frank we’d do this.' I have that rapport with him. Then they felt comfortable even though other people might not have thought he was as approachable.

The administration also enhances the teachers’ efforts to make changes in their teaching practice. Vicki feels strongly about the role the administration can play in supporting such change. “My director is one of those men,” she explains, “who makes you think about
other ways of presenting information, tries to really pull out the best in you as a teacher.”

The team members are also aware that administrators are essential in providing the organizational structure that will enhance their integration efforts. “You have to have your administration behind you,” Vicki states. “If they don’t really believe in this system, they’re going to be more content to go back to what’s traditional.”

One constraint with regard to the administration has been a few shifts in leadership during the first year of implementation. “We started off with Mr. Shaw and then they switched to Mr. Bergen in the middle of the year,” explains Julie. Both these administrators have been moved to another building to implement the cluster approach. There was also a change in the number of administrators and their titles—from three directors to one director and two deans of instruction. But the teachers remain hopeful that these shifts have stabilized. “If [administrators] keep their same positions this year, I think that will help a lot,” Julie states. “The consistency just helps the kids a lot more.”

The district administration also provides support for the Business Technology team. In their first year of implementation, the team experienced a major conflict among the team members. The district was able to provide an administrator who was well trained in continuous quality improvement techniques and served as a mediator for the conflict. At first, some of the team members had reservations about having the mediator. “I think that the cluster felt that we don’t need this, we can work through it ourselves,” explains Jacqueline. “But I knew that Sarah was asked to do it. Someone had to say something within that cluster to give someone at a higher level the impression that there was a concern, the problems with this cluster getting along.”

Sarah’s assistance, however, provided the help the team needed to work through that particular situation. “We didn’t feel comfortable voicing those concerns when it was just us together, but with the mediator in the room, then that seemed to help a lot,” Julie remembers. Even though many of the team members were familiar with the conflict
resolution techniques that Sarah used, it was helpful to have someone external to the team in a mediating role. Julie explains why this was so successful.

We had all at one time taught [Continuous Quality Improvement], so we knew the process that she was going through. But it helped us. Some of the different tools we used were the nominal group technique where you are writing things on the board. That helped because we weren’t actually verbalizing it, even though we could see who was writing what on the board, and we know each other’s handwriting, it was a little bit easier sometimes to get your frustrations out when you didn’t have to voice them.

The team members also felt that Sarah was well qualified to serve in this role. Yet at the same time, they realized the importance of their commitment to resolving the problem.

“Sarah does that and she’s really good,” Vicki states. “You have to be open to what she’s telling you and if you are a closed individual, you’re not going to hear it anyway. But Sarah is a real good support system for that.”

Another source of human and social resources for the Business Technology team are the linkages they have forged with business and industry partners. This relationship is seen as an integral part of the reform initiative at Westfield Vocational School District. Informational brochures about the district describe it as “an alliance of business and education.” Building on this theme, the research team recommended “a stronger more effective connection with business, industry, labor, and community resources” in order to develop the “individual goals, skills, knowledge, attitudes, and values of all our students.”

The Business Technology team has accepted this challenge by strengthening their business and industry advisory committee. The membership includes employers who can advise the program with regard to emerging trends within the industry and serve as mentors for students. Frequently, the advisory committee will also serve as an authentic audience for student performance. A recent advisory committee meeting included a skit performed by students depicting what they had learned in the Life on the Mississippi classroom project.

The team members themselves provide an essential source of human and social resources that support the team’s efforts to integrate academic and vocational education.
The resources each individual brought to the team were particularly important given the quick-start approach to the change process. For example, several of the team members had extensive experience with project-based learning and integrated curriculum. This expertise contributed significantly to the team’s integration efforts in the first year of implementation. Vicki served on integrated teams in two other school districts. “I’ve always been lucky,” she states. “Blessed from the standpoint that I’ve had teachers that were innovative and that I could bounce stuff off of.” Jacqueline is also an experienced teacher who has used project-based learning techniques in her classroom for many years. “I’m a projects person. I do projects all the time,” she explains. “I just had to now work with someone else’s topic and say, ‘Okay, let’s do this.’” Thus, these teachers bring a wealth of ideas and strategies for supporting those teachers on the team with less experience. Jacqueline explains how she assisted Julie in integrating curriculum, even though they were both new to the Business Technology team.

Even though we were coming in at the same level, I knew more about the district, I knew more about the expectations and so forth. And so we worked together in planning some things but we taught separately. And that worked out real well, because we had two different types of students. And we put them together for different workshops and other things, but as far as the integrating, we did the same thing at the same time.

In addition to sharing their expertise gained from experience, the team members also contribute personal qualities and skills that support the team as they integrate their curriculum. As they work together, they become more aware of each other’s strengths and depend on those individual contributions to move the collective work of the group forward. Again, these contributions were particularly significant during the first hectic year of implementation. “I think because we know each other so well,” explains Julie. “We know our strengths and weaknesses. You know, half the time it’s one person saying, ‘Okay, you write this better, you can type this, I’ll write this out and you type it.’ We just all agree with it because we know who can do what and who can’t or who does something better.” Jacqueline, for example, is very creative and the team relies on her for everything from
artwork to innovative ideas. As Julie describes, “Jacqueline has creativity coming out of her pores and she helps me a lot and it works perfect.”

These human and social resources—administrative support, business and industry linkages, and individual contributions of the team members themselves—have propelled the integration of academic and vocational education on the Business Technology team. These resources are one aspect of the foundational support that enhances the professional development of the teachers and drives curriculum integration. Both the human and social resources and the organizational conditions described earlier interact with a third component, the culture in which the team works, to create the impetus for change.

School Culture

Since the Westfield Vocational School District has as its focus the preparation of students for careers in the high performance workplace, the district staff strive to create a “corporate culture” quite different from the culture found in a traditional school setting. Staff refer to teachers as “associates” and to the district office as “corporate.” Administrative titles include “chief executive officer,” “chief operating officer,” and “director of associate development.” There is a standard of professional dress among the staff—ties and suits are the norm. The Continuous Quality Improvement (CQI) process and strategies, designed for fostering problem solving and decision making in productive and efficient workplaces, are an integral part of the district system. All staff are trained in CQI, a CQI course is required for students, and daily staff interactions reflect CQI strategies through meeting agendas and group facilitation techniques. Vicki describes her experience in this corporate culture.

This is not your typical school system. It’s much more professional and there’s a real professional mind set and it’s so refreshing. There’s the overall attitude that the [district] has, it just kind of permeates everything. It’s much more of a professional mind set and that comes from the top down I think, the folks who are in charge. I appreciate that.
The present school reform initiative itself was designed to create a culture parallel to that of the high performance workplace. With continuous improvement as its goal, a high performance workplace must be a learning organization. According to the research team, developing a learning organization is "an evolving process that involves all members of the team focusing on meeting the needs of the customer through continuous improvement." The process of developing a learning organization includes the identification of success indicators that would drive data collection and continuous improvement efforts.

Consequently, the entire staff at Kennedy Career Center is organized into teams to achieve this purpose. "The teams are finding ways to maximize student learning—intensifying instruction and positively impacting the six success indicators," states the research team.

This vision of organizational design frames the school culture in which the Business Technology team works. First, there is a strong sense of teamwork and commitment to democratic principles. Secondly, there are commonly held attitudes about teaching and learning including the value of integrated curriculum and project-based learning. Finally, there is an ethic of caring as illustrated by the team’s concern for the students and for other team members as well.

**Teamwork and commitment to democratic principles.** The Business Technology team operates on several democratic principles that support their functioning as a team. There is a sense of fairness and justice and a belief that everyone has the right to share an opinion and have input into the decisions of the group. When asked what prepared her for her experience on the Business Technology team, Jacqueline describes the importance of making a meaningful contribution to the group and focusing on the group success rather than on your success as an individual.

My father gave me the sense of fair play and also the confidence to know that I had something to offer. But I also had a father that was a strict disciplinarian about don’t open your mouth until you know what you are talking about. And I really truly have lived with that. If I don’t say anything it’s because I’m not sure or I don’t know the subject or I don’t have anything to add. But if I do say something, it’s going to be well thought out and then I’m really going to feel as though that
input was needed. And I don’t always have to get credit for every idea that I have. I can throw it out and the let the group get credit for it.

Yet thinking of the group first is not always easy for team members. Generally teachers are usually trained to teach independently, and may lack the skills or the motivation to work collaboratively with other teachers. As Vicki states, “I have to understand that there is a fear of losing control. We have never taught people that your success is in the success of your team.”

In order to strengthen the team, members attend to issues of trust and respect. Vicki describes the importance of trust, particularly in implementing a team-centered change initiative. “We need to know that if something doesn’t go right with the team, somebody won’t run to the principal.” One of the things the team learned from their first year of implementation was how to build that trust in spite of disagreements and conflicts. “I guess we just defined how much you can trust different people. We all got along, you know, really well,” Julie describes, “We had our problems up until I guess maybe spring break. Then we did a lot better.” Jacqueline compares the kind of attitude needed for a good team with a definition she recently saw on a poster, “Teamwork is the absence of whining, blaming and personal agendas.”

Since Kennedy Career Center took a quick-start approach in implementing their plan for systemic reform, the team had to persevere through a tough first year of change. In the newly organized team structure, the teachers were empowered to make decisions about many aspects of the school environment that had typically been dictated by district or building policy and handled by administration. As Jacqueline describes it, the responsibility for making decisions and establishing new policies created a good deal of frustration. “During the year there was so much of not knowing what direction the district wanted us to be going and everyone giving us their opinions and ideas. There was just a lot of, ‘I didn’t take that to mean that.’ Some people were really unsettled about the way things were going.”
In the spring of the first year of implementation, the team faced a critical conflict. Several team members felt comments they were making in team meetings were being shared in a negative way with others outside the team. This undermined the trust the team had built thus far. As mentioned earlier, a mediator assisted the team in resolving the conflict. Jacqueline describes the importance of the experience in working through the conflict as a team.

We all saw the need to talk about what was bothering us. I don’t have a problem talking about what’s bothering me but some of the people did and in these meetings they could talk or express it in the third person. And I think everybody got something out of that. It allowed everybody to step back and look at what they had been doing. It gave everybody the okay to change.

Working through this conflict with a mediator reinforced the team’s development as a collective group and their use of democratic principles of fairness and consideration.

During the first year of implementation, the teachers learned how to share their many responsibilities as a team. Initially, Julie was frustrated because one or two team members were doing an unfair amount of the work. “I said I can’t go on like this. I can’t go on trying to do a little bit of everything in this department.” Through the regular team meetings and discussion with a district supervisor, Julie and others suggested that everyone needed to share in the work of the team. “We had talked about divvying up . . . if everybody is responsible for one or two things, then if they need help (from others on the team), they’ll ask for it,” Julie explains. After some initial reluctance, the work is now distributed among the team members. “Now Sheila takes care of Advisory Committee, if she wants to call everybody and split the list up or if she wants my class to do labels and Jacqueline’s class to stuff envelopes, then we do that. But if she doesn’t ask for help, then we know she’s got it covered.” Learning how to negotiate the sharing of these responsibilities was one of the major accomplishments of the team’s first year together as it paved the way for operating more smoothly and eliminated a source of potential conflict.
Beliefs about teaching and learning. Though the team faced significant challenges in their first year of decision-making and developing the policies that would support their new structure, their beliefs about teaching and learning held them solidly together and fostered their ability to integrate the curriculum. The team members believe strongly in the importance of integrated curriculum. “The interdisciplinary approach helps because they see that all of us are working on the same page,” explains Vicki. “We’re modeling a lot of things when we do this. We are modeling teamsmanship. We are modeling problem solving. We are modeling crossing one area and idea to another, being able to transfer information. So the kids see that going on and I think that’s one of the biggest lessons.”

In spite of their beliefs about the importance of integration, some team members still feel the pressure of covering the curriculum in a limited amount of time during the school year. Vicki explains that integration involves being able to focus on the most important aspects of curriculum rather than feeling like everything has to be “covered.”

Teachers are imprisoned by curriculum. They write these curriculums, and we write these grandiose goals and objectives that have to be met, and there are teachers who are not as comfortable, with saying, ‘Oh, let’s change this.’ And I’m pretty comfortable with that. But there are teachers, and I have had that put to me here that say, ‘I can’t do that, I have to do this, I have to do this curriculum by the end of the year and I have to be here.’ I don’t believe that for a minute. I’ve got 18 years experience under my belt that tells me that if I don’t dot every ‘i’ and cross every ‘t’ on those pages, I’m not short changing kids.

At the same time, Vicki realizes that it is not possible to integrate everything in the curriculum, nor is it desirable. “I have certain subject matter that I have to do that may not be directly applicable to a lot of what goes on in Business Technology, though Business Technology is really very easy to relate to,” she explains. At times the team may choose to teach in a parallel way, aligning subjects they are teaching so that students see the relationships among what they are studying in various classes rather than using fully integrated projects. “We do a little bit of everything,” Vicki describes. “Individual, parallel, and integrated, too. I think that’s the beauty of being here, because we have that option.”
The Business Technology team also wholeheartedly supports project-based learning as a way to integrate the curriculum and get students actively involved in their own learning. In fact, they consider the projects they developed in that first year of implementation among their greatest successes. "As far as working on projects and project-based learning," shares Jacqueline, "we were able to do that very successfully." The teachers on the team created several projects in which all subjects were integrated and some projects that involved two or three members of the team. For example, the students organized and prepared an authentic British tea to increase their understanding of another culture. Integrating social studies, language arts, and business technology, students developed British tourist packages, created Power Point presentations on Great Britain, researched governmental relations and analyzed cultural differences. In a recruiting project, students created promotional displays to illustrate the vocational Business Technology program. These displays were developed through the Business Technology and language arts classes.

Fueled by the project-based learning workshop they participated in the summer after their first year of implementation, the team planned four major projects for the next school year each focusing on a specific theme—Life on the Mississippi, Hiroshima, Careers in Business Technology, and All Quiet on the Western Front. These projects include integration of all academic subject areas with the vocational curriculum. For example, the Life on the Mississippi project described briefly at the beginning of this case study revolves around Mark Twain's novel of the same title. The unit provides students opportunities to research the geography and history of their community, a river town, and compare it to other towns on the Mississippi River. Students also develop travel itineraries for riverboat cruises and research and analyze trends and influences in that particular industry. They dramatize the novel and perform their dramatization at a dinner theater which they organize.
They also use technology to contact and communicate with students from other schools along the Mississippi River.

Projects provide a rich context for student learning that the staff feels helps students learn more deeply and relate what they are learning to the real world of work. “The more simulations you do,” states Jacqueline, “the more the students will remember it. We give them simulations where they must set up a business meeting or conference and they have to do everything—from setting up a banquet to making notebooks to securing a speaker.”

Frequently, the Travel and Tourism class will work closely with the social studies teacher because of the logical connections between geography, studying other countries and cultures, and travel. They often set up a scenario in which the students create travel itineraries and reservations for a particular country or region of the world based on what the students are studying in social studies class. These and other projects create opportunities for the teachers to collaborate on instruction and integrate curriculum in meaningful ways for the students.

Ethic of caring. The Business Technology team displays an ethic of caring for both the members of the team and the students in the program. Team members respond to each others’ needs with empathy and create ways to be supportive. For example, Margaret joined the team late in the school year during the first year of implementation. As the Travel and Tourism teacher, she had rich work experience in the industry but little experience with teaching students. She recalls a particularly bad day in which she was confused about the school schedule and unknowingly left a group of students alone for a period of time. At the end of the day, she sat alone in her classroom feeling as if she had made the wrong decision about entering the teaching profession. Vicki approached her, and offered to listen while Margaret talked about her feelings. Vicki reassured and comforted her. As Margaret explained, “She listened to me and encouraged me to stick it out. She talked about how things would change for me as I got more experience. She also said the
students had been saying good things about my class and that made me feel a lot better. I guess she helped me realize that these were things all teachers went through when they began teaching.” This type of caring behavior has allowed the team to work together closely as they integrate academic and vocational curriculum.

The Business Technology team also cares deeply about their students. As Jacqueline explains, “I want to make it better for the kids. And that was my main thing. I'm only here for the kids. No matter what it is, I will assist anyone if I can.” As evidence of this caring, the team will often make an extra effort or sacrifice their personal time to make sure they have planned the best possible learning experiences for students. Julie explains her feelings about working during the summer months to prepare projects for the coming school year.

Our friends said I can't believe you keep going in to school, you know, this is your time off, and I said but this is fun stuff. This is the stuff that we know. You know, we stayed here almost all day yesterday writing and doing all of our typing because we get that done ahead of time and we don't have that to worry about it during the school year. We're that far ahead.

Planning the field trip the students took as part of the Life on the Mississippi project was another example of the teachers' level of commitment to designing experiences that will best meet students' needs. The field trip required setting up transportation, coordinating the field trip schedule among three different sites so that the students would be back in time to take the buses home, and advocating with the administration for time to be out of the building which in many cases meant preparing plans for a substitute or making sure classes were covered by other teachers. Vicki spent the week before the trip telephoning riverboats to negotiate lunch arrangements that would be reasonably priced for students and that would meet the time constraints. In the end, one riverboat complied with her requests but several of the students themselves complained to her about the food being served. Yet Vicki took the complaints in stride. When asked to reflect on the experience, many students expressed how much they had learned. Even though the students live in the area, few had
ever been to the museum or the riverboats they visited on the field trip. The teachers' efforts to organize this trip illustrate a caring relationship—providing students with meaningful experiences that meet their needs is a top priority.

Outcomes of Integration

The efforts to integrate academic and vocational education undertaken by the Business Technology team at Kennedy Career Center have resulted in several outcomes for the school, the students, and the teachers themselves. In terms of the total school program, the dean of instruction has carefully tracked data since the cluster team initiative began in 1997. Overall, he has seen a slight increase in program enrollment—up 2.3 percent. There are a higher percentage of students with perfect attendance and the number of suspensions is down. The biggest change has been a 72 percent drop in expulsions over the same period in the year before the cluster organization was implemented. Since the programs are retaining more students, initially there was a jump in the percentage of students receiving "Fs" on their report cards. But by the second quarter, that trend had reversed itself and there were more students on the honor roll and a smaller percentage of students with "Fs" than on the same period in the previous year. The school-wide scores on work readiness skills in applying math, locating information, reading for information, and applying technology are also up from the previous year. The dean sees the Business Technology program as one of the cluster teams with the greatest success. "They have done a good job of creating projects that are integrated and working together as a team."

As a result of the integration of academic and vocational education, the students in the Business Technology program seem more motivated about their work in school, have better attendance than those students in previous years, and score well on end-of-project assessments. For example, the senior Business Technology students completed a recruiting project in which they used teamwork, communication, and time management skills to
produce recruiting materials for the program. In a report on the project, the teachers wrote that the students were “proud and involved, saw value in the work that they were doing, and consequently, had better attendance.” These project-based experiences also seem to affect student learning. At the end of the British tea project described earlier, students scored an average of 98 percent on the final unit test. The teachers felt these test scores could be attributed to the high level of student engagement in the learning activities. “Students enjoyed the learning process,” the teachers explain in a report on the project. Julie describes what it is like to experience the students’ excitement when they present their final work.

And they wanted to stand by their [work] and explain what they did and they used Power Point and it was all finally clicking. Everything that they had learned was finally starting to gel a little bit . . . They were taking everything they had learned and putting it all together in one project. And I’ll be really excited to see the four projects this year because they’ll really use all of that.

Yet the team continues to be challenged by those students who are more difficult to motivate. Jacqueline states, “The class [Julie] had didn’t have any concern at all. It was like this is my senior year and I want to have fun. I’m not going to take anything seriously.” Generally the team feels that most students benefit from the integrated approach. “I think the students are able to use the knowledge better, they can see the correlation,” Jacqueline explains. “Different kids learn differently. Different years, like the group last year, it wouldn’t have mattered. Whereas the group this year, they’re seeing the relevance of everything.” The teachers believe a team approach is the best strategy for responding to these different kinds of students. “The only thing with the team,” states Jacqueline, “when kids don’t want to succeed, is you have different personalities to work with the student. And then maybe one person, it will click with the student. And kind of turn them on to whatever.”

When students are excited about learning through integrated projects, it seems to have an impact on the teachers’ beliefs about good teaching and learning. Julie feels that the
team was convinced that integrated projects were well worth the time and effort it took to plan them when they saw the students’ enthusiasm. “Through the projects that the team worked on, the kids loved so much and they were so into everything and their attendance went up,” Julie explains. “And the team just saw the advantages and I think that had a lot to do with it.” Once the teachers have experienced this type of integrated instruction designed by a team of teachers working together, it is difficult for them to imagine going back to teaching independently. Vicki describes this feeling.

I never ever want to be in a classroom alone again. I don’t like that. I don’t like being what they call the sage on stage or the lone ranger. I never want to do that again. I believe project-based learning and interdisciplinary teaming is the way to teach. We have too many outside influences and factors that kids deal with today. People don’t work that way any more. They don’t work alone. And I think that you have to be able to teach kids those kinds of things. With the interdisciplinary approach I’m showing them that history isn’t dead. It’s very much alive. It affects this, it affects that. In this wonderful setting, I can say okay, in the 1880s these were the inventions in the 1890s these were the inventions, the cutting edge. Now you tell me what’s coming up in business today. This is why you need to vote. These are the issues that you need to look at and deal with.

Using project-based learning has also changed the kind of teaching strategies the teachers use in the classroom. The teachers are more likely to use learner-centered instructional strategies such as cooperative learning, role-playing, problem solving activities, and reflection on learning. “I use more student-based learning. Now I find I do, there’s a lot of group dynamic learning,” Vicki explains. “Teaming with the kids. I’m teaching with the teachers, the kids are teaming with each other. I think those things have changed the most. There are also more hands-on activities.”

For the teachers, the efforts to integrate curriculum have also resulted in a stimulating professional environment. “I think the people I work with at this school are very rigorous for professionalism,” Vicki states. Working together on something as challenging as implementing a new initiative for integrated curriculum has created a cohesive professional team, one which has faced opportunities and conflict with a willingness to persevere and improve the program. “I think we’ve gotten through the worst
part,” Julie shares. “You know, the initial year is incredible.” Facing change together has helped the team come together. As Julie explains it, “I think because everything was so new and we were all so new as a team we were overwhelmed. Nobody knew what to expect. This year, we’ve got it down pat and we’re raring to go.”

Case Study 3: The Sycamore Tech Prep Team

Thirty-six people had gathered for the second session of the Sycamore District School-to-Work Retreat, including administrators, teachers, a school board member, parents, community members, business leaders, and students. As the Tech Prep director described the group, there were a lot of “heavy hitters at the table.” Their goal was to develop a more powerful educational delivery system for school-to-work transitions. Before returning to the initial draft of the vision statement the group had crafted in an earlier session, they were listening to a panel of parents, students, and teachers involved with the district’s Tech Prep program, Technology 2000. Based on his experience, David spoke with conviction about the benefits of being a Tech Prep student. David had just recently transferred to a school in another district to attend a career preparation program in Environmental Science. Since his new school held an excellent academic reputation, the retreat participants asked David how he would compare the education he was receiving now with the one he had received in the Tech Prep program at Sycamore. David explained that the courses at his new school were difficult, but “the teachers work in isolation and you don’t get the kind of integration we got in Tech Prep.” The Tech Prep director and teachers felt a real sense of accomplishment in David’s assessment. Integrating instruction so that students see the connections and make sense of what they are learning is much of what the day-to-day work of the Sycamore Tech Prep team is all about.
The School Setting

The Sycamore School District serves approximately 6,000 students. The mission of the district, developed as part of the 1994 strategic planning process, is “to provide individuals with diverse educational opportunities to enable them to become contributing members of society in an ever-changing world and to encourage them to pursue their desires and dreams.” There are two high school buildings, two middle schools, and six elementary schools. After graduating from the district, approximately 45 percent of the students go to college. The district is classified by the state education agency as a proficiency intervention district as a result of low scores on statewide achievement tests. Consequently, raising these test scores is a high priority.

Driving into the Sycamore School District by car, the story of the community’s growth is told through the surrounding landscape. At its outer edges, the Sycamore community reflects both its agricultural roots and more recent industrial and commercial development. The landscape alternates between fields of corn and soybeans, and massive buildings serving as warehouses, offices, or manufacturing plants. Driving further into the community, residential areas include housing developments with brand new, large homes, and older areas where homes are small and less well-cared-for. At its center, the community has beautifully preserved its historic commercial district, with some buildings dating back more than 150 years. Massive old trees, winding sidewalks, and Victorian street lamps line the streets. Yet amid the old storefronts, churches, and homes are the occasional gas stations or mini-marts.

Just outside the historic area lie two brick school buildings, one an elementary school, and the other a high school. The high school building is one of two secondary buildings in the Sycamore School District and it serves primarily ninth graders. As in many growing districts, this building was once the only high school in the district. But as the number of students grew, a new high school was built and the upper grades were moved to
that facility. Consequently, the ninth grade building, though carefully cared for, has antiquated classrooms and laboratory facilities.

Approximately 450 students attend the ninth grade building, which has a staff of 25. The student population reflects the changing nature of the community's economic base over the last 30 years. Though students come from a wide range of socioeconomic groups, the dominant demographic profile is described by a school administrator as "blue collar Appalachian." Since the building serves only one grade level, the small staff is very close.

Jane, an English teacher at Sycamore, describes her experience in the building.

I've been [at Sycamore] for ten years . . . I love working in the freshman school. The staff, it's a great place to work. We pretty much congregate in the office in the morning. Drink our coffee. Shoot the breeze about yesterday, the news, and everything else. And I don't know, that's something we've done for years. There was a former principal . . . he really did a lot to develop the camaraderie. A really neat guy. And it just has continued.

The Policy Environment

In 1994 the Sycamore School District superintendent and board of education led the district in a strategic planning process in an effort to define the future of the district. The strategic planning process focused the activities of the district around a mission statement, a set of beliefs, several objectives, and strategies to achieve them. The process involved educators, community members, parents, and business leaders in examining the current state of the district and areas for improvement. Several concerns were discussed as part of this planning process. First, there was concern about below-average academic performance on standardized tests and state proficiency tests. These low scores were related to the poor attendance rates and increasing numbers of students requiring remedial courses when they enrolled in college. Another concern was the number of seniors, nearly 85 percent who were working in paid employment more than 20 hours per week. This could also be affecting academic performance. Finally, those involved in the strategic planning process
were concerned about increasing incidents of violence. These concerns gave rise to a set of goals and objectives designed to improve student performance.

One of the goals that emerged from this planning process was to offer programs focusing on students' educational and career goals. It was hoped a career focus would help students see the relevance of what they were studying, improving attendance and achievement. District leaders acquired funds provided by the School-to-Work Opportunities Act, as well as vocational funding to fuel career-related activities and courses. There was also a growing interest in Tech Prep, a statewide initiative to articulate secondary and associate degree courses leading to careers requiring high levels of technical skills. In response to these policies, the district decided to "establish an annually reviewed Individualized Career Plan for every 8th grade student," "establish business, government, community, and agency partnerships," and "increase parental involvement in new and innovative ways." One of the specific strategies selected to provide career-focused instruction was the implementation of a Tech Prep program in the district.

As a first step in implementing a Tech Prep program, Sycamore joined the area Tech Prep consortium. According to a brochure describing the consortium and its activities, the statewide Tech Prep initiative is "a growing educational program that prepares students for high-technology careers requiring a two-year or four-year college degree." Aimed at students often considered "the academic middle," Tech Prep is an alternate approach to the college preparatory curriculum. Students in Tech Prep programs take college preparatory academics taught in an applied context, as well as technology applications and skills to prepare them for employment in their chosen field. A well-designed Tech Prep program creates a seamless pathway between high school and an Associate degree program with options to begin a career or continue on for a Bachelor's degree. Tech Prep programs involve high schools, business and industry, and colleges in working together to promote student achievement and career preparedness. In joining the consortium, the Sycamore
District created access to resources for program design, professional development, and a network of organizations who would support implementation of Tech Prep at Sycamore.

The curriculum director in the district understood the importance of a team of teachers in developing and implementing a successful Tech Prep program, but she also recognized that prior attempts by teams of teachers had not always worked out. She decided to invest the responsibility of leading the Tech Prep initiative with Debra Hathaway, who was then leading a service learning program. At the time, Debra was in the midst of a conflict with a school board member. "There was a board member who wanted me out of my position because he said I was a 'loose cannon,' Debra explains. "So [the curriculum director] set me up to report to her. That took the pressure off, [the board member] couldn't complain, and nobody knew anything about Tech Prep at that time. So they took me out of the limelight and they quieted him down."

In spite of this political climate, Debra's strong commitment to doing what is best for students made her a logical choice to lead the Tech Prep program. "It's my vocational background that gave me the grit to do what I'm doing today. Because I know the value and believe just passionately that you have to have community and parental involvement. That is not a common denominator or belief among most teachers." However, Debra had to make the transition to the idea of leading a Tech Prep program. "I didn't want to do this. I was very involved in service learning . . . It was political how I happened to end up over there, it was either that or I was going to go back and work in my old home economics classroom. And so I took it on and it became a way for me to make things happen broadly that I had only been part of in my classroom or within the structure of service learning."

With a director in place, the next step was to select the 9th grade teachers who would make up the Tech Prep team. The idea was to begin with the 9th grade team and then add Tech Prep teams at each grade level over successive years, building the program from the ground up. Rather than imposing a structure for the program on the teachers, the district
leadership felt it was important to establish the teams and let them design the program. Teachers were asked if they would be interested in joining the team. The initial group consisted of one teacher from each of the subject areas included in the Tech Prep freshman program—math, science, social studies, language arts, and industrial technology. A technology teacher was also indirectly involved at the beginning of the planning process. He had extensive experience with team teaching, project-based learning, and organizing instruction around a career focus, and his ideas scared the team at first. Jane describes this in an interview with the team.

Jane: We agreed to disagree on some of the things early on because Bob came from another state with a real concept, scared the hell out of me. Do you remember that? [Laughter.] No honestly, I didn't really think I liked him, did I? That's very true! I didn't think I liked Gray either.

Mark (Gray): And she still doesn't! [Laughter.]

Jane: Because he had a real concept of the whole picture of how it was supposed to be and then Gray being Industrial Technology he had a real picture of the technology, I was still hanging on to the old curriculum. Trying to figure out well now how am I going to place what I do in that concept, because you know, the idea of completely changing was so foreign.

When asked why he thought his ideas were so difficult for the team to grasp, Bob explains, “Because it meant that some people would not be doing in four years what they were doing then . . . And they didn’t want to hear that. They said I frightened them too much and so they asked me to leave the team. Which I did.” But a few months later, the team asked Bob to return. Having realized that much of what Bob was suggesting was worth their consideration, Bob became a permanent member of the team and has remained very much involved. That brought the team to six teachers and the director. The size of the team has remained constant over the four years they have been functioning. The social studies teacher has been the only staff change, with three teachers in and out of this position over the four years.

During the 1995-96 school year, the team spent a year planning the Tech Prep program, designing the delivery structure and curriculum for the 9th grade year. They met
after school, one night each week for the first year. Those meetings were held largely on
the teachers’ own time, outside the normal working day. “We talked about how we were
going to put things together,” explains Jane. “From the beginning we knew that parents
would be really important so we talked about how we would try to get parents on board.”
Several visits were conducted to schools who were implementing exemplary programs.
One of the major accomplishments of the planning was working out the structure of the
program.

The two most important things that happened that summer was number one we
finally were able to decide when lunch was going to be and . . . this may just be for
school teachers, I don’t know, but until school teachers can really understand when
they eat lunch and when they go to the bathroom, they can’t divide the rest of the
day. So we probably spent parts of three or four meetings talking about that.
Because until you can get that first thing nailed down the rest of the structure
couldn’t come together.

The team also established a working relationship. As Jane describes, “I don’t necessarily
mean friends, but there has to be some sort of rapport, that give-and-take understanding of
the weaknesses, the strengths, you know, accepting them, moving on. We did a lot of
that.” They also discussed major topics and projects that they wanted to do and came to an
understanding of what Tech Prep really meant. One team member summarized the
important work done in that first year. “It was great. It helped to get everybody organized
and gave us some sort of direction. Where we were going and how we were going to tie
things together.”

Their year of work culminated in the design of the Sycamore Tech Prep program.
Looking to meet the needs of average and above average students who require a more
hands-on approach to learning yet still want to prepare for college, the team envisioned
being responsible for a group of students, essentially a school-within-a-school. One team
of teachers serves 9th graders, another 10th graders, and a third team serves 11th graders.
Materials developed to inform parents of the program describe it as follows:

The Tech Prep idea is this . . . a team of teachers work together to develop a unified
curriculum that brings together English, Science, Social Studies, Math, Electronic
and Industrial Technology into one 9th grade package. This unified curriculum is taught in a hands-on manner that also teaches students how to work together in teams of their own. At the 10th and 11th grades there are other teams of Tech Prep teachers. All three teams work to keep the program working to help your son or daughter grow academically. The entire operation has a director who coordinates and facilitates the work of all the grades and their teams. In addition, these teams and the director work with the local colleges to make sure that your child is learning what the colleges are recommending.

Organizational Conditions

The Tech Prep team at Sycamore operates within an organizational structure that they designed specifically to foster their interdependence and give them control over the many factors affecting their instruction. The team is responsible for a specific group of students and has the authority to make decisions about student grouping and the way in which time is used, as well as curriculum, assessment, and discipline. Common space and planning time provide a supportive structure to support the team in making these decisions. Furthermore, the team has ready access to a wide variety of external ideas, experiences, and networks. These conditions enhance the team interaction and foster the fundamental changes necessary to integrate academic and vocational education in the Tech Prep program.

The way in which the work environment is structured supports the team in making decisions about how best to integrate their instruction. The six teachers on the team work with a group of approximately 125 students. The team begins each day with a team meeting, held during their common planning time. Over the rest of the school day, students rotate through the academic and technical classes taught in the program—language arts, science, social studies, mathematics, industrial technology, and business technology. Though the students rotate through the classes on the same schedule as other students in the building, the Tech Prep team has the capability to alter the schedule as they see fit. It is also possible for students to use their time flexibly, working with other teachers if it is needed.
The team plans instruction collaboratively, not only aware of what is being taught in other classes, but teaming together for several major projects over the course of a year.

There is a real sense of empowerment in the way in which the team makes decisions and takes responsibility for their actions. Bob describes it as “feeling finally that you are in charge of your destiny. That you can’t wait for the principal to tell you. And this team doesn’t do that. They don’t wait for the principal. They tell the principal what they want. They ask him to come and sit in on their meetings.” For example, when there is a need to replace a team member, as in the case of a turnover in staff, the team members participate in the interview and selection process. “We’re willing to show up,” says Bob. “That is not always an easy thing for teachers to do in the summer. We had two solid days of interviews from eight to five. Two solid days this summer and there were representatives from both [the freshman and sophomore] teams those days.” The team also writes their own job descriptions, requiring additional qualifications beyond those needed by other teachers in the district. As Debra explains, “That has been helpful in eliminating some of the folks that you probably would not want to have on your team.”

The team takes ownership for the students in Tech Prep and that ownership begins with scheduling them into the program. The director and team members are actively involved in scheduling eighth grade students. Using the theme, “Tech Prep: Another Way to Go to College,” the team communicates to the parents of all eighth graders with a letter informing them of the purpose of the program and the characteristics of students who benefit from the program. The letter reflects the team’s commitment to helping students and their parents make an informed choice about entry into the program.

If your child fits this profile you will want to talk with him or her about Tech Prep. You may also want to speak with a parent who has had a child in the program this year. Or you can get further information by calling members of the Tech Prep teaching team. You may get a parent name or reach the team by calling and leaving a message with the [Tech Prep] Consultant.
The team also offers suggestions to parents and prospective students to visit the computer labs at the school, ask about early opportunities for college credit, check with colleges about the reputation of the Tech Prep program for preparing students for college-level work, and talk with district administrators about their support for the program. Members of the team also go to the middle school to schedule students with the school counselor.

Common space and planning time were things the team anticipated as contributing to their success. When they were visiting other programs it became evident that they wanted an area of the building set aside for the Tech Prep program. "As soon as you break the space, you break the bond," Bob explains. With adjacent rooms, teachers can talk between class periods, send students to other teachers to complete work in another class, and communicate with each other quickly. Finding adjacent classroom space in an old building, however, was not an easy task. When the team was established, it meant asking teachers who had been used to working in particular classrooms to move. Mark, the industrial technology teacher, describes the strategy the team took in overcoming this barrier.

At first [the other school staff] were a little leery because we made some real changes. We wanted all the Tech Prep kids in a certain area. And then they could go take their electives once they were done. There was a little resentment about some people who had been in their rooms for like 5, 7, 10 years. You know, once you get a room established you really, I mean you've got your own little niche. This is where my books go, and this is where I store my supplies. This is where my bulletin boards go and they actually get attached to that room a little bit too much and what we did, it was really Chris' idea. We had a spaghetti lunch and we told them what we were trying to do and if they didn't mind we would really like to switch some rooms around. And I guess hunger conquered all the misgivings or whatever insecurities.

This year, the team made other changes with regard to their classroom space. The director arranged to have a wall knocked out, transforming what was once a small technology lab into a language arts classroom. The technology lab then moved next door to a much larger classroom space. This contiguous classroom arrangement creates a lot of
flexibility for grouping students throughout the school day. Bob describes how the team uses this flexibility.

If a child is here with Mr. Brown in math but really has something over in science that desperately needs attention, he is right there. And it isn't impacting anybody else, he's getting it right when he needs it. The ability to move your children is a very powerful tool, though. Now if I want to I can block them into classes where I can put everybody that needs math proficiency here, social studies here, science here and so on. Then later on once we're done with that I can reshuffle them. I can put them together over here and that is a tool that is very, very powerful.

The team has also had access to ideas, experiences, and external networks that have supported their efforts to integrate the curriculum. In addition to visiting programs in other schools, all the teachers have had opportunities to work with business or industry, either through externships, bringing them in as a resource for the classroom, or taking students out to visit the world of work. These opportunities help teachers focus the curriculum toward skills important to the workplace. Jane describes the advantages of these experiences for her classroom instruction and her students.

Getting out into the community is a big one. Dealing with business people and the community at large. Bringing them into the school, having them talk to the students. It's like you really begin to understand that there is such a need for certain basics that you tend to ignore. For instance, all the workplaces that we go to, if something occurs, they have to write up an incident report. It has to be clear, it has to be concise. And what we are doing this year is that when we are sending them out on shadowing or some minor job experience, we'll ask them when they come back, 'From what you saw, I need an incident report. You already know how to do one.' When they get to the job site, they'll know.

The teachers have also participated in several professional development seminars outside the district, such as the state Tech Prep Institute for teachers. This experience includes a week-long summer retreat with follow-up meetings over the course of a year. It focuses on curriculum integration, project-based learning, and authentic assessment. Probably one of the most important experiences for the teachers was the opportunity to visit other programs. These visits were a source of ideas and information that was invaluable as they established their own program. When asked what he would recommend to those teams
beginning efforts to integrate academic and vocational education, Bob suggests building that network of ideas from outside sources.

I would say don't try to do it alone. Go to as many programs as you can. Visit, talk to people, ask as many questions as you can think of. Don't try to do it alone. As many places as we can be and as many workshops as we can pick up, we try to do.

Yet in spite of structured interdependence, common space and planning time, and access to ideas, experiences, and external networks, the team is still plagued with organizational conditions that act as barriers to the kinds of things they really want to do with the students. One of the major barriers is lack of financial resources. "It's very frustrating to see the dollars that do get used around this district, just disappear for lack of focus, lack of understanding." The team also lacks the kind of technology that would support their program. "I would love to have the opportunity to have the hardware, the software that we really need to make the program go," Bob explains. "You know here we are a technology based program without any technology." Again, the strength of the team lies in their ability to accommodate for inadequate resources. Jane explains one of the strategies the team uses to expose students to technological resources.

We are not connected to the Internet and we are determined to be connected to the Internet. So that's a big obstacle we are trying to get over at this point. You know we've done everything we can to introduce our students to it. I mean we've hauled all 125 of them down to the public library last year in two different days, to give them that kind of access so that they can use it. So that's where we're really working.

Another organizational barrier for the team is the departmental organization of the school. The Tech Prep team is interdisciplinary and does not fit into the structure of academic departments. "They meet weekly and they decide things that don't fit with us, the whole Tech Prep initiative. So I've attended on occasion, but that's not really a solution," Debra explains. "The departmental structure sets up hierarchies in departments. You've been here this long, and you want this so you get this and somebody else gets that and then you get a new teacher who gets three preps." Bob feels strongly about moving away from this type of structure. "If I was going to do one thing to reorganize education at the
secondary level, I would do away with departments tomorrow,” he states. “I would force people to work in educational, year-based teams and the idea that I am the head of the English department or the math department would just go out the window.”

**Human and Social Resources**

In addition to organizational conditions, there are a variety of human and social resources that support or constrain the team in their efforts to integrate academic and vocational education. Leadership from both administrators and the Tech Prep program director, the involvement and support of parents, interaction with business and industry, and the attitudes of other teachers toward the Tech Prep program all have an impact on the way in which the team works to achieve the program goals.

A variety of administrators support the Tech Prep program at Sycamore. One of the administrators who had the greatest impact on the program is the director of personnel and curriculum. She created a Tech Prep program director position and placed Debra in that role, thereby establishing an advocate for the program and a link between the Tech Prep team and the surrounding school and community environment. The personnel and curriculum director also made sure that Debra was a member of the district education team so that the Tech Prep initiative would be an integral part of the total school program. “She is our strongest ally on a day-to-day basis at the central office,” Debra explains. “She is who I report to and she is who keeps me politically out of hot water many times because I report to her and therefore it’s not ‘Debra’s a loose cannon’.” In addition to the director of personnel and curriculum at the district level, the building principal has also played a key role. Jane feels that Mr. Brodnick, who was principal when the Tech Prep team first began the program, was particularly good at building a sense of community among the teachers. “He really did a lot to develop the camaraderie.” Jane explains. “[He was] a really neat guy. And it just has continued.” Building this type of relationship among all the staff members
creates the kind of conditions that support the team as they collaborate and work with other teachers in the total school environment.

By far the most important source of administrative support for the team is the commitment and dedication of Debra as the program director. Jane explains the importance of having this kind of leadership for the team.

Debra was instrumental in getting so many things done and making us aware of a lot of things. And asking a lot of good questions. And trying to find the right answers. She is our facilitator in so many ways. Our liaison with the central office. If we need it done, she'll do everything she can to get it done. It's like this wall, you know I can move this room. Believe me, I don't think there are many people who get a wall knocked out in a school building. But she's getting it done. You could move the chairman of a major corporation easier. She won't take no for an answer. But she just keeps on. Her focus always has been and continues to be the students.

Debra often organizes experiences or nurtures relationships with external groups—things that the teachers on the team simply do not have time to do. For example, Debra coordinates business and community involvement, which is an important part of the Tech Prep program. She arranges job shadowing experiences, field trips to business and industry, advisory committee meetings, and teacher externships among other things. Above all, she serves as a contact for the many business and community representatives who come into the school and work with students on a regular basis. "It is very labor intensive and that's what school systems need to understand. There has to be someone in that school environment who is really responsible for [the volunteers'] comings and goings and who listens if they have a concern or they have a frustration," Debra explains about working with business and community volunteers. "Because if a volunteer comes into your building and they get dumped on, and if there is no one to tell what they are feeling, they'll go away. They don't have to do this."

The leadership and support that drive the Tech Prep team do not rest solely with the program director. Two of the team members themselves have provided a source of leadership and encouragement during the first years of implementation. "I really think that
the two main people as far as holding us together are Bob and Jane,” Mark states. “It’s amazing how much they know and how much of a work ethic they have. It’s really because of those two, and then everybody else kind of pitches in and helps out.” As explained earlier in this case study, Bob came to the group with a vision of integrated learning and the type of program the team could accomplish. Jane developed a vision of the Tech Prep program over the first few years of implementation and continues to press the team toward that vision. Bob describes the importance of having people on the team who are passionate enough to make personal sacrifices and a strong commitment to the ideals of the program. “If you are going to make a thing like this go,” Bob states, “you’re going to pay a price. You better figure about your family, your children, everything else, very seriously before you go into this kind of thing.”

In addition to having a supportive director and leadership among the team members themselves, the team also recognizes the importance of involving parents, and plays a very proactive role in getting parents into the school and in making home visits during the summer. Last year, when the team had a particularly difficult group of students, they spent a lot of time conferencing with parents, usually two or three conferences a week. During these conferences, all members of the team would meet with a parent to try to solve a problem related to that child’s academic work or behavior. In addition to parent conferences, team members make regular phone calls to parents. Debra worked to have phones installed in each classroom and explains why this has really been a boost for the teachers. “The power of being able to walk right over to that phone with a child and talk right then is great. And you don’t have to wait until whenever, you know, it’s there.”

Finally, a commitment to parent involvement also finds the team rewarding parent attendance at evening activities with door prizes and recognizing parent contributions at the annual awards night for the program.
The team continues to cultivate business and industry support for the Tech Prep program. "We are trying to develop real business partners," Jane explains. "They can meet our needs and we can meet their needs. We are not just looking for student placement, we are also looking at other options like financial resources, too." Debra obtained a School-to-Work grant "to get our educators out into the business community so that they will have shadowing and mentoring opportunities with our business connections. Because there is no real way to impact what teachers do in their classrooms if they don't see the value of what they are doing out in the community, what the business needs are." Business and industry partners serve the program by providing job shadowing sites, field trip opportunities, teacher externship experiences, tutoring for students needing proficiency test help, and involvement in program planning through advisory committees and planning retreats.

Relationships with other staff members in the building and throughout the district have been both a support and a constraint to the team. When the program first began, the team realized they were challenging long-held traditions of subject matter departments and teacher independence and they anticipated some resistance from other staff. In fact, the real resistance did not come until the second year of the program when other staff in the building really began to see what Tech Prep was all about.

The second year was very tough. Well it's been tough ever since because [other teachers] went out in the community, bad mouthed the program, said that it was a program for dummies, that we were lying to people, that it wasn't college prep even though it had all of the courses and so on. So then when we went back in . . . and parents are touchy on these things anyhow. Parents any place haven't got a clue what school's all about. And down here they have less than that. And these are folks that lack information, knowledge about schools or education. So the word had gotten around and when we went in for the second year, [other teachers] had pretty well shot out anybody that would have been in that group that really might quickly profit from what we were doing. So that made our job tougher. And we got through the year in pretty good shape and we managed to move at least some of the kids along.

In spite of these attitudes on the part of some teachers, however, Jane feels that most of the staff are supportive. "I think [the resentment of staff] has been outweighed by the fact that because we are a school-within-a-school we take 125 kids out of the main stream. What
that does is it reduces the amount of kids in the hall. It helps the other teachers and the administrators in ways that I don’t think they could have conceived. And most of our discipline we take care of ourselves.” Though the team senses this support, they are aware that the concerns of other teachers in the building or in the district can still create constraints to their work. Because the way in which the team works with students is so different from the way in which other teachers work, issues such as students being out of the building for extended experiences, awarding course credit through independent studies, and coordinated planning and instructional time for the team members can become contentious areas. Bob has worked in other school settings in which these issues were not as problematic and wishes for a time when other teachers will be completely supportive.

One of the things I would like to see here is the lack of anyone out there to constantly be dogging you. To be shooting at you and trying to destroy what you are doing. And if that kind of a thing could happen, that would be one of the best things that I would like to see... just that the rest of the school if they can’t support it, can at least stop fighting it. Because then the team internally can grow and do all sorts of things.

School Culture

The school culture in which the Sycamore Tech Prep team works includes the norms and values that guide the day-to-day interactions of the team. This team is driven by a commitment to student learning and a sense of caring for their students. They operate using norms of collegiality and teamwork. Finally, their actions are guided by a set of commonly held beliefs about teaching and learning that have evolved through their efforts to integrate academic and vocational education.

Commitment to student learning. One of the most significant things guiding the actions of the Tech Prep team is a commitment to student learning. One of the ways in which they show this commitment is in the assistance they provide to help students pass the ninth grade statewide proficiency tests. Though all students have an opportunity to take these tests at the end of the eighth grade year, not all students who enter the Tech Prep
program have passed the tests. The team focuses the curriculum in the early part of the school year on concepts that will help with success on the tests. They also arrange for community partners to tutor individual students. To ensure that the tutoring relationship is productive, the team has developed contract agreements for both the tutor and the student. For example, the students agree to “be ready at the beginning of class to work with my partner, take my work seriously and do my best to really learn, and maintain a respectful attitude toward my tutor and other students with whom we are working.” The team takes great pride in their individual attention to students’ passage of the tests. Jane’s comments reflect her level of commitment to helping students be successful.

At the end of this last year, we only had one that hadn’t passed the writing and I think we had all of them pass the reading. So we work with them individually, you know with the writing I sit down and look at what their problem happens to be. I look at the scores. I really try to concentrate solely on their problem. One kid, his problem was handwriting, and so I really thought about, ‘How can we get this kid to write this thing legibly?’ By God, we did. I told him to get up and get a drink, because he just has trouble. He made it, he passed it, and I was so glad.

Another way in which the team exhibits their commitment to student learning is through their efforts to provide equitable learning opportunities for all students. Bob expresses the team’s distaste for the practice of tracking. “Some schools have two tracks, some have three tracks, but you get to the eighth grade and you’re put through a big sorting machine. And that sorting machine is based on what scores you got in the eighth grade in math and English. Once you get up from the table with the guidance counselor at the end of your eighth grade year, you’re life has just been put on a paper and you don’t even know it.” The team sees the Tech Prep program as a means of detracking students—offering college level content to those students who would not have been enrolled in or perhaps would not have succeeded in a college prep track.

What we did was we took that group and we put them into a different path. Because now, kids who would have had integrated math are taking algebra. And those who would have been labeled with integrated science are being labeled with [college prep] science, not that the two are any different and the same sort of thing. So we got them a different label. Because they get a different label, then they get to go different places. We get to open doors for them. And just like Jane was pointing
out, you know, the stuff that you are going to learn in integrated you are going to learn in [college prep], you are going to learn in Tech Prep, that's established you got to go through Romeo and Juliet. You have to have this vocabulary book. But you are going to go about it a different way. And when you come out, you are going to have a different label.

The team is also committed to involving students in reflecting about and assessing their own work. Each year, they require students to assemble a portfolio. These portfolios include samples of work from all the classes the students take during their freshman year. The students must present their work to an audience of parents, teachers, and community members at the end of the school year in lieu of a final examination. The focus of the portfolio is on quality work. Jane explains the process of refining work for the portfolio. “They submit it the first time, it’s graded. I put comments on it. I talk to them individually. I give it back to them and they have to resubmit it. They have to redo it so that it’s better.”

The teachers facilitate this work in spite of the fact that the portfolio development and the presentation itself are very time consuming. They are committed to making sure students are able to assess their own progress, make connections among the different subject areas they are studying, and strive for high quality in their work.

Ethic of caring. Individual attention to students is a hallmark of this program. The teachers on the team are sensitive to the needs of students and make every effort to meet those needs. Each year, the team asks students to respond to a survey about what they have learned from the Tech Prep program and what it was about the program that helped the students be successful. The students’ responses describe the significance of the caring attitude of the team. As one ninth grade student explains her experience in the Tech Prep program, “You have individualized attention from your teachers, while otherwise in regular classes they might not know your capabilities and they might overlook you.” Another student, when asked to identify the person who helped her the most, explains, “Ms. Smith... every time I had a problem with something she was always willing to help me. I remember at the beginning of the year I was struggling and she talked to me and said that
she was going to keep checking up on me. When she did that I felt a lot better knowing that someone cared.” One ninth grader summed up her experience in the Tech Prep program by saying, “The students and teachers care about you and will do their best to help you and see you achieve.”

Creating a caring community is an important goal for the Tech Prep team because they feel it establishes an environment in which the students can be successful. The teachers work to provide each student with individual attention, from customizing instruction to student needs to documenting progress and experiences in longitudinal files. They also try to work with parents and other educators in ways that will help the child succeed. “Our rule has been to work with that family,” Bob explains. “If there is some question about a student, or if there is some problem or if [administrators or counselors] want to move a kid or bring somebody in, they come and sit down and talk with the team.”

Chris explains what building this caring community means for the students.

I think probably the most important aspect of Tech Prep is that it’ll be the only time that our kids are in a situation where they have six teachers that deal with those kids every day. And we all know what all these kids do all the time. They have six teachers to turn to at all times. If there’s one thing that I and the other teachers have done, it really helps the kid to be much more focused on what he’s doing and really know where to come when they need help. I mean it’s like it’s the only time they’ll be like in a family situation is in this group and for a lot of kids that’s a comforting situation.

The sense of caring extends beyond the students to the members of the team. This is illustrated through the consideration and respect afforded all team members. “We try not to attack each other personally,” Jane states. “We try to keep it on a professional basis.”

Yet as they have worked together over the years, they have come to know each other very well. “And you have to learn to be, I don’t necessarily mean friends,” Jane explains. “But there has to be some sort of rapport, that give and take understanding of the weaknesses, the strengths. You know, accepting them and moving on.” Caring for team members is also evident as the team welcomes and orients new teachers to the team. As one new team member describes it, “The best thing for me right now is that I have a lot of people to
reflect with. I have a mentor in the system, but I talk to her and a lot of things I’ve already
talked to someone on my team about. So I think that as a new teacher, that’s probably the
biggest benefit. The people I work with, I think they are great.”

**Collegiality and teamwork.** The Sycamore Tech Prep team feels strongly that
they are more effective working as a team than they are working independently. Consulting
regularly during the school day with colleagues helps team members view student behavior
and work from different vantage points. Jane describes how the team helps her see multiple
perspectives.

There is no way we have all the answers, and so when you team and just dealing
with different students, different outlooks, different perceptions. They make you
think that what you saw, maybe that’s not what you saw. That’s with students,
with parents, with administrators, it’s with curriculum. You know, we begin to
work with curriculum and somebody will say, “Why did we do this?” It’s
interesting that when you do grade student work together... whether you realize it
or not sometimes you have a bias. Because you know Brian will look at something
and you know he wouldn’t see what I would see or vice versa. It really helps to
reduce the amount of bias when you grade subjective kinds of things. When you do
specify this is what you need to do, it helps. When you work together, it really is
great.

Working together rather than in isolation also seems to improve instructional effectiveness
when teachers consult with colleagues to find the approach that best meets student needs.

Jane contrasts what it was like working independently as a teacher versus the impact she
has working as a team.

Kevin and I taught over in this hall, we were beside each other for years. And
you’d come out in the hallway and you’d talk before the period begins and I think
in the old days you know, he and I were both, you know this group they just don’t
get it. And you just kind of resign yourself to the fact that you may not have a really
bright group and you still plow through the material, but how much are they
getting? What we are learning to do and we’re getting better at it each year is to
discuss it and figure out how we are going to overcome this. So what we are
seeing, you know, just discussing and going through these things is that we can
help each other out and maybe make (students) more successful whereas before we
didn’t see the possibilities of connecting.

Last spring the team was going through a difficult time. There was a sense that they
were losing focus. Jane in particular felt that they were not making progress. She began to
consider quitting the team.
You know, last spring, I said I wasn’t going to do this any more. I really believe in the program and we’re such good friends, and I said you know I want to try for a number of years. But I was getting very frustrated with the way things were failing to develop. Sometimes it’s hard to fall back. I felt like I was really losing a lot of ground. I felt like I was going up this hill, this mountain, and you know, you’re getting along and then all of a sudden you lose your footing and you tumble.

The team realized they were at a critical point. As Debra describes it, “We just weren’t going forward. Because you know we have these high expectations and it didn’t seem like we were getting there. It even seemed like we were going backwards in some cases.” So the team held a two-day retreat and that helped to focus the teachers on their goals. “I think that then became a base for having great personal responsibility among the team members,” Debra explains. In addition to this retreat, the team spent extensive time together over that next summer. Consequently, Bob feels the team is moving to a new level of communication.

I think we are going to be a step further than we were, maybe several steps because this summer we have had concentrated time working together and they have enough experience now that they know what to talk about. The first summer they were just planning what they wanted to do and they were excited. They gathered once a week, sometimes twice a week and talked about subject matter. Then they were talking about some of the real organizational kinds of things. But this summer, the team was beginning to talk about different kinds of things, the common language, the core values. Are we gonna accept trashy talk? Is there going to be some mode of dressing that is acceptable? When we are going out into the community or when they are in their classroom, what kind of decorum is important? These are not things they could even discuss the first couple of years. It is cultural to a large extent, because it’s the way in which the norms that you use to work together on a daily basis.

Attitudes about the importance of teamwork extend beyond the teachers on the team to expectations for ways in which students will work together. As one student reflects, “[Tech Prep] helps you work together in groups; you have more responsibility because everyone relies on you.” As students are expected to learn through teamwork, they also seem to become aware of the need for these skills later in life. A ninth grader explains, “Tech Prep helps students interact with each other. [It’s] a good chance to learn what you need to know to have a good job.”
Beliefs about teaching and learning. Several common beliefs about teaching and learning guide the Tech Prep team. First, the team agrees that integrated curriculum is very important. Their idea about what integration means has evolved over these first few years of implementation. For them, integration means not only aligning curriculum and creating integrated projects, but also using an integrated vocabulary. “I don’t really believe kids learn isolated vocabulary words,” explains Jane. “They have to be integrated. When we are talking about creating an integrated vocabulary, they are using these words in every single class. They really begin to understand.” Such integration is an integral part of the success of the Tech Prep program. Jane explains why this is the case.

I think in order for the program to succeed, you’ve got to have the integration. Projects are great, I think projects help. But I don’t really think the focus of the Tech Prep program is a project. I want us to do projects, but I don’t think the focus is projects so much as you start integrating and they just move from one room to the other. It’s not the same thing over and over, but it makes sense to them more because what we are doing here and what we did over there. Okay, now I get it. When you see the light bulb come on, you think you are doing something. It really goes back to the old elementary school. You know, where the teacher would do her math, her science, and her social studies around the Pilgrims, you know what I mean. It really does emulate a lot of the early elementary. Some kids still need that. It’s all meshed together. That’s why I am involved. I really do believe in that. I really do.

Jane also sees integration as a way to break away from more traditional approaches and improve student achievement. “When you integrate and that book is important not just in English class but in social studies class and other things they are doing, then there is more pressure to get it done,” Jane describes. “Personally, I think the world is changing and it’s got to change in the classroom too, because a lot of the traditional things aren’t working.”

Even the students see the benefits of integration. When asked what he liked best about the Tech Prep program, one student responded, “The integration of the classes. It’s so convenient when every teacher is teaching along the lines of the same topic.”

The students also enjoy the integrated project-based learning opportunities. Last year the team taught projects around major works of literature such as *Of Mice and Men* and *Animal Farm*. The previous year they did a project around the Renaissance. The focus of these
projects is to help students understand and apply knowledge they have learned. Usually there are one or more authentic performances or applied learning experiences in each project. One student describes her favorite project experience, “Animal Farm/Russian history . . .because we had a chance to do a newscast which was a lot of fun but still helped me learn.”

The team also plans extensive experiences beyond the classroom walls that help students connect what they are learning to the real world. Each month, the students have special activities as part of what is called “prime time.” Debra describes these experiences as “signature events."

That’s when we either take our students out into the community or we have folks come in and I mean all kinds of folks. We had an 80-year-old artist. The kids loved him. Then we had somebody from the grandparents Vision Theater. And the message that kids get over and over again is that you’ve got to get out there and make your own way. You have to be in charge of you. These are the kinds of things that I think this program has been able to bring to children that doesn’t happen anywhere else.

The Tech Prep program also provides job shadowing and internship experiences, uses authentic audiences for student presentations of work, and connects students to business or community mentors. Students see these kinds of experiences as being valuable to their learning. “You don’t sit at your desks all the time,” shares one student, “We go to a lot of places and do a lot of things. Tech Prep teaches you a sense of responsibility, organization, and communication skills. And the program is like a family. Everyone has a certain responsibility to complete.”

Outcomes of Integration

Both the students in the Sycamore Tech Prep program and the teachers on the Tech Prep team have benefited as a result of the integration of academic and vocational education. There are several ways in which the integration has had a significant impact on students, including a greater sense of confidence, improved attendance, and better
behavior. Jane explains how the environment in the Tech Prep program promotes students’ sense of security and confidence.

We see a lot of confidence. Some of them have a greater sense of security just being in the team. Also, I see it more in intangible things than I do in tangible things. I wouldn’t say all their grades go up. It’s not something that you could easily point to. But I think at times they . . . there’s a comfort zone for them. They tend to seek you out more as a confidante. At times they also know that the old schoolhouse tricks don’t work any more. ‘Don’t tell me that’s what you’re doing in there. I know that’s not what you’re doing in there. I know that’s not what the teacher said. I talked with him this morning.’ See we meet first period every day. So you don’t see a lot of the same old immature kind of thing that a lot of kids in the past have tried because they are not going to get away with it.

This environment supports better behavior on the part of students. “Both administrators would tell you and I’ve heard them say this more than once that we see fewer Tech Prep for discipline than any other group,” Bob explains. Better behavior and a more secure environment also seem to have an impact on the students’ achievement. “We have a higher proficiency passage rate than any other group in the school,” Debra states. “Because the team really focuses on the skills that are needed and give it the kind of attention that says, ‘This is important.’”

For the teachers, the outcomes of integration include a deeper understanding of integrated curriculum and the professional support of a team of colleagues. Over the years the team has been working together, their shared understanding of what it means to integrate has evolved. At first, it was a matter of coordinating the content being taught and teaming on major projects. Early in their experience they were focused on being aware of what was taught in all subject areas and aligning that content so that it made sense for students. Their goals seemed to be to complement each other’s instruction. This year their understanding about integration seems more focused on building a common vocabulary and common assessments. In a recent School-to-Work grant proposal, they described the use of “writing as an integration tool.” “If the grant works out,” explains Bob, “we will have developed an integrated core of math, science, and technology tied together with writing as a tool of integration. Bob explains how the team’s understanding of integration evolved.
The very first thing that happened was that the teachers on our team dropped back
to the project integration mode because it was the thing they were familiar with.
They knew how to work together on a project, and so they did that in a number of
different places. That worked out and we did some of that the second year. But
what’s happening now is that we’re looking at the need to tie ourselves together
across grade levels so that what we’re doing whether it’s project-oriented or
otherwise in the 9th grade has some direct connection to the 10th grade and on out
into the 11th grade. We’re going back to the importance of a common vocabulary
amongst all of the different teachers. Things just as simple as what do you call a
one-page report? And what are the set-ups that you are going to use in terms of
type size and so on. And this year, it’s all up in the air. Everything is changing to
just build a common core. So we’ll be shifting a lot of things. But the whole
business of integration has shifted, it’s been a real learning process for the team.
They would have been so happy when we started out if someone could have
handed them a six-part book that said this is what integration is and they could all
just do it. But it didn’t work that way.

For the teachers, the most significant aspect of integrating curriculum has been the
experience of building a supportive team that enhances your work as a professional. It is
the success of this team building that is at the heart of the Tech Prep program at Sycamore.

Jane sums it up well.

You know when you have people behind you, supporting you, you can take things
head on. You know when you think you’re standing there all by yourself. You
have a team, I can’t tell you how wonderful it is to know that if you have any kind
of adversity with a student you have the whole team behind you. You know or if
you have something happening today, regardless of what it is, you have that team
behind you. I was never that way, I never would have learned the team concept.
But now that I’m involved in it, I can understand you know how that team concept
really makes a difference in what you do and how much confidence you have in
tackling something. So you have that with the students too, making them feel a part
of this team. It does give them confidence, it does give them security, you can see
that. You know, it’s like we’re practicing what we are preaching. Whereas, years
ago, we were doing a lot of preaching, but not doing it ourselves.

Yet, the gains that have been won by the team in terms of student achievement and
professional development have not come without personal sacrifice on the part of team
members. Bob explains the importance of such sacrifice.

When things happen, it’s because there are the champions that work with people to
make that happen. And any champion anywhere you find them across the land,
gives up other things in order to do that. Every cause that has some kind of payoff
there’s someone there who has probably given other kinds of things either in the
personal or professional life because they were passionate about what they were
doing.
Summary

This chapter reported the findings of the data collection in three case studies, each representing a team of teachers engaged in school reform efforts to integrate academic and vocational education. In an effort to describe the factors influencing teacher professional development, these cases were presented according to the components of the conceptual framework for the study—the policy environment, organizational conditions, human and social resources, and school culture in each context. The Maple Hill Electronic Communications team includes four teachers who share three classrooms and serve the same students. Their day-to-day interactions include designing instruction, making choices about the use of classroom time and space, and dealing with student behavior or performance issues. The Kennedy Career Center Business Technology team focuses on coordinating their instruction and making decisions related to the management of their cluster academy. This team includes seven teachers who share common planning time. The Sycamore Tech Prep team consists of a group of six teachers and a project director who serve a large block of freshman students. They cooperatively make decisions to plan instruction and extended learning experiences, coordinate student assessment, and involve parents in student learning.

Though the teams in each case represent a unique local context in their efforts to integrate academic and vocational education, there are several factors that the teams have in common. Examining the similarities and differences among the three cases provides insight into those factors that have supported or constrained the teachers’ professional development, hence affecting school reform efforts. The next chapter presents a cross-case analysis of the cases in order to describe these similarities and differences.
CHAPTER 5

CROSS-CASE ANALYSIS AND FINDINGS

The purpose of the cross-case analysis is to examine similarities and differences among the three case studies described in Chapter 4. As with the case studies themselves, the cross-case analysis is organized according to the themes of the conceptual framework. The policy environment, the organizational conditions, human and social resources, and school culture are compared across the case studies describing the teacher teams at Maple Hill Technical School, Kennedy Career Center, and Sycamore High School. For the purposes of quick reference while reading the cross-case analysis, Table 2 provides a brief overview of the three cases with regard to descriptors such as community setting, size of the school district, nature of the integration effort, and size and composition of the team.

Policy Environment

In each of these three cases, the policy environment influenced teachers and their professional development by creating a vision that gave direction to the change process, setting expectations for teacher involvement, and providing resources for implementation. Each district began locally with an approach to change that can best be characterized as systemic. State and national policies, such as the School-to-Work Opportunities Act and the 1990 Amendments to the Carl Perkins Act influenced these local efforts. The three cases differ, however, in the balance between policy themes of control and commitment,
<table>
<thead>
<tr>
<th>Descriptor</th>
<th>Maple Hill Electronic Communications Team</th>
<th>Kennedy Business Technology Team</th>
<th>Sycamore Tech Prep Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nature of School District</td>
<td>Comprehensive</td>
<td>Vocational</td>
<td>Comprehensive</td>
</tr>
<tr>
<td>Community Setting</td>
<td>Urban, suburban, and rural</td>
<td>Urban, suburban, and rural</td>
<td>Suburban and rural</td>
</tr>
<tr>
<td>Size of District</td>
<td>15,000 students</td>
<td>3,000 students</td>
<td>6,000 students</td>
</tr>
<tr>
<td>Type of School Building</td>
<td>Technical school</td>
<td>Technical school</td>
<td>High school for 9\textsuperscript{th} grade</td>
</tr>
<tr>
<td>Nature of Integration Effort</td>
<td>Electronic Communications Tech Prep team</td>
<td>Business Technology Career Cluster team, academy structure</td>
<td>School-within-a-school Tech Prep team</td>
</tr>
<tr>
<td>Size and Composition of Team</td>
<td>Three vocational teachers, one language arts teacher</td>
<td>Four vocational teachers, three academic teachers (math, social studies, and language arts)</td>
<td>Two vocational teachers, four academic teachers (math, social studies, language arts, and science)</td>
</tr>
<tr>
<td>Grade Level Served</td>
<td>11\textsuperscript{th} and 12\textsuperscript{th} grade</td>
<td>11\textsuperscript{th} and 12\textsuperscript{th} grade</td>
<td>9\textsuperscript{th} grade</td>
</tr>
</tbody>
</table>

Table 2: Overview of Cases

the speed at which change was implemented, and the scale of implementation. A summary of data guiding the analysis of the policy environments in the three cases is provided in Table 3.

A systemic approach to reform. The school reform efforts in each district were characterized by a systemic approach because each district attempted to align all aspects of the school system toward improving student achievement and better preparing
<table>
<thead>
<tr>
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<th>Kennedy Business Technology Team</th>
<th>Sycamore Tech Prep Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Modernization of vocational education</td>
<td>• Modernization of vocational</td>
<td>• Strategic planning to</td>
</tr>
<tr>
<td>• Applied academics</td>
<td>education</td>
<td>better prepare students</td>
</tr>
<tr>
<td>• Team of administrators and teachers plan elimination of general track</td>
<td>• District research team</td>
<td>for careers</td>
</tr>
<tr>
<td>• Tech Prep initiative</td>
<td>• District approves and selects</td>
<td>• Tech Prep initiative</td>
</tr>
<tr>
<td>• Consortium participation</td>
<td>pilot site at Kennedy</td>
<td>• Consortium participation</td>
</tr>
<tr>
<td>• Grade 9-10 integrated learning</td>
<td>• Career academy initiative</td>
<td>• Grade 9-11 integrated</td>
</tr>
<tr>
<td>• Grade 11-12 programs at technical school</td>
<td>• Learning communities of</td>
<td>learning</td>
</tr>
<tr>
<td>• Articulation to postsecondary</td>
<td>academic and vocational teachers implement academy design</td>
<td>• Grade 12 programs at career center</td>
</tr>
<tr>
<td></td>
<td>• High performance workplace</td>
<td>• Articulation to postsecondary</td>
</tr>
<tr>
<td></td>
<td>• Integrated learning</td>
<td>• Program director</td>
</tr>
<tr>
<td>• Grade 9-10 teams in comprehensive high schools</td>
<td>• Whole school reform</td>
<td>• One team of teachers</td>
</tr>
<tr>
<td>• One team for each 11-12 grade Tech Prep program at the technical school</td>
<td>• All teachers organized into teams</td>
<td>at each grade level</td>
</tr>
<tr>
<td>• Technical teachers interviewed, academic teacher encouraged to join team</td>
<td>• Teachers asked to reapply for team positions</td>
<td>• Invitation to teachers for teams</td>
</tr>
<tr>
<td>• Fueled by School-to-Work Systems Building grant and High Schools That Work</td>
<td>• Fueled by vocational funding</td>
<td>• Fueled by School-to-Work grants, vocational education funding and Tech Prep monies through consortium</td>
</tr>
<tr>
<td>• Seamless pathway</td>
<td>• Researched and implemented</td>
<td>• One year planning process to engage teachers</td>
</tr>
<tr>
<td>• Data collection</td>
<td>academy structure within six</td>
<td></td>
</tr>
<tr>
<td>• Incremental change over six years</td>
<td>months</td>
<td></td>
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</tbody>
</table>

Table 3: Policy Environment Data Summary
students for the workplace. The Newtown district—including Maple Hill Technical School—initiated several reforms in vocational and career education programs during the early 1990s. After those early efforts, the district involved business and industry leaders, community members, and educators in a process to align programs and resources into a total system for improving student achievement and eliminating the general track curriculum. Their efforts resulted in a seamless pathway of experiences and courses to better prepare students for work and further education. Kennedy Career Center, through a close association with business and industry and a commitment to a high-quality workplace, engaged in a process entailing research, vision and mission building, and goal-setting, with a particular focus on establishing assessment criteria. In the Sycamore School District, a strategic planning process engaged educators, community members, and business leaders in developing a vision, goals, and objectives that would guide all change efforts including the new Tech Prep program.

Influence of state and national policies. As each local policy environment took shape, there was clearly evidence of the influence of state and national reform proposals as well as federal and state legislation. The 1990 Amendments to the Carl Perkins Act called for the modernization of vocational education and fueled early integration efforts at both Kennedy and Maple Hill, particularly in the implementation of applied academics courses. The state Tech Prep initiative, fostered by the same 1990 Amendments, was a model for local policy development at both Maple Hill and Sycamore. These two schools worked with their area Tech Prep consortia to access program ideas and resources as well as build articulation agreements with local colleges and universities.

The School-to-Work Opportunities Act provided funding resources through a grant application process at the state level. Both Maple Hill and Sycamore used these resources for a variety of integration efforts, including the development of work-based learning experiences, teacher externship experiences, and professional development seminars. In
addition to these particular grant opportunities and specific initiatives, all three districts accessed state vocational funding for their programs. Kennedy and Maple Hill both offer specialized vocational programs and have a long history of vocational funding. Though Sycamore does not offer specialized vocational programs, they do receive such funding for business education and technology education courses offered to students in the 9th and 10th grade Tech Prep program.

Given the nature of the influence of state and national policies on the local policy environments, it is not surprising that the programs in each of these three cases reflect the broad themes often described as part of the new vocationalism (Grubb, 1995). These common themes include a focus on more rigorous academics and student achievement, greater integration between academic and vocational courses, and a need to prepare all students for both work and continuing education to meet the demands of a high performance workplace. Higher academic expectations at Kennedy through integrated learning, equitable opportunities for the students in the Sycamore Tech Prep program, and elimination of the general track curriculum at Maple Hill are just a few examples demonstrating how state and national policies significantly impact local districts.

Yet in spite of the common systemic approach and influence from state and national policy contexts, the local district policy environments differed in ways that affected teachers and their professional development, namely: the balance between policy themes of control and commitment, the speed at which change efforts were propelled forward by local policies, and the scale of implementation.

Balance between themes of control and commitment. Though elements of the contrasting policy themes of control and commitment can be found in all three cases, the local policy environment in which each team worked had a dominant theme that set the context for teacher professional development. The Kennedy Career Center Business Technology team, for example, worked within the school district's plans for an academy...
Teachers who were in existing programs were asked to reapply for positions on the academy teams. The structure of the academies was established and the emphasis was on implementation of the design. From a professional development perspective, the teachers were focused on learning the skills necessary to implement the programmatic and classroom changes. Their first year as a team was focused on establishing the operational policies of their cluster team and creating project-based learning opportunities for the students. Though the teams of teachers, once established, were empowered to make decisions about instruction, assessment, and student discipline, the initial change efforts were characterized by clear policies that provided clarity and a specific direction. Consequently, the professional development was focused and specific as well.

In contrast, the policy environment for the team at Sycamore High School emphasized commitment. The Tech Prep team and the program director were selected early in the change process and spent an entire year visiting other programs, attending conferences, and discussing how the program should be designed. The experience of working together as a team and taking complete responsibility for the decisions that would guide the program was in and of itself a rich opportunity for teacher growth. The teachers questioned their beliefs about good teaching and learning and the elements of educational environments that support such learning. In a parallel way, the process created the kind of learning environment they were attempting to achieve for their students. Though the team functioned within specific local policies that represented an element of control, the dominant theme for the Sycamore Tech Prep team was clearly one of commitment and teacher empowerment.

The Maple Hill Tech Prep team worked in a policy environment best described as a balance between the themes of commitment and control. The district’s efforts to plan strategically for career pathways and improved student achievement gave direction to the design of the Maple Hill Electronic Communications team. When the Electronic
Communications program first began, the vocational and academic teachers selected for the program were given a clear charge to integrate academic and vocational education. The structural conditions—shared classroom space and common planning time—also supported their work as a team. These policies reflect the theme of control. Once the team was established, however, they were given much responsibility for the daily operation of the program and opportunities to make many of the decisions that would contribute to the success of the program. Consequently, the team shares a strong sense of ownership for the program and their interactions as a team constitute rich opportunities for professional development. As they plan daily instruction together and take collective responsibility for students, they continually call into question the effects of their decisions as teachers. Their teaching practice is public rather than isolated, because they develop and refine common instructional plans, team teach, and conduct common student assessments. In this way, their work environment represents the policy theme of commitment, stretching and building their strengths as teachers and providing rich possibilities for their professional growth.

Pace of the change process. Another significant difference between the policy environments in the three cases is the pace at which the change process moved forward. The Sycamore Tech Prep team took a year to plan the program before selecting students and implementing the design. This allowed them the opportunity to collect information, discuss possibilities, and focus on developing their vision for the program—all of which contributed to their professional growth as teachers as well. The integrated team at Maple Hill Technical School, though not given the luxury of a year-long planning process, was established as part of a series of incremental innovations in the Newtown School District that occurred over a period of years. These previous innovations—applied academics and career education programs—provided some "lessons learned" regarding the integration of academic and vocational education that influenced the design of the Electronic
Communications program. As the teachers began to work together as a team, those previous experiences propelled them forward into the change process.

Kennedy Career Center took a quick-start approach, designing and implementing their career academy teaching teams after a brief but intense period of research. Initially, the teachers felt frustration and struggled to find their place in the change efforts. This created an environment in which the teachers felt pressured to hone the skills they needed to implement the academy design rather than taking the opportunity to examine some of the fundamental beliefs about teaching and learning which would best support classroom change. Even though the quick start established a new structure and new opportunities for teacher learning, it may well have set up at least a temporary barrier to the kind of professional development opportunities necessary for successful reform.

Scale of implementation efforts. The policy environments in the three cases also differed with regard to the scale of the implementation efforts. Kennedy Career Center took a whole-school approach as the first building in the district to implement the academy design. This gave the teachers on the Business Technology team the opportunity to learn from the experiences of teachers on other teams in the building. On the other hand, implementing the design across the building meant massive changes in the daily operation of the school and created a volatile climate with teams working independently and sometimes at odds with one another. The Maple Hill Electronic Communications team was one of three such Tech Prep teams in the Newtown School District. They also benefited from the experience of other teams. However, with a smaller group of teachers engaging in innovation, the total school environment remained relatively stable. Now the challenge remains to bring other programs in the building on board with an integrated team approach.

The Sycamore Tech Prep team illustrates a focus on a small pocket of change agents. These teachers represent one team working with about 25 percent of the students in their particular grade level. They face the issues of operating under a different structure and
in different conditions than the rest of the teaching staff. Consequently, the team deals with the burden of continually explaining and justifying their program to other teachers and functioning within a set of school policies sometimes at odds with the way in which they would like to operate. In each of these cases, the scale of the implementation, the pace of the change efforts, and the balance between policy themes of control and commitment, have influenced teachers' opportunities for professional development.

Organizational Conditions

The organizational conditions of the three teaching teams are a critical component to their success in integrating academic and vocational education. (A summary of the data guiding the analysis of organizational conditions among the teams is provided in Table 4.)

Grouping teachers together in teams and providing them with common planning time is an organizational condition at the heart of integration as a reform strategy. In the cases in this study, the teams include both academic and vocational teachers, breaking down the traditional barriers of subject matter departments. Each team is relatively small in size, composed of four to seven teachers. The teams are also organized to serve a particular group of students. The Sycamore teachers select students and help schedule them into the Tech Prep program. Aside from one or two elective courses, students take all their classes from the teachers on the Tech Prep team. At Maple Hill, four teachers work with all the juniors and seniors enrolled in the Electronic Communications program. The students are at Maple Hill for half of the school day before returning to their home school for the rest of their classes. The vocational teachers on the Business Technology team at Kennedy Career Center serve the same students, but two of the academic teachers serve more than one team and consequently they teach students from other vocational programs. This is due to the size of the school and the number of students enrolled in various vocational programs in the
<table>
<thead>
<tr>
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<th>Kennedy Business Technology Team</th>
<th>Sycamore Tech Prep Team</th>
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<tbody>
<tr>
<td>- Four teachers—three vocational and one language arts</td>
<td>- Seven teachers—four vocational and three academic (language arts, social studies, and math)</td>
<td>- Six teachers—two vocational and four academic (language arts, social studies, math, and science)</td>
</tr>
<tr>
<td>- Serve all students in Electronic Communications Tech Prep program</td>
<td>- Serve students in Business Technology and senior students in Travel and Tourism</td>
<td>- Serve all Tech Prep 9th grade students</td>
</tr>
<tr>
<td>- Responsibility for instruction, assessment, and discipline</td>
<td>- Responsibility for instruction, assessment, and discipline</td>
<td>- Teachers select and schedule students</td>
</tr>
<tr>
<td>- Control over time and classroom space</td>
<td>- Control over time and classroom space</td>
<td></td>
</tr>
<tr>
<td>- Common planning time</td>
<td>- Building-level design team to make decisions involving all cluster teams</td>
<td>- Responsibility for instruction, assessment, and discipline</td>
</tr>
<tr>
<td>- Daily meetings</td>
<td>- Common planning time</td>
<td>- Control over time and classroom space</td>
</tr>
<tr>
<td>- Shared classroom space—three laboratories</td>
<td>- Formal meetings each week</td>
<td>- Conflict with academic department structure</td>
</tr>
<tr>
<td>- One teacher is “integrator” every fourth day</td>
<td>- Some classrooms adjacent, others down a long hallway</td>
<td>- Common planning time</td>
</tr>
<tr>
<td>- Sophisticated equipment and adequate materials for the classroom</td>
<td>- Sophisticated equipment and adequate materials for the classroom</td>
<td>- Daily meetings</td>
</tr>
<tr>
<td>- Access to formal learning experiences—conferences, externships, workshops</td>
<td>- Access to formal learning experiences—conferences, externships, workshops</td>
<td>- Classrooms adjacent</td>
</tr>
<tr>
<td>- Involvement in selection of new team members</td>
<td>- Involvement in selection of new team members</td>
<td>- Inadequate technological equipment and limited classroom materials</td>
</tr>
</tbody>
</table>

Table 4: Organizational Conditions Data Summary
building, but it is the goal at Kennedy to eventually have all academic teachers serving one cluster team. When the teachers serve the same students, the team builds a sense of collective responsibility for student welfare and the teachers are cognizant that the decisions they make as a team can enhance or constrain students' success.

**Decision-making responsibilities.** The teams in all three cases have been vested with the responsibility of making decisions about the daily operation of their programs, including instructional design, student assessment, program assessment, student behavior problems, use of instructional time and classroom space, and selection of new team members. Since some of these decisions are not within the realm of traditional school organization, the teams have had to negotiate the balance between their responsibilities and those that might be building-level responsibilities. For example, the Kennedy Career Center team spent much time deciding on discipline policies in their first year of implementation. They had been given complete authority to handle discipline problems, yet were unsure about how to deal with discrepancies with other teams in the building or with issues they felt should be handled at the building level. The result was the formation of some building-level policies that would guide disciplinary actions at that level yet support the teachers' decisions as a team.

Because the integration efforts at Sycamore High School involve just one team of teachers in the school, they, too, must frame their decisions within the larger context of school policies. The Sycamore team is interdisciplinary, but they function in a school that continues to be organized by academic departments. This complicates their participation at the building and sometimes even the district level. For example, when they decided to use a portfolio presentation in place of a final written exam for their courses, they had to justify this decision to other teachers, department chairs, and administrators who were functioning under a stringent policy for written exams. To support these kinds of decisions and the time it takes to implement them, all three teams have common planning time. Having time to
work with a relatively few number of colleagues to plan instruction and make decisions about a program provides a high level of teacher empowerment and fuels a strong sense of professionalism among the teachers on these teams. Yet even with the team structure and the common planning time, there are differences among the organizational conditions under which the teams work.

Use of common planning time. Even though all the teams have at least one period of common planning time, there are differences in the overall amount of time the team members have to interact during the school day, in the placement of that planning period during the day, and in the way in which the common time is used. As the largest of the three teams, Kennedy has a common planning period at the end of the school day and little time outside that planning period to interact with each other. Team members expressed frustration about being tired at the end of the school day and distracted from the team meeting by work that had to be done for the next day. During the first year of implementation they met every day during their planning period and spent a lot of time working out how discipline would be handled in their cluster. As a result, policies were established regarding the responsibilities of the building administrators and the responsibilities of the team members. A building-level design team was also established to deal with questions and issues across the cluster teams. With many of the operational issues resolved at the end of the first year, the Business Technology team decided to cut back their team meetings to once each week during their planning time and focus mostly on designing instruction and monitoring student progress.

In contrast to the Kennedy Business Technology team, the teams at Sycamore and Maple Hill not only meet daily during common planning time, but also interact informally throughout the school day. The Sycamore team meets the first period of every school day to discuss instruction, student progress, parent contacts, and work-based and service learning opportunities. Some of their meetings are very informal and teachers merely
exchange information about student performance or behavior. Similarly, Maple Hill teachers meet daily during their common planning time and interact constantly throughout the school day, mainly because they share classroom space. For these two teams, the level of integration goes beyond interdisciplinary project-based learning to establishing a common vocabulary among the subject areas, reinforcing key concepts, team teaching, and planning large-group learning experiences, such as seminars with speakers and work-based learning opportunities. Though the Kennedy team also interacts informally between team meetings, this is more difficult because of space constraints.

**Contiguous classroom space.** Classroom space is another difference among the three teams. At Maple Hill, four teachers share three classrooms and an office space. Since there are more teachers than classrooms, one of the team members serves as the “integrator” every fourth day and works among the three classrooms either team teaching with other teachers, assisting individual students, or addressing disciplinary problems. This space arrangement fuels a high level of integration and collegiality. Teachers must know what is going on in all classrooms and coordinate their professional decisions about the learning environment on a daily basis.

Sycamore also has contiguous classroom space, but each teacher has his or her own classroom. The teachers know what is going on in different classrooms, but are more likely to teach in a parallel way as opposed to team teaching as in the case at Maple Hill. The effect of space arrangements on integration is further emphasized at Kennedy, where some of the teachers on the team have contiguous space and others do not. The teachers who have classrooms a distance from the other team members perceive this as a handicap to their integration efforts. Not only is it difficult for them to team teach or to know what is going on in each other’s rooms, they cannot touch base with other teachers between or during classes without covering some significant distance down a hallway. This not only reduces
opportunities to integrate curriculum but to nurture collegiality. As the teacher at Sycamore explains, "As soon as you break the space, you break the bond."

**Classroom equipment and materials.** Another difference among the three schools is the adequacy of classroom equipment and materials. Both Kennedy and Maple Hill have sophisticated laboratory space, well equipped with computers and software. When Newtown began the Electronic Communications program at Maple Hill, the district renovated the classroom space with the level of business equipment often found in the workplace. The district continues to support the upgrading of the equipment. Similarly, Kennedy also has up-to-date business equipment. These two schools operate specialized vocational programs and have the funding to maintain laboratory space. Sycamore, on the other hand, operates in a comprehensive high school building that is very old. The district lacks the financial resources to purchase state-of-the-art equipment, particularly computers and software for the business laboratory. This constrains what the teachers can teach with regard to technology.

There are two other organizational conditions common among the cases that have supported teachers' professional development and enhanced the implementation of academic and vocational education. First, the teachers in all three cases have had many opportunities to participate in formal learning experiences within and outside the district. All the teams have had the benefit of wide access to external experiences, ideas, and networks through professional development workshops, conferences, and externship opportunities in business and industry. Teachers on each team have attended week-long summer institutes sponsored by Tech Prep or offered by their local district. In all cases, the teachers felt such access was a boost to their professional growth and the district's willingness to allow them these opportunities a support for their professional efforts. Secondly, the team members have had the opportunity to participate in the selection of new team members by interviewing candidates and influencing hiring decisions. In the case of
Sycamore, the teachers not only interview candidates but have designed a job description for team members that highlights some of the responsibilities specific to being a member of the Tech Prep team. Maple Hill teachers also participate in interviewing candidates and feel that their involvement enhances the possibility that they will select a “team player.” This kind of involvement promotes the development of a sense of collegiality and supports the teachers as a group of colleagues with collective responsibility.

Human and Social Resources

Human and social resources are another area of influence with regard to teacher professional development in the three case studies. Table 5 summarizes the data on human and social resources used in this section of the analysis. These resources include the influence of administrators, business, industry, and community members, and colleagues. In all three cases, central office and building administrators supportive of the integration efforts were an important human and social resource for the teachers on the teams. These administrators led others in establishing and communicating a vision for change, selected staff members to promote program implementation, assisted teams in solving problems, managed organizational conditions to support the teachers in their work, and linked teachers to resources beyond the school environment. Each team identified the building principal, and district administrators such as the superintendent, a curriculum director, program director, or vocational supervisor who provided leadership and support for their integration efforts and consequently, enhanced the teachers’ opportunities for professional growth.

Administrative support. District administrators, such as superintendents and curriculum directors, serve as advocates for the integration efforts of the team, communicating information about integration with parents and community members as well as finding the necessary financial or organizational resources to support the program.
<table>
<thead>
<tr>
<th>Maple Hill Electronic Communications Team</th>
<th>Kennedy Business Technology Team</th>
<th>Sycamore Tech Prep Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superintendent support, despite different people in the position</td>
<td>District administrative support, including identifying research team and providing a mediation specialist</td>
<td>Support from district director of curriculum and personnel</td>
</tr>
<tr>
<td>Support from district vocational supervisor</td>
<td>Support of building principal</td>
<td>Leadership of Tech Prep program director</td>
</tr>
<tr>
<td>Support of building principal</td>
<td>Setting tone of innovation and continuous improvement</td>
<td>Support of building principal</td>
</tr>
<tr>
<td>Encouraged participation on team</td>
<td>Frustration with changes in building leadership</td>
<td>Encouraged camaraderie</td>
</tr>
<tr>
<td>Organized financial support for lab space</td>
<td>Business and industry partnerships</td>
<td>Business and industry partnerships</td>
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<tr>
<td>Business and industry partnerships</td>
<td>Advisory committee</td>
<td>Advisory committee</td>
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<tr>
<td>Advisory committee</td>
<td>Model for school environment</td>
<td>Student internships</td>
</tr>
<tr>
<td>Model for school environment</td>
<td>Externships</td>
<td>Externships</td>
</tr>
<tr>
<td>Externships</td>
<td>Student internships</td>
<td>Tutoring for students</td>
</tr>
<tr>
<td>Mentors for students</td>
<td>Business and industry partnerships</td>
<td>Special projects funding</td>
</tr>
<tr>
<td>Linkages with college and technical schools through Tech Prep consortium</td>
<td>Linkages with college and technical schools</td>
<td>Linkages with college and technical schools through Tech Prep consortium</td>
</tr>
<tr>
<td>Articulation agreements</td>
<td>Information and meetings for parents during recruitment</td>
<td>Articulation agreements</td>
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<td>Information and meetings for parents during recruitment</td>
<td>Information and meetings for parents during recruitment</td>
<td>Information and meetings for parents during recruitment</td>
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<tr>
<td>Occasional parent conferences with team</td>
<td>Occasional parent conferences</td>
<td>Frequent parent conferences with team</td>
</tr>
<tr>
<td>Open houses</td>
<td>Open houses</td>
<td>Evening meetings</td>
</tr>
<tr>
<td>Misunderstandings about vocational education on the part of counselors and the community</td>
<td>Building staff all support vocational education</td>
<td>Awards banquets</td>
</tr>
<tr>
<td>Misunderstandings about vocational education on the part of counselors and the community</td>
<td>Removed from colleagues in feeder schools</td>
<td>Misunderstandings about the program</td>
</tr>
<tr>
<td></td>
<td>Contributions of team members</td>
<td>Misunderstandings about special or unique treatment for the team</td>
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<tr>
<td>Contributions of team members</td>
<td></td>
<td>Support for the team in dealing with special population of students</td>
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<td></td>
<td></td>
<td>Contributions of team members</td>
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</tbody>
</table>

Table 5: Human and Social Resources Data Summary
Even in spite of changes in district leadership, Maple Hill has consistent support from central office administrators who herald the benefits of the Tech Prep program and the importance of preparing students for both work and further education. In addition, these central office administrators make sure the resources are there for the teachers to succeed.

Identifying a program director and making that director a part of the district curriculum team was an important factor in the success of the Sycamore Tech Prep program. The Sycamore teaching team sees that director as the leader who takes their concerns to a district-wide arena and serves as an advocate for the program throughout the district and in the community. She encouraged teachers to join the team as the program began, guided them through a year of planning, and made sure they had necessary resources such as access to telephones and adjacent classroom space. She also coordinates contacts with parents, nurtures relationships with external groups, and organizes experiences such as field trips.

District administrators gave leadership to the career academy initiative for Kennedy Career Center, pulling building administrators off their regular duties for several months to research the possibilities for change and making staff and organizational changes to support the initiative at the building level. When the Business Technology team at Kennedy Career Center experienced conflict and needed assistance, it was a district administrator trained in team building and conflict resolution who was able to act as a mediator and help the team resolve the conflict. This support is critical to building an effective working relationship among the team members.

The building principals for the teams are also important sources of leadership, providing daily encouragement for the teachers and managing the organizational conditions to support the work of each team. These administrators all had the leadership ability to empower teachers to make decisions. This meant placing confidence in the capabilities of their staff and creating the conditions necessary for the teachers' success—time for
planning, access to external ideas and experiences, and assistance in resolving conflict. Building-level administrators are also a key element in attracting teachers with appropriate qualifications and capabilities to the program. There were subtle differences in the qualities each team valued in their principal. At Maple Hill, the team found their principal a source of encouragement, beginning with their selection for the team. She invited teachers’ participation. Once the team was established, the building principal was an advocate for the financial investment necessary to get the three computer labs for the program. At Sycamore, the team seemed to most appreciate their principals’ ability to build staff camaraderie. Fostering relationships with other staff assists the team in feeling a part of the building, in spite of operating under a school-within-a-school structure.

At Kennedy, the team seems to value their principal’s high expectations for professional practice. In spite of the difficulties Kennedy experienced in asking staff to apply for the career academy positions and some shifts in leadership in the first year of implementation, the most recent principal overcame some early anxiety by setting a tone for innovation and continuous improvement. As one teacher at Kennedy states, “He tries to really pull out the best in you as a teacher.” Perhaps these principals are adept at adjusting their practice to meet the needs of the teachers they serve. Nevertheless, their assistance and encouragement enhance the teachers’ ability to integrate their curriculum.

**Business, industry, and community support.** In addition to the support of district and building administrators, each of the teams has also had the benefit of assistance from business, industry and community partners. All three teams have external advisory committees and seek their input into plans for program development and continuous improvement. Business and industry contacts provide internship or job shadowing experiences for the students and externships for the teachers. Both the teachers at Maple Hill and at Sycamore participated in teacher externships and found these experiences a valuable source of professional development. Not only did the teachers gain a better
understanding of the work environments in which many of their students will soon be working, but they also brought ideas back to the classroom about what students need to learn and how to provide a relevant real-world context for instruction. Connections to business and industry are uniquely evident at Kennedy and Maple Hill because these schools are focused on preparing students for work with specialized training. Their alliance with business and industry extends to the organization of the school itself and sets a tone for the school environment as a high performance workplace. The teachers feel this contributes to their sense of professionalism and heightens the important role they play in preparing students for their life in the community. As a district with scarce financial resources, Sycamore cultivates business and industry for special projects funding. Even though there are subtle differences in the business and industry partnerships for each case, the teams value these relationships as resources that contribute to the success of their integration efforts.

Besides the linkages with business and industry, each of the teams have also forged partnerships with local colleges and universities through articulation agreements. Both Maple Hill and Sycamore have Tech Prep programs, and therefore join higher education institutions in the Tech Prep Consortia who offer two-year associate degrees. Since Sycamore does not have adequate computer equipment, their sophomore Tech Prep students are actually bused to a local community college with their high school teacher to take their business applications class once each day. In addition to the interaction through the consortium, Maple Hill teachers use college representatives as speakers in their classes. These representatives discuss postsecondary opportunities with students and encourage student enrollment in college programs, an important goal in the Tech Prep initiative. Kennedy does not have Tech Prep programs, but has had a long-standing relationship with community colleges, forging articulation agreements to help their students continue their education beyond high school career training programs.
A difference between the three cases in terms of business, industry, and community support is the way in which the teams involve parents. Since all the teams seem to value the role of parents in enhancing students' educational success, the differences seem largely due to the nature of the programs and the grade level of students they serve. For example, Sycamore serves freshman students who are still shaping their career goals and making decisions about their high school program and courses. Being in the Tech Prep program is a choice students make in their eighth grade year, and a continuing choice as they move through each grade level of high school. The student profile includes students who might not normally have been successful in a college prep series of courses with high academic expectations, such as those of the Tech Prep program. Consequently, the team makes every effort to involve parents in the choices the students make and in their academic achievement. In addition to brochures, letters, evening meetings, and an annual awards banquet, the team makes regular phone calls and holds frequent conferences. Usually the entire team is present for a conference with a parent.

Maple Hill and Kennedy serve students who are in 11th and 12th grade. Both Kennedy and Maple Hill make a big push to inform parents about the programs through brochures and meetings as students make their decision to enter the program as 10th graders. Once students are in the program, they hold parent conferences as necessary and invite parents to open house events. When they have a parent conference at Maple Hill, the entire team participates, probably due to the nature of their shared instructional approach. At Kennedy, most of the students travel a distance to attend the school and this constrains frequent parent involvement. Similarly, Maple Hill is a technical school and students only attend half a day before returning to their home high school.

Lack of support from colleagues and the community. In two of the three cases, the teachers described one constraint related to human and social resources—dealing with other staff members and community members who have a negative attitude toward the
integration program or toward vocational education in general. The teachers feel these negative views are grounded in a lack of understanding about their program. Since the Sycamore Tech Prep team operates under different working conditions than the rest of the Sycamore staff, there is some resentment from other teachers. At times, the team members feel that their work is being undermined or their decisions questioned. As Bob describes, he wishes for a time when “the rest of the school can stop fighting [the program], because then the team internally can grow and do all sorts of things.” His comments illustrate that dealing with these negative attitudes absorbs time and effort the team could spend more productively. Yet one teacher on the team feels there is support from other colleagues in the building because the Tech Prep program works successfully with a group of students who may not otherwise have had such academic and work-based learning opportunities.

The team members at Maple Hill also face negative attitudes from staff members, usually teachers and guidance counselors in other school buildings in the district. The teachers feel a lack of understanding about the Electronic Communications program, and attitudes about traditional vocational programs are at the root of this problem. The Maple Hill team attempts to overcome this constraint by designing informational materials, involving other staff in integration-related conferences and workshops, and seeking their input about program design where appropriate. Interestingly, the team members at Kennedy did not mention this constraint, perhaps because it is a large vocational school that is focused solely on career preparation. Though they serve students from many comprehensive high schools, they are removed from day-to-day interaction with colleagues who may not understand the nature of vocational education.

Contributions of team members. Finally, one of the most important human and social resources in all three cases is the contribution of skills, attitudes, and commitment of the team members themselves. With just two years of experience as a team, the Business Technology team at Kennedy relies heavily on the capabilities of the various
members of the team, such as the ability to design integrated curriculum and project-based learning opportunities. They rely on each other’s strengths and depend on individual contributions that move the work of the team forward. Similarly, the teachers on the team at Sycamore attribute much of their success with integration to the efforts of their fellow team members. After several years of working together, they share a passion for making the program work and are willing to make personal sacrifices as part of their strong commitment to helping the students succeed in the Tech Prep program. These resources, along with support from administrators and business, industry, and community partners have fueled the teachers’ professional growth and contributed to the successful integration of academic and vocational education.

School Culture

There are several common cultural characteristics among the three teams that foster the teachers’ professional development and their efforts to integrate academic and vocational education. Commonly held beliefs about teaching and learning undergird the teams’ professional practice, including the essential role of integration in developing understanding, a commitment to developing workplace readiness as well as subject matter content, and the importance of actively engaging students in the learning process. In addition to commonly held beliefs about teaching and learning, the cultural characteristics of the teams also reflect an ethic of caring that extends to the team members as well as the students they serve. Finally, the culture of each team reflects a strong sense of collegiality and teamwork. Summary data regarding school culture appears in Table 6.

Common beliefs about teaching and learning. There are several commonly held beliefs across the three teams. First, the teachers believe strongly in the value of integration. Making connections across the various subject matter areas helps students see
<table>
<thead>
<tr>
<th><strong>Maple Hill Electronic Communications Team</strong></th>
<th><strong>Kennedy Business Technology Team</strong></th>
<th><strong>Sycamore Tech Prep Team</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Importance of integration</td>
<td>Importance of integration</td>
<td>Importance of integration</td>
</tr>
<tr>
<td>Commitment to connect learning to the world of work</td>
<td>Commitment to connect learning to the world of work</td>
<td>Commitment to connect learning to community and work</td>
</tr>
<tr>
<td>Actively engaging students</td>
<td>Actively engaging students</td>
<td>Actively engaging students</td>
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<tr>
<td>Project-based learning</td>
<td>Project-based learning</td>
<td>Project-based learning</td>
</tr>
<tr>
<td>High expectations for student achievement</td>
<td>High expectations for student achievement</td>
<td>High expectations for student achievement</td>
</tr>
<tr>
<td>Responsive to needs of teachers on the team</td>
<td>Responsive to needs of teachers on the team</td>
<td>Responsive to needs of teachers on the team</td>
</tr>
<tr>
<td>Caring about students</td>
<td>Caring about students</td>
<td>Caring about students</td>
</tr>
<tr>
<td>Extra time and effort to develop best possible experiences for student learning</td>
<td>Extra time and effort to develop best possible experiences for student learning</td>
<td>Individual attention to students</td>
</tr>
<tr>
<td>Cooperative resolution of student discipline problems</td>
<td>Cooperative resolution of student discipline problems</td>
<td>Like a family</td>
</tr>
<tr>
<td>Rapport and teamwork</td>
<td>Rapport and teamwork</td>
<td>Rapport and teamwork</td>
</tr>
<tr>
<td>Democratic norms</td>
<td>Democratic norms</td>
<td>Democratic norms</td>
</tr>
<tr>
<td>Development of communication skills for resolving conflict</td>
<td>Conflict resolution through negotiation</td>
<td>Development of communication skills, common language and core values</td>
</tr>
<tr>
<td>Ability to “agree to disagree”</td>
<td>Outside assistance with conflict resolution helpful</td>
<td>Use of retreat setting to resolve conflict and solve problems</td>
</tr>
<tr>
<td>Emphasis on collective practice</td>
<td>Emphasis on corporate culture</td>
<td>Emphasis on providing equitable learning opportunities</td>
</tr>
<tr>
<td>Collective reflection about practice</td>
<td>Corporate language</td>
<td>Helping students be successful</td>
</tr>
<tr>
<td></td>
<td>Corporate problem solving processes</td>
<td></td>
</tr>
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<td></td>
<td>High performance workplace</td>
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<td></td>
<td>Commitment to fairness and justice</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Making contributions to the team</td>
<td></td>
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<tr>
<td></td>
<td>No personal agendas</td>
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</tbody>
</table>

**Table 6: School Culture Data Summary**
how information is used in the real world—in an integrated way. The cellular phone marketing and design project at Maple Hill is an example of how teachers make connections through real-world assignments. To complete such a project, students must use language arts skills such as technical writing and oral communication, graphics design skills, marketing concepts, and computer design capabilities. The teachers feel projects such as these help students apply what they are learning in different classes in an integrated way. As a Maple Hill teacher explains, “[The students] begin to see how things work together.” Teachers not only feel integration helps students see the connections between subject matter, they also believe integration helps deepen student understanding of complex concepts.

The Sycamore teachers typically choose a few key concepts, such as measurement or diversity, and focus on them in all subject matter areas for several weeks of the school year. They develop a common vocabulary and help students understand the meaning of these words as they are used in each class. Sycamore teachers plan extended projects that involve service learning and job shadowing and internships to allow students to explore careers. The teachers on all three teams seem to have conquered their fears about “covering the curriculum” which often act as a barrier to integration. Recognizing that not all instruction needs to be integrated, they decide what concepts and skills are most important to teach and find areas of integration that help students make essential connections for deep understanding.

Secondly, there is a commitment to actively engaging students in the learning process. Both the Kennedy and Maple Hill teams focus on projects across the curriculum, learning activities that replicate real-work world assignments, and performance assessment. Most projects emphasize the purpose of what students are learning to success in their future career and include a final, realistic presentation. Since the Sycamore Tech Prep team works with 9th graders, their integration efforts are more focused across academic content than
those of specific technical skills. Their authentic context may be community related as well as work related. In addition to projects, the Sycamore teachers organize a number of active learning experiences beyond the classroom such as field trips and internships in business and industry. The Sycamore teachers also involve students by having them reflect and assess their own work through a portfolio. Through active involvement, the teachers agree that students have better classroom behavior, learn content more deeply, and develop workplace readiness skills such as self-assessment and self-management.

Third, the teachers have a common vision for student achievement and a commitment to fostering that achievement. Workplace readiness and lifelong learning skills, such as problem solving, interpersonal relationship skills, and cooperation are important learning outcomes for these teachers. At Maple Hill, the Electronic Communications teachers want students to be able to "think outside the box" rather than to routinely follow a set of instructions. They encourage students to solve problems creatively and to "learn how to learn." The common vision for student achievement also includes high academic expectations. This is evidenced by the teachers’ commitment to improving student performance on standardized tests such as state proficiency tests, college placement tests, and assessments for work readiness skills. The Sycamore teachers have high academic expectations for all students because they feel it is a matter of equity. Their program offers students who would not normally be in a college-preparatory track the opportunity to learn content that will lead to college entrance and success. Hence, their students can achieve workplace readiness and high academic standards.

**Caring for students and team members.** Another characteristic of the cultural environment common to all three teams in this study is an ethic of caring. This sense of caring is reflected in their actions toward team members and toward their students. When working with their teammates, these teachers are sensitive, empathetic, and responsive to the needs of others. This is best illustrated in their support of new team members,
particularly those with less teaching experience. New team members in all three cases found their fellow team members took time to provide help in planning instruction, negotiating new procedures and policies, and dealing with student behavior problems. The more experienced teachers were often available to listen and offer suggestions. In addition to the assistance provided new team members, an ethic of caring is also reflected in how the teachers provide a source of day-to-day support for each other. One teacher at Maple Hill described how her colleagues would cheer her up when she was in a bad mood. Several of the teachers enjoy close friendships with their fellow team members, though they feel this is not absolutely necessary for the team to function well. Even when the teachers disagree, they try to express their ideas in such a way as to show respect for their differences. "We try not to attack each other personally," explains a Sycamore teacher.

This ethic of caring is also reflected in the teams' actions toward students. "I am always thinking of the kids," suggests a teacher from the Business Technology team at Kennedy. Her comment was echoed over and over by the teachers interviewed for this study. The computer-aided design teacher at Maple Hill emphasized the importance of a classroom environment in which students feel emotionally safe and free from inappropriate criticism or put-downs. His team handles discipline problems in such a way as to maintain the students' self-esteem and responsibility for their own behavior. At Kennedy, the team members can be found working over the summer vacation or late into the evening planning the best possible learning experiences for their students. Giving extra time and effort was a common occurrence across all three of the teams in this study. It is an indication of their level of caring for the students and their success, as well as their commitment to their fellow team members and to the success of their program. The Sycamore Tech Prep team expresses their sense of caring to students through lots of individual attention, similar to that found in a family setting. The teachers on the Sycamore Tech Prep team are constantly
willing to help students by spending time talking with them, conferencing with their parents, or by customizing instruction to maximize student success.

**Collegiality and teamwork.** A fundamental cultural condition of the three cases is the sense of collegiality and teamwork that pervades their day-to-day interactions. Each team has good rapport, which the members have forged through trust and respect. The teams operate under democratic norms—each team member has a right to share in the decisions of the group and a responsibility to make a contribution. They have learned, through trial and error, how to negotiate an equitable sharing of responsibilities. The Business Technology team at Kennedy, for example, responded when one team member expressed her frustration about personally doing too much of the work. Their solution was to identify duties related to the work of the team and to delegate them fairly among all the teachers. As they worked together over time, the members of each team established a focus on the success of the team rather than their success as individual teachers. As a team member from Kennedy explains, this is not only difficult to do, it is contrary to the way most teachers are prepared. “We never teach teachers that your success is in the success of your team,” Vicki states. “There is a real fear of losing control.”

In each case, the team built their sense of collegiality over time by resolving conflicts or disagreements, getting behind common causes, and working through challenging problems. Each team, as with any group of people, was composed of individuals with different personalities and was challenged with the task of learning how to respect and work with those differences. There are differences, however, in the way the teams resolve conflict, possibly due to the length of time they have had together as a team and the organizational conditions under which they work. For example, as the least experienced of the teams, Kennedy relies on more formal processes for conflict resolution. When they experienced a conflict in their first year of implementation, they resolved it with the assistance of an administrator trained in negotiation techniques. This worked very well

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for them and helped build a stronger sense of themselves as a team. Working as closely as they do at Maple Hill, the Electronic Communications team relies on good communication skills to resolve conflicts. The teachers at Maple Hill believe being forthright and willing to talk through problems was a key to their development as a team. They have also reached the point in their relationships as a team where it is possible to "agree to disagree" and are able to share their disagreements without eroding their capacity to accomplish common goals. They see overcoming conflict as a way to continually strengthen the team. After years of working together, the Sycamore team has developed not only their communication skills, but a common language and core values for working together as a team. In their third year of implementation, the Sycamore Tech Prep team experienced a sense that they were not progressing in their change efforts. They spent several days at a retreat listening to others' ideas, forming new goals, and renewing their commitment to the program. The team feels strongly that taking this time away from the school building to communicate and problem solve strengthened their ability to sustain their reform efforts.

There are several other differences in the cultural environment of these teams that are worth mentioning. Kennedy functions as a unique school culture patterned after the corporate culture of a high performance workplace. The characteristics of this culture pervade all activities of the school building and the team. Using corporate language and thinking processes such as Continuous Quality Improvement (CQI) influence the way teachers, administrators, and students work together. This culture also affects the work of the Business Technology team. Democratic principles of fairness and justice guide the team's interactions. Teachers are expected to make a contribution to the group as well as to share their opinions. As one teacher explains, that means "no whining, blaming, or personal agendas." Consequently, functioning in the team is largely about setting goals, achieving them by delegating the responsibilities as well as working cooperatively. This is in contrast to the team atmosphere at Maple Hill, where the emphasis is on collective
practice and common reflection. This is the pervasive focus of the Maple Hill team because of the structural conditions of having four teachers and three classrooms. Working in that structure requires extensive collaboration, organization, and flexibility. Since instruction is common, the team reflects on their practice together. Sycamore also has a slightly different emphasis with regard to their cultural environment, largely due to the purposes of their program and their commitment to serving students. Providing equitable learning opportunities is the focus of this team. They are committed to helping students who would not otherwise have had opportunities for rigorous content. That commitment to student success guides their interactions as a team.

Outcomes of Integration

There are several ways in which the integration of academic and vocational education influenced the schools, the students, and the teachers in the three cases. The data summary for these outcomes appears in Table 7. Though it was not a focus of this study, team members at two of the sites noted outcomes related to the entire school building. At Maple Hill, the Electronic Communications team serves as a model for other programs in the building as other teachers express interest in integrating curriculum. The program also attracts a more academically able student and that helps raise standards across the building. Kennedy identified an overall increase in building enrollment when they implemented an academy structure. In addition to these outcomes for the school building, there are also outcomes for the students and the teachers involved with integration.

Outcomes for students. The similarities and differences among the cases with regard to the outcomes for student achievement are difficult to fully assess because each site varies in their approach to collecting student data. As a school-within-a-school, Sycamore has the most difficulty tracking student progress because student data are compiled as a district or building instead of as a program. The team is working hard to better track student
### Table 7: Outcomes of Integration Data Summary

<table>
<thead>
<tr>
<th>Maple Hill Electronic Communications Team</th>
<th>Kennedy Business Technology Team</th>
<th>Sycamore Tech Prep Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Model for other teams in the school</td>
<td>- Program enrollment up across the building</td>
<td>- Better attendance for students</td>
</tr>
<tr>
<td>- Attracting more academically able students</td>
<td>- Better attendance for students</td>
<td>- Higher passage rate for proficiency tests</td>
</tr>
<tr>
<td>- Improved student scores on college placement exam</td>
<td>- Fewer expulsions</td>
<td>- Better classroom behavior</td>
</tr>
<tr>
<td>- Student technical expertise</td>
<td>- Fewer &quot;Fs&quot;</td>
<td>- Improved confidence level</td>
</tr>
<tr>
<td>- High level of college enrollment for students</td>
<td>- More motivated students</td>
<td>- Desirable working environment for teachers</td>
</tr>
<tr>
<td>- Desirable working environment for teachers</td>
<td>- Score well on end-of-project assessments</td>
<td>- Support of colleagues</td>
</tr>
<tr>
<td>- Support of colleagues</td>
<td>- Desirable working environment for teachers</td>
<td>- Reinforced beliefs and need to change from traditional methods</td>
</tr>
<tr>
<td>- Changed teachers’ beliefs about teaching and learning through collaborative planning and reflection on practice</td>
<td>- Team members shaped beliefs of others about project-based learning</td>
<td>- Improved confidence level</td>
</tr>
<tr>
<td>- Improved practice through continuous observation of others and reflection</td>
<td>- Instruction is more student-centered</td>
<td>- Fostered use of projects, integration, alternative assessment</td>
</tr>
<tr>
<td>- Integration includes team teaching and collaborative instructional planning</td>
<td>- Integration focuses on projects and parallel instruction</td>
<td>- Integration includes projects, common vocabulary, key concepts across disciplines</td>
</tr>
<tr>
<td>- Use of “integrator”</td>
<td>- Teachers feel more effective as a team</td>
<td>- Teachers feel more effective as a team</td>
</tr>
<tr>
<td>- Teachers feel more effective as a team</td>
<td>- More relaxed</td>
<td>- Increased confidence in practice</td>
</tr>
<tr>
<td>- More relaxed</td>
<td>- More willing to try new practices</td>
<td>- Value of different perspectives</td>
</tr>
<tr>
<td>- More willing to try new practices</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

progress, but they did note several important changes. First, the students have a higher rate of state proficiency test passage and better attendance rates than the general student population. The team also feels the students’ classroom behavior is better as indicated by
the very few disciplinary referrals made to the building administrators. The Maple Hill team tracks improved student achievement by scores on college placement tests and these scores are very high, particularly in relation to those of students in other programs. The principal also notes the high level of technical expertise achieved by students as evidenced by their Career Passport. There is also a high level of college enrollment after completing the Maple Hill Electronic Communications program. Kennedy carefully tracks student data and notes better attendance, fewer expulsions, and fewer "Fs." The teachers feel the students are more motivated and cite examples of improved scores on end-of-project assessments. This anecdotal data supports the idea that integrated learning leads to better student achievement.

Outcomes for teachers. There are several ways that participating in integration efforts and working with colleagues on a team influenced the professional development of teachers in the three cases. All the teachers agree that working on a team is something they value. It creates a desirable working environment in which they have the support of their colleagues. Many of the teachers expressed in the interviews that, given a choice, they would never go back to teaching and working in isolation from other teachers. The team nurtures their sense of professionalism and enhances their growth as teachers in several specific ways.

First, their experiences with integration deepened or altered beliefs about teaching and learning that influence professional practice. Any educational change efforts are shaped by the beliefs about teaching and learning shared by those involved in the change process. In these three cases, the beliefs held by the teachers have both given shape to and been shaped by the collective beliefs of the team. Many of the teachers on the teams either were selected for the team or elected to participate on the team based on their beliefs about integration, hands-on learning experiences, or the importance of a relevant context. For example, both Vicki and Jacqueline, teachers on the Kennedy Business Technology team, were selected because of their experience with integrated, team teaching and project-based
learning. Their contribution to the team has been to help those teachers with less experience design integrated kinds of instruction. On the other hand, some team members experienced a change or a strengthening of their beliefs as a result of working with the team over time. At Sycamore, Jane's commitment to integration of curriculum deepened. She came to the team feeling that traditional instruction was not effective. After several years of designing integrated instruction, she now feels that integration is essential for students to understand some concepts deeply.

Secondly, working toward integration as a team influenced the teachers' use of instructional methods. The Kennedy team feels their instruction is more learner-centered than before their integration efforts, including cooperative learning, role-playing, problem solving, and reflection on learning. Similarly, the teachers at Maple Hill have changed some of their practices because of the time they have spent watching each other teach. They are also more willing to try new instructional strategies because they have the support of other team members and can work out problems together. One member of the Sycamore team shared that before joining the team, she felt traditional methods of instruction were no longer effective. She welcomed the changes in her instruction as a result of integration—more integrated projects, emphasis on concepts bridging subject matter and ongoing assessment such as the use of portfolios.

An examination of the changes in instruction, however, reveals subtle differences in the way these teachers integrate their curriculum that may be due to the length of time they have been together as a team and the organizational conditions under which they work. With the least experience as a team among the three cases, Kennedy focuses mostly on integration through projects. With seven team members, noncontiguous classrooms and weekly meetings as a team, they use summer and workshop-related planning time to develop the four extensive projects they will do during the school year. Subgroups of two or three teachers plan additional projects on a smaller scale and there is an effort to make
instruction between vocational and academic courses parallel, even during periods when the team is not engaged in a major project.

The Maple Hill team has a much deeper level of integration because there are four teachers sharing three classrooms. With teachers rotating the responsibility as "integrator" every fourth day, each teacher must be well informed about what others are teaching or be prepared to team teach a lesson if needed. Consequently, their instruction is planned collaboratively and the content is integrated at every possible opportunity, not only through projects but also through daily instruction. The Sycamore team has taken an increasingly more sophisticated approach to integration through their years of experience. At first, the focus was on projects. In the last year, the teachers have focused more on an integrated vocabulary and the development of major concepts crossing subject matter areas through parallel instruction as well as projects. These differences in approaches reflect the depth to which teachers have developed a concept of integration that influences their professional practice.

Another outcome for teachers with regard to their participation in the integration efforts is an increased sense of efficacy, though this varies somewhat among the three cases. As part of the team, the teachers can observe how their fellow team members teach, get ideas for their own instruction, and reflect with others about the effectiveness of particular instructional decisions. Consequently, they feel their participation increases their effectiveness as teachers. For example, the teachers at Maple Hill spend a lot of time in each other's classrooms. Their instruction is highly public and followed by formal and informal conversations in which they reflect about their teaching. Consequently, they are constantly refining their professional practice. Such interactions build a sense of collective practice and continuous improvement. Their work on teams also exposes the teachers to multiple perspectives. "It's interesting, whether you realize it or not, you have a bias. [Other team members] will look at something and see what I would not see," a teacher from
Sycamore explains. These different perspectives can produce creative solutions to problems or de-escalate conflict. The increased sense of efficacy is not quite as significant for the teachers at Kennedy, perhaps because they have had less experience together as a team, they are a larger team, and their space constrains the constant interaction found at both Maple Hill and Sycamore. But the opportunity for collective practice, reflection, and exposure to multiple perspectives that is part of each team’s experience enhances the teachers’ professional growth.

Summary of Cross-Case Analysis

Each of the three districts took what can be characterized as a systemic approach to the integration of academic and vocational education. They aligned organizational conditions with curriculum, instruction, and assessment initiatives. Both state and federal policies, including the School-to-Work Opportunities Act and the 1990 Amendments to the Carl Perkins Act influenced their local integration efforts. Yet the districts differ with regard to the balance between policy themes of control and commitment, the speed at which change was implemented, and the scale of the implementation. These differences affect teacher professional development and have an impact on integration. In two of the cases, the change efforts were focused on a small group of teachers, adequate time was give to the process of program development, and teachers were actively engaged in the program design. This provides a rich environment for teacher growth and results in deeper levels of integration such as common vocabulary, aligned curriculum, and common student assessment.

Differences among the organizational conditions of the teams, though they may at first appear subtle, also have an impact on integration efforts. The teachers are empowered to make decisions about instructional design, assessment, and student discipline. When teacher interactions are fostered through common time and common space, there is a deeper
level of integration. At Maple Hill, for example, the four teachers share three classrooms. Integration includes frequent team teaching, assisting students in all classrooms, and planning nearly all instruction collaboratively. Consequently, their sense of efficacy as teachers is tightly tied to their success as a team. Working together this closely as a team fosters their professional development as teachers.

Human and social resources include the influence of administrators, business, industry and community members, and colleagues. Each team has the support of district and building personnel, though there were some differences in the nature of that support. Regardless of whether building administrators emphasized camaraderie or high expectations for practice, their actions seem to meet the needs of the teachers on the teams. Perhaps these administrators are adept at matching their support to the needs of teachers engaged in the change process. Business, industry, and community support continues to enhance the teachers' work toward integration, as well as the contributions of their team members. Two of the teams deal with an occasional lack of understanding on the part of colleagues outside the team, community members, or other school staff such as counselors.

The cultural characteristics of each team appear to be a significant influence on teachers and their professional development when integrating academic and vocational education. The teams hold common beliefs about teaching and learning, care for team members and students, and depend on their collegiality and sense of teamwork. In spite of these similarities, there are different areas of emphasis in the culture of these teams—a corporate culture, a collective practice culture, and a commitment to equitable opportunities culture. These differences exist largely because the teams have been together for differing lengths of time and work under different organization conditions.

Finally, the outcomes of integration clearly point to benefits for both students and teacher. Students tend to have higher achievement, better attendance, and more motivation. The teachers have significant professional development opportunities through the
examination of their beliefs about teaching and learning and changes in their classroom
practice. Few teachers would return to teaching in isolation from other subject areas. Yet a
close look at the level of integration in each case reveals some differences. Those teams
with more experience together and the organizational conditions to support closer
interaction tend to be more sophisticated in their integration approaches. Perhaps these
conditions have fostered a greater degree of professional development as well.

The three cases also illustrate how the four factors identified in the conceptual
framework interact to support or constrain teacher professional development. At Kennedy,
the policy decision asking teachers to reapply for positions on the cluster teams created a
change in the cultural characteristics. Teachers became anxious and frustrated. Though this
may have been a temporary condition, it none the less focused their professional
development toward honing the skills they needed for implementation rather than on
interacting with other teachers to think deeply about their practice. Another example of the
interaction between these factors is the relationship between organizational conditions and
cultural characteristics. At Maple Hill, the organization of the team creates a high level of
structured interdependence. Because the four teachers share three rooms, they must
coordinate their instruction. Consequently, the cultural characteristics reflect a greater sense
of collective practice than the other teams. Reflecting on decisions about instruction and
continually refining work is a necessity, and it creates a rich environment for teacher
professional development.
A common thread running through school reform efforts over the last fifteen years is the notion that schools must better prepare students for the world of work. All students, regardless of their immediate plans following graduation from high school, will likely be employed in a career. Efforts to integrate academic and vocational education are intended to equip students with better information for making career decisions, develop thinking and interpersonal skills important to success in the high performance workplace, and provide an authentic context for learning academic and vocational subject matter.

Integrating academic and vocational education, a challenging component of school reform, involves breaking down long-held traditions such as organizing schools by subject matter departments, tracking students into college preparatory and vocational course sequences, and teaching in isolation from colleagues. Integration also means significant changes in classroom practice, particularly teaching subject matter content in a real-life context and providing opportunities to apply content to real-life situations and problems. Consequently, teachers and their professional development are at the heart of efforts to integrate academic and vocational education. In order for integration to succeed, teachers must learn to think in new ways about the subject matter they teach, collaborate with other
teachers across subject matter areas, and relate content to real-world contexts in ways that are meaningful for students.

Literature in school reform, teacher professional development, and the integration of academic and vocational education have informed the research presented in this study. A review of this literature revealed several common themes that can inform educators seeking to integrate academic and vocational education. The conceptual framework for this study reflects these themes. They include four factors that appear to influence the professional development of teachers and hence, school reform efforts to integrate academic and vocational education. First, the environment created by local, state, and federal educational policies can enhance or constrain teacher professional development (Little, 1995; Hargreaves, 1994; Wood & Thompson, 1993). Federal and state policies establish guidelines and provide funding for school reform efforts such as integration, and the local policy context determines the change process and how teachers will be involved in those efforts. Secondly, organizational conditions are a factor in teacher professional development (Sergiovanni & Starratt, 1993; Louis, Marks, & Kruse, 1996; Lambert, 1984; Little, 1995). Effective school organization facilitates decision making by leaders, supports them as they seek access to external ideas and networks, and provides common time and space for collaboration. Organizational conditions can also constrain teacher professional development by isolating teachers from their colleagues or limiting decisions over which teachers have control. Human and social resources are yet another factor influencing teacher professional development (Fielding & Schalock, 1985; Huberman, 1983; Beck, Copa & Pease, 1991). These resources include support from the administration, community and business leaders, parents, students and fellow teachers as they seek to implement reforms. Some factors related to human and social resources, such as a lack of support from colleagues or administration can constrain teacher professional development. Finally, the culture of the school influences teachers and their development (Hargreaves &
Fullan, 1992; Little, 1995; McLaughlin, 1994; Louis, Marks, & Kruse, 1996). The norms, values, and daily work habits of those in the school environment can support or constrain teachers’ efforts to integrate academic and vocational education.

The purpose of this study was to describe the school change context for teams of teachers integrating academic and vocational education and interpret the impact of these factors on their professional development. Three case studies, developed using qualitative data from interviews, observations, and document review, illustrated the way in which contextual factors have influenced teacher professional development. The case studies of the three teams—Maple Hill Technical School, Kennedy Career Center, and Sycamore High School—portrayed the role teachers play in integrating academic and vocational education. This chapter, Chapter 6, draws conclusions from the cross-case analysis, suggests implications for practice, and outlines recommendations for further study.

**Conclusions and Implications for Practice**

Evidence from this study affirms the highly contextual nature of school reform efforts and the important role teacher professional development plays in the success of those efforts. Teachers’ professional development is enhanced by a school context that provides them with opportunities to think deeply about their practice, interact substantively with colleagues, and reflect on their actions. When their professional growth is supported, teachers are better prepared to make the fundamental changes in classroom instruction essential to school reform efforts such as the integration of academic and vocational education. These changes in classroom instruction include designing curricula across subject matter areas, actively engaging students in real-world problems related to the workplace, and teaching to high academic and workplace readiness standards.

The data from this study suggest there are four factors in the school context that support or constrain teacher professional development—the policy environment, organizational conditions, human and social resources, and cultural conditions. There are
several conclusions and implications for practice that can be drawn from the data regarding these four factors. These are presented in the section that follows. Following that discussion, there are several conclusions that can be drawn about the interaction of these factors and implications for sustaining systemic school change efforts over time.

These case studies illustrate the role of the policy environment in influencing teacher professional development. District policies create a vision for change, set expectations for teacher involvement in the change process, and establish resources for implementation. There are several aspects of the policy environment that seem to best support teacher professional development. First, as suggested by Newmann and Associates (1996) and Smith and O'Day (1991) local policies should be designed systemically to align all aspects of the system including the organization of the school, curriculum, and assessment. When change efforts are targeted toward one aspect of the system, it is difficult to achieve the intended goals and sustain the reform over time. For example, making changes in the curriculum to achieve better integration without making organizational changes in the school day to allow academic and vocational teachers time to work together creates anxiety and constrains teachers' professional development. Local leaders must also mediate the influence of state and national policies, taking full advantage of the opportunities they may provide. Each of the teams in this study used grant funds earmarked under federal legislation or linked with state initiatives driven by federal legislation or state policies. These funds, for example, supported teachers in attending conferences and workshops they would not have been able to attend given the limited nature of local resources.

Secondly, school leaders should be attentive to the policy themes of control and commitment and their consequences for teacher professional development. Similar to the findings of Little (1995), these themes have particular consequences for the teachers in this study. If control strategies dominate local policy, teachers are told what changes must be made. Consequently, teacher professional development is focused on honing the skills
necessary to implement the prescribed changes. A theme of control is advantageous in the sense that professional development is very directed, which may move change efforts forward more quickly. However, teachers may lack opportunities to take an active role in shaping the change efforts and in understanding differences which may exist between their views of teaching and learning and those related to the expected changes.

When commitment is the dominant theme, teachers are purposefully engaged in the process of creating and shaping the changes to be made. Hence, teachers' professional development is connected with the change process itself and is enhanced by the teachers' participation—discussing possibilities, developing their vision, and seeking solutions to problems. Change strategies reflecting a theme of commitment may result in a greater sense of ownership for the teachers, but proceed more slowly. In reality, most change efforts have some elements of both themes, but one or the other theme may dominate at a given point in the change process, carrying with it consequences for teacher professional development.

Finally, these case studies suggest teacher professional development is influenced by the scope and pace or intensity of school change. Local policies can determine whether change efforts are implemented across an entire school building or district or isolated in a small pocket of change as in a pilot program. While whole-school initiatives hold the advantages of offering teachers a wider support system of colleagues engaging in the change process, there is a disadvantage because the scale of the efforts makes the school environment very volatile. When change efforts are focused on a pilot program, the school environment remains relatively stable while the teachers involved in the effort work together to implement change in their program. The disadvantage to a pilot program is the teachers may be seen as different, must spend time justifying or explaining their actions, or may be resented by other staff members. In addition to attending to the scope of change efforts, the pace or intensity of these efforts is also important. A quick-start approach holds
the advantage of a more intense but efficient process, focusing the teachers’ professional development yet placing pressure on them to make the necessary changes. A slower approach carries the opportunity for teachers to learn deeply as part of the process, but risks the possibility of losing momentum or a sense of direction. As the local policy environment takes shape, leaders should consider the consequences of each approach or a combination of approaches.

The data in this study clearly highlight the important influence of organizational conditions on teacher professional development, affirming the findings in other studies of teachers engaged in the change process (Hargreaves, 1994; Little, 1995; Lieberman, 1994; Louis, Marks, & Kruse, 1996). There are several organizational conditions that greatly enhance teacher growth. First, organizing teachers into relatively small teams provides opportunities for them to share ideas, design instruction, and reflect on their practice. When the team serves the same group of students, they develop a collective responsibility for student success. In order for teachers to develop this shared sense of responsibility, the team should be vested with the ability to make decisions such as the design of instruction and assessment, use of time and classroom space, and disciplinary actions. Secondly, the teachers must have time during the school day to work and plan together without students. This time should include both a formally assigned planning time as well as opportunities for informal communication such as a common lunchtime. Thirdly, common or contiguous space facilitates teacher interaction, and hence professional development. When teachers are able to share space or work among each other’s classrooms, teaching becomes more public and opportunities to collaboratively design and reflect on professional practice are enhanced. Finally, the data in this study suggest teachers need wide access to experiences, ideas and networks such as professional development conferences, workshops, and professional organizations. These opportunities provide new ideas, foster collegiality, and enhance the teachers’ feelings of professionalism.
As suggested by other studies (Louis, Marks, & Kruse, 1996; Marks & Louis, 1997; Fielding & Schalock, 1985; Beck, Copa, & Pease, 1991), human and social resources contributed to teacher professional development in this study. Human and social resources influence teacher professional development by providing advocacy and encouragement for change efforts, resources for program implementation, and assistance in solving problems. Support for teacher professional development can come from district and building administrators, the community, or from colleagues. Administrators can provide leadership in establishing a vision for change, organize and manage the school environment to support teachers' efforts, and link teachers to both internal and external resources. Building administrators in particular play an important role in empowering teachers to make decisions and creating an environment that will support the change efforts. Business, industry and postsecondary institution linkages are also important human and social resources, particularly to those efforts focusing on the integration of academic and vocational education. Nurturing these linkages provides teachers with opportunities to understand the world of work better through externships, offer internship learning experiences to students, and get ideas for contextualizing classroom instruction. Most importantly, interaction with colleagues is a human and social resource that supports teacher professional development. When teachers work in teams, each team member brings a contribution to the group. These contributions are particularly important at the beginning of the change process when the team faces so many challenges. Consequently, local leaders should give careful thought to the composition of the team, considering individual strengths and potential contributions.

The data in this study also suggest a possible constraint to teacher professional development with regard to human and social resources. When teachers are working to integrate academic and vocational education, they may encounter other staff members or people from the community who misunderstand the purposes of vocational education and
career preparation. Interacting with those who hold negative attitudes can make teachers feel discouraged and frustrated. This barrier can be overcome by providing accurate information about programs integrating academic and vocational education and advocating the importance of these programs among the school staff, parents, and community members. Clear communication and marketing strategies are essential for gaining the support teachers need to make change efforts successful.

The importance of school culture to teacher professional development is a significant finding in this study and reflects previous research findings (Hargreaves & Fullan, 1992; Little, 1990; Little, 1995; McLaughlin, 1994; Louis, Marks, & Kruse, 1996). This study suggests several characteristics of school culture that influence teacher professional development. First, establishing common beliefs about teaching and learning is an essential part of teachers' involvement in the change process. Teachers' beliefs both give shape to and are shaped by their interactions with other teachers throughout the process. Arriving at these beliefs through reflection on practice and consensus building activities such as collaborative instructional planning supports teacher professional development. Beliefs particularly important to the integration of academic and vocational education deal with actively engaging learners, teaching to high standards of achievement, and finding connections between subject matter areas. As teachers are involved in the change process, they need opportunities to identify their beliefs as well as those associated with integration, note similarities and negotiate differences among those beliefs, and discuss how those beliefs affect their day-to-day decisions as a teacher. In addition to common beliefs about teaching and learning, a culture that reflects an ethic of caring is also important in fostering teacher professional development. In a caring environment, teachers are sensitive, empathetic, and responsive to the needs of their peers and those attitudes are evident in interactions with students as well.
A sense of collegiality and teamwork is an important cultural condition for teacher professional development. Working as part of a team enhances teachers’ feelings of efficacy and supports them in making changes in their practice. Consequently, change efforts should include team building experiences and training in teamwork skills such as negotiating sharing of responsibilities, resolving conflict, and recognizing and appreciating individual differences. Local leaders should also realize that placing people on a team does not automatically ensure a successful team. The sense of collegiality and teamwork builds over time as they establish trust, work through problems and disagreements, and achieve common goals.

Each of these four factors—the policy environment, organizational conditions, human and social resources, and school culture—individually influence teacher professional development in the context of school reform. The data from this study also suggest an interactive relationship among the factors—that is, a change in one factor may affect changes in other factors. For example, a change in local policy such as the reorganization of teachers into integrated teams as opposed to subject matter departments can have an effect on the culture of the school. A change in school culture may drive an initiative to change local policy. This conclusion has implications for managing change efforts such as the integration of academic and vocational education. Focusing change strategies on only one factor or failing to consider the implications for other factors can sabotage the change process. For example, focusing solely on block scheduling, an organizational condition, without considering the cultural factors such as beliefs about teaching and learning may result in longer class periods but no real changes in teaching methods or student achievement. It is essential that school change be planned comprehensively and systemically, considering the policy environment, organizational conditions, human and social resources, and school culture. Similarly, sustaining change
efforts over time means attending to changes in these factors and their relationship to one another.

**Recommendations for Further Research**

Each of the three cases in this study—Maple Hill, Kennedy, and Sycamore—reflect complex school change contexts and provide a rich environment for further research. As the conceptual framework asserts, the policy environment, organizational conditions, human and social resources, and school culture are all factors influencing the professional development of teachers in school reform efforts such as the integration of academic and vocational education. Since the data in this study suggest that these factors are also interactive, further research could continue to build an understanding of the relationship between these factors, their role in fostering the professional development of teachers, and ultimately, their impact on student achievement.

This study focused on the perspective of teachers in the change environment. Further qualitative research from the perspective of others involved in change efforts would be helpful. For example, this study suggests administrators are an essential human and social resource in the school context that supports teacher professional development. What is the administrators’ perspective with regard to the factors identified in the conceptual framework? What is it about these factors that support or constrain an administrators’ role in the change process, particularly in the integration of academic and vocational education? In this study, human and social resources also included several sources of external support including business and industry representatives and local colleges and universities. Their perspectives could also be explored in further research, as these findings suggest they play an important role in secondary school reform, especially in efforts to better prepare students for the workplace.
In addition to qualitative studies focusing on the perspectives of those involved in the change process, further research is needed on the relationship between change efforts and student achievement. In these three cases, evidence suggests that students have better attendance and better behavior in the classroom, quite possibly due to the authentic nature of instruction that is associated with integration. Each of the districts in this study is beginning to track student achievement to evaluate the results of integration efforts. For example, state proficiency test scores seem to be better than are those of the general student population in the districts. Further research could explore the relationship between the classroom instruction used in programs integrating academic and vocational education and the level of student achievement. In fact, given more resources of time and funding, I would have included such research questions in this study. Newmann, Secada, and Wehlage (1995) have developed an assessment for authentic classroom instruction that could be used to measure the variable of the classroom environment. That assessment, assigned by a trained classroom observer, yields a numerical measure of the degree of authenticity in instruction, which could be correlated with student achievement as measured by state proficiency test scores or another standardized measure of academic achievement. National networks of schools engaging in efforts to integrate academic and vocational education now exist, such as the High Schools That Work initiative under the direction of the Southern Regional Education Board. These schools would provide an excellent pool for sampling because they often use common student assessment tools such as the National Assessment of Educational Progress (NAEP). These types of studies might also explore the relationship between classroom instruction and the development of work-readiness skills as measured by such instruments as Work Keys.

The findings in this study highlight the contextual nature of school change and suggest that both quantitative and qualitative methods are necessary to inform successful school reform through future research. Qualitative methods such as field observation,
interviews, and document reviews provide rich description of the context of change efforts and as this study suggests, efforts to integrate academic and vocational education are highly contextual. Qualitative data reveal the differences—sometimes obvious, sometimes subtle—between each local school context. Reading such description allows school leaders to glean insights into their own circumstances and change process, not in such a way as to necessarily replicate the actions of other districts but rather to inform their own actions. Quantitative methods, on the other hand, provide the advantage of research on a larger scale and the capability to generalize findings. These methods are important in understanding relationships between certain variables in the change process and in predicting the success of particular change strategies. Both quantitative and qualitative methods are essential to further inform the field and guide successful school reform.

Summary

This chapter began with a brief summary of the conceptual framework guiding the study that was derived from the literature on school reform, teacher professional development, and the integration of academic and vocational education. Using the findings from both the case studies in Chapter 4 and the cross-case analysis in Chapter 5, conclusions and implications for practice were explained. Finally, the chapter outlined recommendations for further study.

This study centered around three school change stories, each describing a team of teachers breaking long-held traditions of classroom practice in an effort to better prepare students for both higher education and the workplace. These teachers’ stories reflect the complexity of school reform and affirm the highly contextual nature of the change process. Yet in reading their stories, common themes emerge. Four different factors—the policy environment, organizational conditions, human and social resources, and school culture—had an impact on the professional development of the teachers in these cases and fostered
school reform goals focused on the integration of academic and vocational education. These four factors, found in any school change context, should be considered when planning, managing, and sustaining reform efforts over time. Hopefully, as educational leaders face the complex challenges of school reform, these three stories and others like them will guide their decisions and lead to schools that successfully prepare students for the world that awaits them.
LIST OF REFERENCES


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APPENDIX A

CRITERIA FOR THE SELECTION OF CASES
Criteria for the Selection of Cases

To facilitate the selection of cases that had achieved fundamental changes in structure and delivery, the following criteria were used:

1. Academic and vocational teachers plan and teach content collaboratively

   Key Indicators:
   - Common planning time
   - Content that normally appears in separate academic and vocational courses now is combined in courses
   - Team teaching
   - Project-based or problem-based learning activities cooperatively taught and assessed by both academic and vocational teachers

2. Academic and vocational courses are offered within a broad, coherent program that serves students with varying ambitions and backgrounds

   Key Indicators:
   - Alternative school structure, such as
     - Career pathway: A series of academic, technological, and occupational coursework and other educational experiences leading to a career major
     - Magnet school: Occupational high school that emphasizes preparation within a career cluster
     - Academy: School-within-school; teachers (academic and vocational) collaborate to provide instruction to students; students stay with the same teachers for 2 or 3 years
     - Different programs may exist for different students (Tech Prep, vocational programs, and/or capstone courses), but operate as part of a coherent whole
     - A coherent sequence of courses exists
APPENDIX B

CONSENT FORM
CONSENT FOR PARTICIPATION IN
SOCIAL AND BEHAVIORAL RESEARCH

I consent to participating in the research study entitled:

A Comparative Case Study of Teachers
Integrating Academic and Vocational Education

Heather Boggs, co-investigator for the study, has explained the purpose of the study, the procedures to be followed, the expected duration of my participation, and possible benefits of the study.

I acknowledge that I have had the opportunity to obtain additional information regarding the study and that any questions I have raised have been answered to my full satisfaction. Furthermore, I understand that I am free to withdraw at any time and to discontinue participation in the study without prejudice to me.

Finally, I acknowledge that I have read and fully understand the consent form. I sign it freely and voluntarily. A copy has been given to me.

Date: _________________________

Signed: _______________________

(Participant)

Signed: _______________________

(Co-Investigator)

Witness: ______________________

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Interview Guide

During the personal interviews for this study, I developed the guide provided below as a framework for learning about the role teachers play in the integration of academic and vocational education. I sought to determine how the teachers became involved in designing integrated career-focused instruction, as well as the factors that fostered or constrained the process of integration.

I shared the questions below with the teachers in advance of the interview and invited them to begin wherever they would like in telling me about their experiences with integration. My goal was to understand their experiences and feelings. At the close of the interview, I used the questions to make sure we had covered all areas for discussion.

A. Demographics:
   • Current Professional Role:
   • Age:
   • Number of Years in Teaching:
   • Number of Years in Present Position:
   • Educational Experience:
   • Professional Experience:

B. How did you become involved in efforts to integrate academic and vocational education?

C. What factors supported your efforts to integrate academic and vocational education?
   • Organizational factors, such as school schedule or departmental organization?
   • School cultural factors, including the norms and expectations of teachers?
   • Policy factors, such as local, state, or other policies?
   • Teacher professional development?
   • Community factors?

D. What factors constrained your efforts to integrate academic and vocational education?
   • Organizational factors, such as school schedule or departmental organization?
• School cultural factors, including the norms and expectations of teachers?
• Policy factors, such as local, state, or other policies?
• Teacher professional development?
• Community factors?

E. What specific changes occurred as a result of the integration of academic and vocational education?
• In what ways has the experience of integrating academic and vocational education contributed to your professional development?
• In what ways has the experience influenced your teaching practice? Are you doing anything differently in the classroom as a result of integration? What has influenced you to make those changes?
• In what ways has integration influenced student learning and classroom behavior?

F. General Questions
• How has your involvement in integrating academic and vocational education influenced your perceptions about good teaching and learning?
• In what ways has the experience of integrating curriculum empowered you to support and facilitate other teachers' professional growth?
APPENDIX D

LIST AND DEFINITION OF CODING CATEGORIES
<table>
<thead>
<tr>
<th>Organizational Conditions</th>
<th>Human and Social Resources</th>
<th>Policy Environment</th>
<th>School Culture</th>
<th>Outcomes of Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>OI: Structured interdependence, capacity to make decisions and solve problems</td>
<td>RDP: Support of school district personnel</td>
<td>PB: Building policy</td>
<td>CCT: Norms of collegiality and teamwork (value of diversity, democratic principles)</td>
<td>OS: Outcomes for school (alignment of system, equitable education for all)</td>
</tr>
<tr>
<td>OSP: Space</td>
<td>RBP: Support of building administration</td>
<td>PD: District policy</td>
<td>CSL: Commitment to student learning</td>
<td>OT: Outcomes for teachers</td>
</tr>
<tr>
<td>OT: Time</td>
<td>RT: Support of other teachers</td>
<td>PSR: State/regional policy</td>
<td>CEP: Commitment to exemplary practice</td>
<td>OST: Student outcomes</td>
</tr>
<tr>
<td>OSS: Size of team or size of group of students</td>
<td>RBI: Support of business and industry</td>
<td>PF: Federal policy</td>
<td>CTL: Beliefs about teaching and learning</td>
<td></td>
</tr>
<tr>
<td>OAE: Access to external ideas, experiences or networks</td>
<td>RP: Support of parents</td>
<td></td>
<td>CCP: Collective practice</td>
<td></td>
</tr>
<tr>
<td>OF: Financial resources</td>
<td>RC: Support of community</td>
<td></td>
<td>CEC: Ethic of caring</td>
<td></td>
</tr>
<tr>
<td>RST: Support of students</td>
<td></td>
<td></td>
<td>CA: Attitudes about purpose of schooling</td>
<td></td>
</tr>
</tbody>
</table>

List and Definition of Coding Categories
APPENDIX E

LETTER FOR FIRST MEMBER CHECK
To: Teachers Participating in Interviews

From: Heather Boggs, Doctoral Student

Thanks so much for taking the time to complete an interview for my research on integrating academic and vocational education. Attached please find a copy of the transcript from your interview. As promised, you now have an opportunity to review the transcript to make sure I have transcribed your responses accurately.

You may also made additions to the transcript if you would like to clarify something you said or further expand on it. You can do this by writing on the transcript itself and returning it to me in the attached envelope. If you prefer, you can contact me with your clarification by telephone (H: xxx-xxx-xxxx or W: xxx-xxx-xxxx) or by e-mail (xxxxx.xx@xxx.xxx).

Your responses may have included names of other teachers, students, or schools and those were difficult to transcribe from the tape. If you wish, you can correct those for the record, but as with all other aspects of the reporting of this study, all names will be changed in the case studies.

If I do not receive your corrections or clarifications by Friday, October 9, I will assume that you felt the transcript was accurate and have no changes or additions.

In the next phase of the research, I will be writing the case study about your team. I will send you the case study and ask you to respond to the accuracy of the description. After that, I will do a cross-case analysis of the other three teams included in the study. When the study is finished, I would be happy to share the findings with you. I think you will be interested to read the cases of other districts I have been studying and to find out what you have in common and what you have done that is unique.

Again, I want to thank you for your participation and willingness to share openly with me your ideas and feelings about integration. I was so impressed with what you have accomplished and your level of commitment to meeting the needs of students. Keep up the great work!
APPENDIX F

LETTER FOR SECOND MEMBER CHECK
To: Research Study Participants

From: Heather Boggs, Doctoral Candidate

Thank you very much for participating in my research study on teams of teachers integrating academic and vocational education. I appreciated the opportunity to interview each of you and to observe at your schools in September and October. Since then, I have analyzed all of the data I collected from the interviews, the observation notes, and the documents I reviewed. I wrote three case studies, each focusing on the work of an exemplary team.

The next step in the research process is to give you an opportunity to review the case study about your team and complete the attached response form. The purpose of this review is to check for accuracy, fairness, and validity. After you have read the case study, complete the questions on the response form and return it to me in the enclosed envelope by Friday, December 18.

As you read the case study, please keep the following in mind:

The case studies are all organized according to the same categories: school setting, policy environment, organizational conditions, human and social resources, cultural conditions, and outcomes of integration. These represent common themes among the case studies and will help me organize the cross-case analysis.

Pseudonyms are used for the names of schools and individuals. In some instances, you provided these to me and in others you left it to me to choose. Let me know if there are any concerns about the pseudonyms I have selected for you or for your school.

After I have received your feedback, I will finalize the case studies, write the cross-case analysis, and submit the dissertation to my advisor. Once the document is finished, I will provide copies to your school and an Executive Summary of the study to each of you.

Again, thank you for your assistance. If you have any questions about the case studies or the response form, do not hesitate to call me at work (xxx-xxx-xxxx) at home (xxx-xxx-xxxx) or via e-mail (xxxxx.xx@xxx.xxx).
To: Peer Reviewers

From: Heather Boggs, Doctoral Candidate

Thank you for agreeing to serve as a peer reviewer for my research study on teams of teachers integrating academic and vocational education. Attached you will find the conceptual framework for the study, Chapter 4 which includes the three case studies, and Chapter 5 which describes the cross-case analysis, implications for practice, and recommendations for further study.

The purpose of this qualitative study is to describe the influence of contextual factors in supporting or constraining teacher professional development and hence, the integration of academic and vocational education. Four contextual factors were identified in the literature: the policy environment, organizational conditions, human and social resources, and cultural conditions. Interviews, observations, and document reviews were used to collect data to develop case studies of three teams of teachers.

Your role as a peer reviewer is to read the data presented in the case studies in Chapter 4 and assess the accuracy and thoroughness of my analysis of the data in Chapter 5. These questions should guide your review:

• Does the cross-case analysis represent a thorough and accurate comparison of the three cases?
• Are the conclusions and implications for practice thorough and accurate given the data presented?
• Are the recommendations for further research comprehensive and logical given the findings in the study?

You may write your comments and suggestions directly on the attached copies and return them to me when you have completed your review. Please remember that the names of the schools and the teachers have been changed to maintain their anonymity. Even though you may recognize a particular school context or team, I ask that you respect that confidentiality.