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THE ROLE OF DATA IN DECISION MAKING ABOUT ONLINE DISTANCE
EDUCATION: A CASE STUDY OF THREE COMMUNITY COLLEGES

A Dissertation Presented

by

WILLIAM A. HEINEMAN

Submitted to the Office of Graduate Studies,
University of Massachusetts Boston,
in partial fulfillment of the requirements for the degree of

DOCTOR OF EDUCATION

June 2011

Higher Education Administration Program

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ABSTRACT

THE ROLE OF DATA IN DECISION MAKING ABOUT ONLINE DISTANCE EDUCATION: A CASE STUDY OF THREE COMMUNITY COLLEGES

June 2011

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Community colleges face pressures to use data to make decisions as they expand online distance education, but practical and political factors as well as the emergent nature of online distance education can be obstacles to making decisions in this way. Using a multiple case study strategy, this study examined the following research questions: 1) How and to what extent do community college academic leaders use data when making decisions about online distance education? 2) What data about online distance education do community college academic leaders cite as influences on their decision making and how strong are those influences? 3) How does the emergent nature of online distance education influence the availability of information and the ways in which community college academic leaders use data to make decisions? 4) What decision making processes do community college academic

leaders use under different conditions of data availability and different levels of data quality? Findings of the study suggest that data are influential in online distance education decision making, especially if the decisions have major consequences; that the emergent nature of online distance education can limit data availability, but that college leaders can still make decisions by gathering data that do exist, generating new data through pilots, and using their experience and judgment; that the rational choice, incremental, political, and constructivist models are useful for explaining online distance education decision making; and that contingency approaches that combine elements of these models are particularly helpful for providing the most complete explanations for these complex decisions.

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CHAPTER 1

INTRODUCTION

Background to the Study

Community colleges face substantial challenges pursuing multiple missions—including workforce development, remedial education, community service, and preparation of undergraduates for transfer to four-year institutions—with modest budgets (Dougherty & Townsend, 2006). Student demand for access to public two-year colleges has skyrocketed with enrollments tripling from 2.2 million to 6.6 million between 1970 and 2008 (National Center for Education Statistics, 2010). Not surprisingly, these institutions have had to spend more to meet this demand, but their resources have not kept pace. Community colleges' expenditures grew at twice the rate of increases in in-state tuition and fees between 1970-1971 and 2007-2008 (National Center for Education Statistics, 2007, 2010). From the mid-1970s to 2007-2008, meanwhile, the combined federal, state, and local government share of community college revenues fell from 76 to 73 percent (A. Dowd, 2004; National Center for Education Statistics, 1979, 2010).

Shifts in public funding toward health care, corrections, and other national priorities; rising tuition rates; and concerns about graduation and retention rates and student learning have fed rising demands for accountability at all levels of higher education, including public two-year institutions. Many citizens, policy makers, and

community college leaders want better student performance and more efficient use of public and tuition dollars (Dougherty & Townsend, 2006). Criticism of community colleges has focused particularly on graduation rates and poor retention (Lassen, 2007). The Spellings Commission's report (2006) laments low graduation rates, poor student scores on national assessment tests, and employer complaints about the skill levels of college graduates. In response, it calls for innovation in teaching and learning, lower costs, better student performance, and greater commitment to learning outcomes assessment.

A data-based approach to decision making is one commonly advocated strategy for increasing efficiency and competitiveness and meeting external demands for accountability. This study defines the term "data-based decision making" as the thorough collection and objective analysis of data to make decisions. Cost-benefit projections, retention and graduation rates, and assessment of student learning outcomes are just a few of the possible sources of data upon which community college academic leaders can draw in making decisions (Bailey & Alfonso, 2005; Lassen, 2007; Oliver & Conole, 2003; Pacheco, 1999; Skolits & Graybeal, 2007).

The accountability and resource-related challenges currently facing community colleges converge in the rapidly expanding online distance education sector (Bramble & Panda, 2008b). The number of American higher education students taking online courses more than tripled to 5.6 million between 2002 and 2009 (Allen & Seaman, 2010b). Over half of these enrollments are at community colleges (Allen & Seaman, 2008). More than 70 percent of community colleges reported that they could not keep up with the demand

for online distance education in 2007 (Jaschik, 2007), and this was before additional, substantial online enrollment increases in 2008 and 2009 related to the troubled economy (Allen & Seaman, 2010b; Jaschik, 2009a). This growth forces academic leaders to face major decisions. Should community colleges offer online courses and programs and, if so, which ones and how extensively? How will they forecast student enrollments? How much money should they invest in technology, faculty development, and the other necessities of online distance education? What sorts of pedagogies and support services should they offer students? What adaptations of faculty workload and expectations should they consider (Adams & Seagren, 2004; Beaudoin, 2003; Owen & Demb, 2004; Watson, 2004; Western Cooperative for Educational Telecommunications, 2009)?

President Obama and many other policy makers and practitioners hope that online distance education can meet growing enrollment demand while limiting the building of expensive new facilities (Bramble & Panda, 2008a; Jaschik, 2009b; Jordan, 2009). They see this expanding sector—guided by careful, data-based decisions—as an opportunity to improve productivity (Moon, Michelich, & McKinnon, 2005; Saba, 2005; *Ten public policy issues for higher education in 2005 and 2006*, 2005). For instance, accreditors expect measured results, such as student retention rates, to drive resource allocation in distance learning programs (Office of Postsecondary Education, 2006). Such practices designed to promote accountability are part of a rational, linear approach to decision making, in which organizations set clear goals, collect all the information needed to objectively analyze all the possible alternative strategies to reach those goals, choose the

strategy that maximizes their chances of success, and then gather more data during implementation to measure their progress and refine the strategy (Chaffee, 1985).

Extensive theoretical and empirical research, however, raises questions about such a rational approach. The assumptions of rational decision making may be problematic, such as the availability of all the necessary information and the human capacity to process it fully (Etzioni, 1967; Hammond, Keeney, & Raiffa, 2006; Lindblom, 1979; Tarter & Hoy, 1998). Empirical studies suggest that there are also significant institutional and environmental obstacles to a rational, data-based approach. Community college academic leaders tend to have little training in budgeting or finance (McBride, 2000), for instance, and they lack the time to collect and analyze large volumes of information (Laden, 1997, 2002; Romero, Purdy, Rodriguez, & Richards, 2005). Community colleges, like other higher education institutions, also have high levels of structural differentiation, and gaining cooperation among the differentiated units requires political bargaining among multiple players (Anderson, Murray, & Olivarez, 2002; Findlen, 2000; Pacheco, 1999). In this context, data may be used as a lever of power rather than as an objective way to choose among alternatives (Dean & Sharfman, 1993).

Environmental barriers also exist. Community colleges are generally part of larger public systems of higher education, and state legislatures, governing and coordinating boards, or system offices may impose decisions from above that are neither rational nor based upon data (Dougherty & Townsend, 2006; Noland, 2006). A budget cut, for example, could prevent a rational, long-term investment in facilities maintenance

that would save money over time. Moreover, competing constituencies can force community colleges' priorities to shift. Such shifts in emphasis among these institutions' multiple missions align poorly with the assumption of rational decision making models that organizations have clear, consistent, and broadly supported goals (Sellers, 2005; Tarter & Hoy, 1998).

Besides these institutional and environmental barriers to data-based decision making, online distance education poses an even larger challenge: its emergent nature. In a sector that is growing so fast and that is based on rapidly changing technology and competitive factors—including the growth of online for-profit colleges—it is questionable how much relevant information is available to community college academic leaders as they make their choices (Adams & Seagren, 2004; Allen & Seaman, 2010b; Betts & Sikorski, 2008; Burge, 2008; Chapman, 2006; Owen & Demb, 2004). Data-based decision making, therefore, may be particularly problematic with respect to online distance education. Institutional leaders instead may have to rely on instinct, intuition, and experimentation to grapple with the uncertainty inherent in this sector.

Problem Statement

Community college academic leaders face conflicting pressures in using data to make decisions about online distance education. Demands for accountability and the need to maximize productivity in an environment of rising enrollments and tight finances have many policy makers and practitioners arguing for data-based decision making and advocating for expansion of online distance education (Dougherty & Townsend, 2006; Lassen, 2007; Secretary of Education's Commission on the Future of Higher Education,

2006; Stumpf, McCrimon & Davis; 2005). Major obstacles exist to such an approach, however. Practical factors—including academic leaders' lack of time and training—and political issues (such as externally imposed rules) may hinder the use of data in any community college decision (Anderson et al., 2002; McBride, 2000; Romero et al., 2005), while the emergent nature of online distance education poses its own unique challenges. It is difficult to estimate long-term costs, for example, when the rapid pace of technological change may make a new learning management system obsolete far sooner than expected. Student and faculty willingness and ability to adapt to such advances in technology—which will affect both the demand for and supply of online distance education—can be difficult to predict as well (Adams & Seagren, 2004; Betts & Sikorski, 2008; Burge, 2008; Chapman, 2006).

In such a context, community college academic leaders following a data-based approach to decision making may spend precious time searching for current and relevant information that either does not exist or is of dubious or fleeting accuracy (Owen & Demb, 2004). An approach that requires the collection and analysis of data before making choices may also cause these leaders to miss opportunities to employ alternative methods of decision making that could advance online distance education and may be more suited to its emergent nature. For instance, an organization could actively experiment by piloting some online courses. Although the pilot may fail in terms of costs, technology or student demand, it is likely to generate more accurate data about all these issues than passively waiting for information. Such data could be used to refine strategies for future experimentation. In this way, academic leaders could build a

successful online distance education effort and continuously learn more about their uncertain environment at the same time (Daft & Weick, 1984; Oliver & Conole, 2003).

Although there is extensive research on decision making (Tarter & Hoy, 1998; Taylor, 1990)—and some literature about this subject in community colleges (Brock et al., 2007; Clagett, 2004b, 2004a; Eddy, 2003; Goho & Webb, 2003; Kranitz & Hart, 1998; Stanley, 2005)—choices about online distance education at these institutions have received relatively little attention. The stakes for these types of decisions are high as the rapid growth of online distance education compels community college leaders to consider questions about access, costs, and technology (Allen & Seaman, 2010b; Saba, 2005).

Purpose and Research Questions

The purpose of this study is to explore how and to what extent community college academic leaders use data when making decisions about online distance education. It examines these leaders' descriptions of the information they use in making decisions about online distance education as well as the importance of data relative to other factors. In other words, do data drive, inform, or have little impact on those decisions?

The study also probes how the emergent nature of online distance education influences the availability of information and the ways in which community college academic leaders use it to make choices. In pursuing these questions, the study explores the feasibility of data-based decision making in this field as well as alternative approaches that either have more modest expectations for the role of data in decision making or assume that data are not available at all. An understanding of these alternatives may help community college leaders to make decisions about online distance

education more effectively. The study will also be useful to scholars of decision making. It inquires into the relevance of various decision making theories to online distance education. Few studies have considered this question, so this research advances understanding of the applicability of decision making models in an emergent sector.

For the purposes of this study, the term “online distance education” is defined as credit-bearing academic courses or programs offered by colleges and universities whose academic content is delivered primarily over the Internet. In addition, the term “data” is defined broadly, to include—as it is elsewhere in the literature—quantitative and qualitative information on costs (Betts & Sikorski, 2008; Dellow & Losinger, 2004), student demand (Compura, 2003), enrollments (Allen & Seaman, 2010b), retention (Manning & Bostian, 2006), technology (Owen & Demb, 2004), learning outcomes (Peterson & Augustine, 2000) and other topics related to online distance education gathered from scholarly research, other colleges’ experiences, or internal institutional analyses and projections.

The literature suggests that leaders in multiple positions have responsibility for making academic decisions about online distance education, including vice presidents of academic affairs, deans, directors of online learning and technology, faculty, and other staff, such as instructional designers (Adams & Seagren, 2004; Cox, 2005; Owen & Demb, 2004; Sachs, 2004). For the purposes of this study, therefore, the term “academic leaders” is used broadly to include any community college employee who has a role in making academic decisions about online distance education. It is possible, however, that leaders in different roles—for instance, administrators as opposed to faculty—perceive

and employ data differently. To capture these variations, the unit of analysis in this research is the decision making system at three community colleges explored as case studies. This system includes all the key institutional leaders in online distance education, their views and behavior, as well as the institutional and environmental factors that influence them. Thus the unit of analysis is flexible enough to encompass varying institutional processes of decision making, and also inclusive enough to examine the different views about and uses of data by individuals or groups within each college.

This study seeks to answer the following research questions: How and to what extent do community college academic leaders use data when making decisions about online distance education?

- What data about online distance education do community college academic leaders cite as influences on their decision making and how strong are those influences?
- How does the emergent nature of online distance education influence the availability of information and the ways in which community college academic leaders use data to make decisions?
- What decision making processes do community college academic leaders use under different conditions of data availability and different levels of data quality?

Significance of the Study

This study will be of significant value to policy makers and community college leaders. Online distance education offers one way for public two-year institutions with modest resources to absorb rising enrollments, while meeting demands for accountability

and greater productivity. Sixty-six percent of chief academic officers at associates degree-granting institutions surveyed in 2008 reported that online courses were critical to their college's long-term plan (Allen & Seaman, 2010a). In 2006, three-quarters of those respondents believed that online distance learning serves students who otherwise would not attend, thus promoting the mission of access (Allen & Seaman, 2006). It will be helpful for these academic leaders to learn about the feasibility of data-based approaches to decision making as well as alternative methods they could pursue. The study should assist policy makers to understand the limits of available information on online distance education and the challenges to data-based decision making in general. It could also help them to consider decision making strategies that account for relevant information but also hold realistic expectations about the degree to which data can determine the choices of community college academic leaders.

The study also makes contributions to the scholarship on decision making. Many studies examine this topic (Herne & Setala, 2004; Tarter & Hoy, 1998; Taylor, 1990), including research that considers decision making in higher education (Birnbaum, 1992; Neumann, 1995; Pfeffer & Moore, 1980). Theoretical and empirical work is also available on the role of data in decision making in community colleges (Brock et al., 2007; Eddy, 2003, 2006; Goho & Webb, 2003; Morest & Jenkins, 2007; Noland, 2006). However, there are few studies that consider how these institutions' academic leaders gather, interpret, and use data to make choices about online distance education (Adams & Seagren, 2004; Cox, 2005; Owen & Demb, 2004; Sachs, 2004).

Since this limited literature suggests the value of several different decision making models—even in explaining a single decision—the use of a contingency theory that encompasses multiple models would likely yield new, meaningful insights regarding decision making for online distance education. Rather than relying on any single model to explain decision making, the contingency perspective assumes that different models may be useful in different contexts (Tarter & Hoy, 1998). For instance, a rational model might predict the behavior of decision makers at an institution where there is consensus on goals, extensive data available as well as time to analyze it, while a political model might describe that same college better if there was conflict about goals and leaders were more focused on bargaining or protecting power than objectively analyzing data. A contingency framework explicitly accounts for these contextual factors and applies the model that is most suited to them. This study employs Daft and Weick's (1984) model of organizations as interpretation systems as a way to account for multiple contingencies in academic decision making. Thus, it should improve understanding of how decision making behavior concerning online distance education aligns with existing theory and suggest directions for new theory building.

To explore available decision making theories, and explain the relevance of Daft and Weick's (1984) model in particular, this study now turns to a review of the literature.

CHAPTER 2

LITERATURE REVIEW

This study explores the role of data in community college academic leaders' decisions about online distance education. This literature review will examine a range of decision making models, the relevance of those models to online distance education at community colleges, and supporting empirical evidence. The analysis in this chapter will reveal that multiple decision making models are helpful in understanding decisions in this sector depending on the context. This reality is reflected in contingency models that argue multiple theories are relevant in explaining decision making behavior. The literature review will conclude by examining one of these models—Daft and Weick's (1984) model of organizations as interpretation systems—and explaining how it will be particularly useful as a conceptual framework for this study. This model incorporates rational choice, incremental, political and constructivist decision making theories.

The literature on decision making is vast, rich, and varied. Multiple academic disciplines—including business, economics, political science, and psychology—have contributed to it (Herne & Setala, 2004; Taylor, 1990). Numerous models have evolved to try to explain decision making and within each scholars have developed an array of theories examining specific aspects of the subject (Tarter & Hoy, 1998; Taylor, 1990).

This review will employ three criteria to identify the most helpful theories for understanding online distance education decision making in community colleges, particularly with respect to the role of data. First, the theories need to be relevant to the study of higher education institutions in general and community colleges in particular. These organizations, for instance, tend to feature shared governance and loose coupling, with semi-autonomous professionals pursuing an array of goals (Anderson et al., 2002; Birnbaum, 1992; Findlen, 2000; Mignot-Gerard, 2003; Pacheco, 1999). Second, relevant models must emphasize the role of data and their analysis in the decision making process. Daft and Weick (1984) argue that organizations are far more complex than the mechanical or biological metaphors sometimes used to try to understand them and that the way they collect data and try to make sense of them are central to comprehending their choices. The last criterion is empirical support. The more a model has proven to accurately depict observed decision making processes, particularly about online distance education, the more relevant it is to this study.

Rational Choice

This section will describe the basic tenets of rational choice theory, with a particular focus on the importance it places on the collection and objective analysis of data to make decisions. It will also examine the empirical evidence for this theory both in community colleges generally and concerning online distance education decisions in particular. It concludes with a discussion of the shortcomings of rational choice.

Theories of Rational Choice

The rational choice model is drawn from classical economic theory. Among other things, it assumes that decision makers have clear goals, that they have all the data they need to analyze multiple alternatives, and that they desire to maximize the effectiveness of their institution by making the optimum choice (Lyles & Thomas, 1988; Tarter & Hoy, 1998). This approach clearly informs some strategic planning theories (Eisenhardt & Zbaracki, 1992; Lyles & Thomas, 1988; Mintzberg, Raisinghani, & Theoret, 1976; Thomas & McDaniel, 1990). In particular, linear strategy models call for organizations to set out broad strategic goals and to operationalize them by making decisions—about budget allocation and personnel, for instance—that are in tune with those objectives (Chaffee, 1985; Pisel, 2008; Taylor, 1990). SWOT (strengths, weaknesses, opportunities and threats) analysis is one example of a tool that can be used in this approach. This tool requires an institution to gather information internally about its strengths and weaknesses and to scan the external environment for data about threats and opportunities, and then objectively assess how competitive it is given these factors. The goal is to use rational analysis of data to improve the institution's position by matching strengths to opportunities and by protecting it from internal weaknesses and external threats (Trainer, 2004).

The role of information. Information is central to the rational choice model. Dean and Sharfman (1993), in fact, define rationality as the gathering and analysis of data to make decisions. This perspective assumes that information, interpreted objectively, will lead to choices that maximize the utility of an organization. For instance, Gayawali,

Stewart and Grant (1997) argue that the availability of quality data can lead to organizational learning, which in turn yields better decisions. In contrast, a lack of data hinders decision making. In discussing the role of institutional research in providing support for higher education leaders, Howard (2001) asserts that the goal is to “...reduce the decision maker’s uncertainty...” (p. 45). Similarly, Seybert (1991) sees the job of institutional research as improving decision making by supplying timely and accurate data. Although Pisel (2008) acknowledges that some uncertainty is to be expected, he argues that a rational strategic planning process can deal with this by making assumptions. However, such assumptions should be as few as possible and be logical and grounded in reality.

The rational choice literature contains numerous descriptions of the process by which data inform decisions. Most models, whether classical or more recent versions, begin with information collecting, particularly various types of scanning of the situation within and outside of an organization. Interpretation and analysis of the data generally follow to include identification or diagnosis of issues and problems. This leads to the formulation of alternatives for decision makers to choose among. Finally, one of the alternatives is picked, subsequent choices—for instance, about resources, personnel, or other key organizational factors—are made to implement it, and feedback is sought to gauge how well the decision is working (Allison, 1971; Brock et al., 2007; Clark et al., 2000; Daft & Weick, 1984; Ewell, 2002; Greaves & Sorenson, 1999; Howard, 2001; March & Simon, 1958; Mintzberg et al., 1976; Petrides, 2002b; Raiffa, 1968; Thompson, 1967). Data play an important role in every step of this rational process. They help the

organization to sense problems in its environment, diagnose the causes, judge the potential solutions, and then assess the effectiveness of decisions.

The rationalist emphasis on gathering and objectively interpreting information is anchored in scientific, positivist modes of thinking. Sanderson (2003) explains that this approach has its origin in Enlightenment perspectives like Bacon's that knowledge can improve the human condition. Bensimon (2003) also points to roots of rational decision making in Dewey's view that experiencing real life conditions should inform actions to influence them. Scientific, evidence-based practice has a long tradition in agriculture and medicine, particularly clinical decision making (Fitzgibbon, 2003; Simons, 2003; Simons, Kushner, Jones, & James, 2003; Yorke et al., 2005).

This perspective has gained increased support recently from those advocating the development of a culture of evidence—also called evidence-based practice (Simons, 2003)—in colleges and universities (Lassen, 2007; Revolutionary leadership concepts in higher education, 2006). This paper will adopt the definition of a culture of evidence used by the Lumina Foundation for Education's Achieving the Dream initiative: "The initiative is attempting to focus community colleges on *understanding and making better use of data to improve student outcomes*—a process that is referred to as 'building a culture of evidence.' Participating colleges collect and analyze longitudinal data on student achievement..." and "...are expected to assess what is happening on their campuses in an open, straightforward, and rigorous way and to make lasting changes in their operations and culture" (Brock et al., 2007, p. ES-1). Clearly, data-based decision making would be a central feature of this culture.

Bailey and Alfonso (2005) provide a similar definition of a culture of evidence: “...institutional research functions play a more prominent role and faculty and administrators are more engaged with data and research...” (p. 3). Some proponents of the culture of evidence in education suggest that ideally data should be derived from randomized controlled experiments (Fitzgibbon, 2003; Oliver & Conole, 2003; Slavin, 2002). A few governments have embraced this call; Dowd (2005) notes that federal education authorities in the United States favor quasi experiments to improve school performance. The implication is that “hard” data—which can be precisely measured and often quantified—are the most valuable in decision making (Oliver & Conole, 2003).

A number of factors are driving the growing calls for higher education institutions, including community colleges, to base decisions more extensively upon data. Demands for accountability by elected officials, government agencies, accrediting organizations and the public are well documented (Bailey & Alfonso, 2005; Brock et al., 2007; Clagett, 2004b; Ewell, 2002; Fitzgibbon, 2003; Morest & Jenkins, 2007; *Creating a culture of inquiry*, 2005; Pacheco, 1999; Romero et al., 2005; Skolits & Graybeal, 2007). These stakeholders want to see evidence of student learning and institutional cost effectiveness in the form of outcomes assessment data, graduation and retention rates, financial statistics and other tangible data on colleges’ performance. For community colleges, increasing enrollments—particularly of disadvantaged students—and uncertain funding put a premium on decisions that make the organization more efficient, effective, and competitive (Bailey & Alfonso, 2005; Brock et al., 2007; Ferren & Aylesworth, 2001; Ferren & Slavings, 2000; Fitzgibbon, 2003; Goho & Webb, 2003; Morest &

Jenkins, 2007; Romero et al., 2005). Advocates of a culture of evidence argue that decisions based on data should replace those grounded in politics, favoritism, guesswork, or anecdotal information (Ferren & Aylesworth, 2001). As Fitzgibbon (2003) asserts, "...if our intuitions were accurate we would scarcely need research" (p. 321).

Rational choice theory and online distance education. Accrediting and regulating agencies, as well as competition from other institutions, are also pushing colleges toward rational, data-based decision making processes in online distance education (Chapman, 2006; Office of Postsecondary Education, 2006; Pisel, 2008; Stumpf, et al., 2005). Multiple scholars advocate activities consistent with data-based decision making, including strategic planning, environmental scanning, needs assessments, cost-benefit analyses, and continuous quality assessment and improvement (Beaudoin, 2003; Betts & Sikorski, 2008; Chapman, 2006; Gordon, He, & Abdous, 2009; Kinser, 2003; Laurillard, 2007; Owen & Demb, 2004; Pisel, 2008; Rumble, 2001; Shaik, Lowe, & Pinegar, 2006; Stumpf et al., 2005; Watson, 2004). For example, Hunt (2005) argues that distance education needs to be studied scientifically and offers a decision-tree model to enable the integration of online courses into international graduate business programs. Laurillard (2007) has designed a planning model to help decision makers predict the costs and benefits of introducing technology enhanced learning methods. Similarly, Betts and Sikorksi (2008) advocate establishing metrics for the costs of faculty attrition in online distance education programs to help administrators make better decisions about hiring, training, and retaining instructors.

Most of the theory building, however, has been confined to identifying the key elements in a successful online distance education effort. Compura's (2003) administrative model, for instance, includes mission, needs assessment, student demographics, curriculum design and assessment, technology, faculty, course management systems, budget, marketing and evaluation among other necessary items for decision makers to consider. Osika (2006) identifies 46 crucial factors and groups them into seven broad categories: students, faculty, content, course management system, technology, program, and community and suggests using them as a checklist for practitioners as they build their online programs. Hunt (2005), Porto and Aje (2004), Stumpf, McCrimon, and Davis (2005) and Watson (2004) developed similar lists of ingredients to be included in any recipe for the management of online distance education. A few studies explore individual elements in more depth. For example, Rumble (2001) developed a model to measure costs of online programs. While these lists of key factors are useful for higher education leaders and scholars to begin to understand online distance education, they represent only initial steps toward promoting data-based decision making in this field. The mechanics of a rational process for choices about faculty, technology, or other key factors are mostly absent in the literature.

In fact, research on online distance education in general is at a very early stage of development, particularly with regard to issues concerning decision making (Berge, 2001; Bers & Calhoun, 2002; Kinser, 2003). Scholars agree that the bulk of the available literature focuses on pedagogical issues rather than administrative concerns (Beaudoin, 2003; Brown, 2000; Duffy & Kirkley, 2004; Im, 2006; Raphael, 2006; Saba, 2005;

Shaffer, 2004; Stumpf et al., 2005; Thompson, Brooks, & Lizarraga, 2003; Zawacki-Richter, 2009). Much of the research is in an exploratory phase (Kinser, 2003; Oliver & Conole, 2003). Both Beaudoin (2003) and Berge (2001) estimate that 70 percent or more of the available literature consists of descriptive case studies from which it can be difficult to develop generally applicable theory. In addition, online distance education encompasses ideas from many fields, such as business, cognitive science, computers, education and psychology (Oliver & Conole, 2003). This complexity means that many different theories might be relevant and a single, unifying model would be hard to build (Berge, 2001; Shaffer, 2004). Smith and Dillon (1999) assert that "...predictive theory in distance education is premature and, perhaps, in the strictest sense, unattainable" (p. 35).

Empirical Evidence for Rational Choice Theory

Empirical evidence notes the value of rational choice theory in explaining behavior in higher education. This section first examines rational choice studies that address community colleges in general and then turns to the use of data in decision making about online distance education in particular.

Evidence for rational choice in community colleges. Community colleges have developed capacities to collect and analyze data effectively and use them to make decisions that improve performance. The Achieving the Dream initiative that now involves more than 130 community colleges in 24 states and the District of Columbia represents one current line of research (Achieving the Dream, 2010). The Lumina Foundation and an array of other organizations provide funding for this effort to build a culture of evidence in community colleges. An Achieving the Dream report based

largely on self-reporting from 88 of these institutions indicates that 86 percent were using data in program review and evaluation, budgeting, and strategic planning (MDC Inc., 2009). An earlier, more detailed study by Brock et al. (2007) examined the progress made by the first 27 Achieving the Dream Community Colleges during their initial two years of work. It found about half of the institutions had used data they gathered to identify problems in student performance, approximately 40 percent were able to link their analysis of this information to suggested solutions, and more than 20 percent were actually using data to make decisions about budgets or other significant strategic issues. Similarly, Delaney (2001) surveyed 304 institutional researchers at higher education institutions in the northeast U.S.—18 percent of them community colleges. About half reported that their data and analysis often or very frequently affected program and policy changes. In addition, several case studies portray community colleges essentially following linear strategic planning models, featuring environmental scanning, rational analysis of the information collected, and decision making influenced by that analysis (Clagett, 2004b, 2004a; Dellow & Losinger, 2004; Goho & Webb, 2003; Harbour & Nagy, 2005; Kranitz & Hart, 1998).

These individual cases and the research on multiple institutions reveal factors that seem to promote the use of data in decision making. Morest and Jenkins (2007) surveyed 189 community college institutional research administrators via email, then conducted case studies of 28 of these institutions in 15 states to gauge their readiness to employ data and research to improve student outcomes. They found some colleges doing so effectively. These tended to be large institutions, with institutional research offices

employing multiple staff and led by a director who held a doctoral degree and who served on the senior leadership team for the college. Delaney (2001) also determined that colleges with a culture of evidence tend to have an institutional research leader with a doctorate. In addition, effective institutional researchers help decision makers structure the questions they want data to answer and place policy recommendations in their analysis and conduct follow-up studies to evaluate data-based decisions (Fusch, 2010; Delaney, 2001). Goho and Webb's (2003) case study of a Canadian community college's strategic planning effort showed that analysis needed to be presented in a timely fashion and in an easily understood format to affect decision making.

Empirical studies also indicate that community college leaders tend to strongly endorse the use of research and data to make decisions. For instance, in their report on progress at the Achieving the Dream institutions, Brock et al. (2007) found presidents to be avid supporters of a culture of evidence. Presidents believe such a culture will help their institutions improve student learning, compete more effectively, and answer external accountability demands. Similarly, Morest and Jenkins (2007) report that most presidents at their 28 case study community colleges want to move in the direction of using data and analysis to improve student outcomes. Romero et al. (2005) surveyed leaders at 83 California community colleges. Sixty-five percent of them said they used research to inform their decisions, and 62 percent employ it to plan for new programs. Anderson, Murray, and Olivarez (2002) surveyed approximately 200 chief academic officers (CAOs) at two-year colleges on a variety of issues. In describing their roles, these leaders made it clear that they need to "...gather and analyze information

effectively...” Moreover, the study found that older CAOs tended to put more emphasis on these skills than younger ones and that more experienced chief academic officers considered their role as an information gatherer in the external environment more important than newer ones.

The evidence for rational decision making about online distance education.

Literature reviews completed over the last several years indicate that the empirical research on online distance education is limited. Bray, Harris, and Major (2007) conclude that, “...the holistic picture remains murky,” (p. 891). Most of the studies describe rather than analyze the online distance education phenomenon, and they tend to focus on just one college, which makes the search for generalized conclusions difficult. As an example, the authors point out that empirical data on faculty pay and workload issues are lacking despite their importance to decision makers. Levy (2003) asserts that there is little research that tests hypotheses about the elements that affect the success of an online distance education program. Moreover, Cox (2005) concludes that, “To date, much of the literature on online education—both empirical and theoretical—has addressed the concerns and contexts of 4-year colleges and universities...” (p. 1756).

Although some data on enrollments, costs, and other facets of online distance learning exist, recent literature reviews cast doubt on whether those data influence choices very much (Allen & Seaman, 2010b; Cejda & Leist, 2006; Saba, 2005). Bray et al. (2007) and Osika (2006) found that there are few examples of colleges employing strategic planning for their online distance education programs. These authors tend to deplore the absence of data-based decisions: “...colleges and universities need to collect

and evaluate data on their goals for the distance education program, determine how allocation of resources to the program will be decided, as well as evaluation of how effectively those resources are used” (Bray et al., 2007, p. 905). The limited scope of data-based decision making in this field, therefore, appears to be spurring calls for a culture of evidence, rather than discouraging them.

Some evidence indicates that online distance education decision makers use data and behave in ways that are consistent with rational choice theory. Some of this emerges from the very few available quantitative studies. From their annual survey of more than 2500 chief academic officers from all sectors of higher education, Allen and Seaman (2007) report that 42 percent of community colleges have included distance education in their strategic plan. Cejda and Leist (2006) conducted a questionnaire of community college CAOs in nine states focusing on their chief concerns. The results indicated that most of these institutions had already developed a plan for distance education or had one on the drawing board. Peterson and Augustine’s (2000) survey of approximately 1400 U.S. colleges and universities determined, however, that although community colleges were more likely to use student outcomes assessment data in their decisions about distance education than other types of institutions, they still rated this information as having minor influence at best.

Some studies have depicted the operation of a culture of evidence in online distance education decision making. Scheer and Fanning (2006), for example, describe the use of a needs assessment at the University of Virginia’s School of Continuing and Professional Studies. This case study shows the school collecting data from surveys,

interviews, and technical help requests and analyzing them to help both instructors and students cope with a change in learning management systems. Similarly, Clinton (2002), who describes the perceptions of officials from firms that sell technology to higher education institutions, indicates that colleges are using strategic planning for their technology purchases more often and are becoming more knowledgeable and analytical about costs and the advantages and disadvantages of various products available to them. Other studies point to the need for internal change agents to marshal data effectively. In a study that featured interviews with 44 “pioneer practitioners” of distance education, Burge (2008) found that this group often needed to make arguments based on clear data and evidence to convince skeptics and opponents to give distance education a chance.

The limited literature on online distance education in community colleges provides a few examples that suggest a culture of evidence at work (Watson, 2004). Goho and Webb (2003) conducted a case study of strategic planning at a Canadian community college. In considering how to pursue distance education, this institution engaged in environmental scanning—examining trends in technology, demographics and the economy, for instance—and gathered data from both surveys and Delphi technique interviews of experts. Although the authors assert that this approach won adherents at the college, they do not provide evidence of actual decisions that were swayed by it. Moon, Michelich, and McKinnon (2005) provide a brief case study of a community college in Georgia facing rising enrollment demand and a lack of traditional classrooms and financial resources. The authors describe how the institution used a rational decision making process to arrive at a solution (hybrid online-traditional courses that reduced the

need for classroom time and cost less than building new facilities) and then allocated its budget and organized faculty training to implement it.

Most of the available studies, however, present a mixed picture for rational choice models in community college decision making about online distance education. Adams and Seagren (2004) compared three community colleges in the Midwest to explore their strategic thinking and choices about online distance learning. While all three were trying to make their online courses better by using outcomes assessment and student evaluations—and one was involved in the Academic Quality Improvement Project, which is an alternative process of accreditation offered by the North Central Association's Higher Learning Commission that focuses on continuous improvement—strategic planning was not generally informing their decisions. Instead, substantial divergence in the strategic views of each college's leaders about how to pursue online distance education led to an approach that favored “bottom-up” faculty proposals and experimentation.

Cox (2005) drew on a broad study of 15 two-year institutions in six states, extracting information on distance education from 210 interviews that covered other topics as well. In some situations, she found examples of data-based decision making. A cost analysis led a California community college, for instance, to eschew an online distance learning program. In general, however, she argues that these institutions' decisions about distance education were driven more by myths than hard data. As will be described in more detail below, these colleges' leaders tended to argue that online

distance education was needed to provide student access and to compete with other institutions, but Cox (2005) shows the evidence for such claims was weak.

Both Owen and Demb (2004) and Sachs (2004) conducted case studies of community colleges with a history of using data to make decisions. Each institution tried to apply this approach to their online distance education efforts. For example, they both employed careful planning, with clear goals used to measure progress and allocate resources. Nevertheless, both colleges struggled with predicting the directions that advances in technology would take and their consequences, particularly those related to cost and governance. In these cases, existing rational models for decision making did not translate effectively to the decision making context for online distance education.

Shortcomings of Rational Choice Theory

To some extent, the limited empirical evidence for the use of data in online distance education decision making may reflect the need for more research on this topic. Although a great deal of attention has been paid to accountability measures, there has been little study of how college leaders have used data to improve institutional performance (Revolutionary leadership concepts in higher education, 2006). Slavin (2002) argues that, “Educational research has produced...very few rigorous studies of programs and practices that could serve as a solid base for policy...” (p. 17). Peterson and Augustine (2000) assert that, “To date, there has been little systematic examination of the relationship between an institution’s organizational and administrative patterns designed to support and promote the use of student assessment information and the influence of this information on institutional academic decision making” (p. 22). Bailey

and Alfonso (2005) conclude that most of the research on program effectiveness examines four-year schools, whose context differs substantially from that of community colleges.

Nevertheless, shortcomings in rational choice theory itself are undoubtedly a significant factor in the limited empirical support for data-based decision making in community colleges. Numerous critics have questioned the assumptions behind this theory (Birnbaum, 1992; Kranitz & Hart, 1998; Laden, 1997; Lindblom, 1979).

Sanderson (2003) distills many of their arguments into two broad themes. Questioning first the feasibility of data-based decision making, he asserts that clinical experiments—with carefully controlled variables—are impossible in the complex world of social institutions, in which widely differing contexts make the search for generalized results difficult. Others question the capacity of the human brain to implement a culture of evidence. Taylor (1990) points out that empirical studies suggest individuals are challenged to analyze even small amounts of data, while Sellers (2005) warns that the information age will almost always supply much more data than can possibly be processed. Even if the capacity existed, research suggests that individual biases will hamper objective interpretation (Dutton, 1993; Hammond et al., 2006; Petrides, 2002a). Moreover, much of the decision making in higher education is collective and loosely coupled. The many competing interests and preferences and the irregular decision making processes that result fit poorly with rational choice assumptions of clear and mutually agreed organizational goals and objective analysis of data (Mars & Ginter, 2007). Scholars of group decision making assert that it is even more complex than

individual choice, with additional opportunities for misperception and political—rather than rational—behavior (Clark et al., 2000; Hinsz & Vollrath, 1997).

Sanderson's (2003) second major critique of rational decision making models is that they wrongly displace other important factors. They make decision making largely a matter of mechanics and ignore values and debates that occur when those values clash. While Sanderson (2003) does not fully reject rationalism, he fears it will crowd out other valuable ingredients, such as experience and intuition.

Oliver and Conole (2003) concur that advocates of data-based decision making often portray the process as neutral, objective and practical, but this can mask a positivist ideology that devalues people's feelings and perceptions as well as the qualitative research methods that are most likely to reflect them. Mumby and Putnam (1992) argue that in this sense the quest for certainty through data can be oppressive. The resulting rationally derived decision will be portrayed as the objectively best one for an organization, yet it may well ignore the interests, perceptions and values of individuals or groups within the organization. Ambiguity, on the other hand, may be a better goal, because it is more likely to recognize the multiple realities being perceived by the constituents of an educational institution. Respecting these differing views rather than overriding them with "objective data" will protect democratic decision making, which is more important, from their perspective, than efficiency. Moreover, ambiguity may lead to better-informed decisions because it reflects differing perceptions that provide a more nuanced understanding of the complexity of the realities facing an organization.

These practical, political, and normative objections to rational choice theory are addressed by incremental, political, and constructivist theories of decision making to which this literature review turns next.

Incremental Decision Making

This section will describe the basic tenets of incremental decision making, including its skepticism that humans have the time to gather or the ability to process all the available information relevant to a decision as called for by rational choice theory. It will also examine the empirical evidence for this theory both in community colleges generally and concerning online distance education decisions in particular. It concludes with a discussion of the shortcomings of incremental decision making theory.

Theories of Incremental Decision Making

Prominent among the numerous critiques of the rational choice model's demanding assumptions (Etzioni, 1967; Hammond et al., 2006; Herne & Setälä, 2004; Tarter & Hoy, 1998) is Lindblom's (1979) argument that the human brain does not have the processing capability to optimize choice among multiple alternatives. His model of incremental decision making posits instead that leaders tend to consider just a few options that differ only slightly from the status quo, simplifying the process considerably. Some scholars have argued that incremental decision making is particularly appropriate for explaining the behavior of organizations whose goals are unclear (Tarter & Hoy, 1998). In the rational choice model, clear goals lead to both an exploration of possible strategies to reach those goals and criteria to help choose among the alternatives. Unclear

goals, on the other hand, provide no guide about what strategies to pursue or how to pick among alternatives. Under such conditions, time and effort might be better spent trying small modifications of the status quo on a trial and error basis than in engaging in the extensive data gathering and analysis called for by rational choice. Others suggest that the incremental model is helpful when there is disagreement within an institution over the methods used to pursue certain objectives (Bulger, 2003). Whether an organization faces uncertainty about means or ends, it may be easier for its leaders to agree to modify current policies rather than consider decisions that could bring major change.

Of even greater significance to this study, minimizing the number of alternatives considered greatly reduces the amount of data that must be gathered and analyzed before making a decision. This helps harried decision makers to “muddle through” when there is not enough time for all the steps called for in the rational choice model (Lyles & Thomas, 1988; Tarter & Hoy, 1998; Taylor, 1990). Sellers (2005) argues that the incremental approach is likely to become more common. He notes that advancing technology is providing both more data and more sources of data to higher education administrators all the time. Managing daily email traffic, for example, has become a major challenge. This can lead to information overload, which overwhelms decision makers’ ability to read all the data, much less objectively and carefully analyze them. The result, suggests Sellers (2005), is a shift toward incremental approaches and away from rational ones.

Although Sellers (2005) is addressing higher education decision making in general, his argument is relevant to the rapidly growing and changing online distance

education sector. Berge (2001), for instance, cites time pressures on staff and faculty—as well as deficits in technical knowledge and training—as major factors influencing online distance education’s development. Similarly, Washburn and Howell (2008) suggest that distance education administrators fear they can not keep up with the rapid pace of change because there is too much information and not enough time to sift through it, although they also argue that RSS (which stands for Rich Site Summary, RDF Site Summary, or Really Simple Syndication) feeds and email alerts, acting as technological filters, could help with this problem. If key decision makers indeed lack the time and expertise to gather and analyze data on multiple alternatives, then incremental models may explain their behavior better than rational choice.

Empirical Evidence for Incremental Decision Making

Despite the empirical support for rational choice theory in community college decision making outlined earlier, the evidence against it appears stronger. In their assessment of 27 Achieving the Dream community colleges, Brock et al. (2007) found that 16 of them had made little progress toward institutionalization of a culture of evidence. About half of the colleges were not using data to identify problems, a majority could not link their analysis of information to solutions they were working on, and three quarters had no plans to assess their new strategies. A more recent summary of self-reports from Achieving the Dream institutions, however, suggests that more of them are now using data to make decisions (MDC Inc., 2009). Morest and Jenkins (2007) discovered that only a few of the 28 community colleges they studied were collecting data on student outcomes for the purpose of strategic planning or program improvement.

Even in Tennessee's long-established higher education institutional effectiveness system, a study of stakeholder perceptions revealed that while it met accountability requirements imposed from outside, this system had minimal influence on campus decision making, including in community colleges (Noland, 2006).

The practical obstacles to data-based decisions that are central to incremental decision making emerge often in the empirical literature. Numerous studies suggest that a lack of time—for the institutional research office to gather data and for college leaders to consider them—is a major problem (Laden, 1997, 2002; Morest & Jenkins, 2007; Romero et al., 2005; Skolits & Graybeal, 2007). The small size of community college institutional research offices and their focus on the reporting requirements of external authorities rather than issues of campus interest also appear as significant obstacles in many empirical studies (Brock et al., 2007; Laden, 2002; Lohmann, 1998; MDC Inc., 2009; Morest & Jenkins, 2007; Romero et al., 2005). Lack of training for institutional research staff members to conduct complex studies and for college leaders to interpret them is another problem (Brock et al., 2007; McBride, 2000; Romero et al., 2005). Finally, information technology systems that are outdated or from which extraction of consistent and useful data is difficult also hamper development of a culture of evidence (Brock et al., 2007; MDC Inc., 2009; Petrides, 2002b).

These same factors hinder a rational approach to decision making in online distance education. Raphael (2006) found little evidence of needs assessments being performed in the area of support services for online students, while Burge's (2008) interviews with "pioneer practitioners" reveal that many colleges have a very limited

understanding of the costs of their distance education programs. A 2009 survey of 182 two and four-year colleges found that 45 percent of the institutions did not know whether their online distance education programs made or lost money (Western Cooperative for Educational Telecommunications, 2009). Compura (2003) compared such programs in six case study institutions in Ohio—half of them community colleges. Only one had developed a mission statement for its distance education effort to guide decisions. None of the six institutions had performed a needs assessment to determine directions for their initiatives based on objectively gathered and analyzed data. Nor had any determined whether their distance education programs were cost effective. Five of the six institutions indicated that they believed the evaluation of course quality was important, but their assessment procedures were cursory at best.

Although Compura (2003) does not speculate on why these institutions were not engaged in a rational decision making approach, Wright and Howell (2004) report that distance education administration positions are often temporary and that leaders tend to be so overwhelmed by their new responsibilities that they have little time to consider research and analysis. Levy (2003) agrees. He reviews research indicating that administrators tend to lack the time to develop the technical expertise to make important decisions about online distance education. Similarly Sachs' (2004) examination of the evolution of the distance education program at Northern Virginia Community College found that data-based decision making was hampered by the lack of technological expertise among those in decision making roles.

Some studies show that instead these leaders follow an incremental approach. For instance, in a dissertation on a joint university-industry distance education program, Bulger (2003) found a mixture of political and incremental decision making. The latter predominated because the partners had to employ a trial and error approach to inventing a new type of education program for which there was little past data to consult. For example, they underestimated the amount of technical, tutorial support needed by both faculty and students who had never engaged in a program like this and were unfamiliar with the technology used. When this was discovered during the first semester of the program, the partners had to shift some of their focus to providing this support. Similarly, the first semester revealed unexpected problems with the distance education classrooms at the industry sites. Despite one of these rooms being carefully equipped with all the necessary technology, for instance, it proved to be unusable because of noise from the nearby shop floor. The room had to be sound proofed before students could use it. Because neither partner had experience with designing and delivering an online distance education program, they had to experiment, see what worked, and when implementation problems arose refine their approach.

In their study, Adams and Seagren (2004) reported that three Midwest community colleges tended to build their online distance education programs through a process of faculty-led trial and error rather than a careful planning process. Paolucci and Gambescia (2007) concur, pointing to studies that show most decision making about online distance education relies more on guesswork than calculation. Burge's (2008) research on distance education practitioners emphasizes the pioneering nature of their work:

uncertainty, complexity, and confusion are common and progress is often incremental at best.

Shortcomings of Incremental Decision Making Theory

Although incremental decision making theory raises important objections—supported by empirical evidence—to the rational choice model, it fails to explain the enthusiasm for and concerted efforts to create a culture of evidence described in the previous section of this review (Brock et al., 2007; Lindblom, 1979). In particular, its assertion that most decisions lead to just small alterations of the status quo does not account for the major community college initiatives that have led to the rapid growth of online distance education in recent years (Allen & Seaman, 2010b). In short, there is evidence for and against both rational choice and incremental decision making theory.

Recognizing the value of both theories, Etzioni (1967, 1986) advocates a compromise. His mixed scanning model combines rational methods for major organizational decisions with an incremental approach for more routine choices (Tarter & Hoy, 1998). It acknowledges that most organizations do not have the time or resources to gather and analyze all the data needed to optimize every decision; instead, they focus those precious commodities on the most important choices. Mixed scanning posits that once a careful, rational approach sets broad policy in an organization, much less effort is needed for making day-to-day decisions: a quick check to see if an alternative aligns with institutional goals is all that is needed (Etzioni, 1967, 1986). A community college might engage in extensive data gathering and analysis to choose among costly software packages through which to offer its online programs, for example, but then allow faculty

to make decisions about which features of the software to include in individual courses on an ad hoc basis. Mixed scanning implies such every day decisions will be made incrementally, with few alternatives considered and little effort put into information gathering or analysis (Etzioni, 1967; Lindblom, 1979; Taylor, 1990).

Even a model that combines the strengths of rational and incremental theories has weaknesses, however. Incremental and mixed scanning decision making models focus heavily on the practical obstacles to rational choice. Although these are important, there are other hurdles to data-based decision making. Decision makers may ignore information not just because they do not have time to consider it, but also because it is politically convenient to do so. Moreover, in the emergent online distance education sector, the amount of timely and relevant data available may be strictly limited in the first place. This review turns to those topics next.

Political Decision Making

This section will describe the basic tenets of political decision making models, particularly their proposition that individuals and groups tend to use data as a tool to advance their interests and values rather than for objective decision making. It will also examine the empirical evidence for this model both in higher education generally and concerning online distance education decisions in particular. It will conclude with an examination of the shortcomings of political decision making theory.

Political Theories of Decision Making

The political model explains decision making quite differently from rational choice theory. It argues, for example, that multiple individuals and groups within an organization are involved in making choices and that their interests, values, and goals will often conflict (Allison, 1971; Eisenhardt & Zbaracki, 1992; Lyles & Thomas, 1988; Mignot-Gerard, 2003). Rational choice theory, on the other hand, assumes a single, clear institutional goal, such as maximizing profit in the corporate sector (Tarter & Hoy, 1998). According to the political model, decisions are the product of bargaining and competition among these actors with varying levels of power, rather than an optimization calculation (Dean & Sharfman, 1993; Narayanan & Fahey, 1982; Tarter & Hoy, 1998; Taylor, 1990).

Data are an important aspect of the political model of decision making, but are used very differently than envisioned by rational choice theory. Information is a tool in a competition for power instead of evidence to help make an objective judgment (Dean & Sharfman, 1993; Narayanan & Fahey, 1982). Those without information will engage in political tactics—such as forming alliances or spying—to acquire it (Narayanan & Fahey, 1982; Taylor, 1990). Actors may look only for evidence that supports their own position or undermines their adversaries' and once gained they may hide, manipulate, or release it selectively to influence decisions (Eisenhardt & Zbaracki, 1992; Hinsz & Vollrath, 1997; Howard, 2001; Lyles & Thomas, 1988; Narayanan & Fahey, 1982). Ewell (2002) admits that expecting educational leaders to allow data to overrule their own self-interest or values is a tall order. The struggle for power also affects data analysis. Sabatier's (2004) Advocacy Coalition Framework captures this reality: "...people in different coalitions

will interpret the same piece of evidence quite differently, leading to suspicion regarding the motives of the ‘perverse’ interpretation of evidence by opponents” (p. 78).

Competing actors, therefore, may seek the control of data gathering, analysis, and dissemination channels to establish their view as the dominant one (Narayanan & Fahey, 1982; Taylor, 1990). In this way, it is possible for information to be used for oppressive purposes. Actors that control the decision making process not only have more data and can make decisions that are in their own interest, but also may portray the process as objectively fair and the decisions as the rationally best for the organization as a whole. They can dismiss competing ideas, therefore, as being both self-serving and irrational (Mumby & Putnam, 1992; Oliver & Conole, 2003). “The analytical rigor of the rational model is dependent on the availability of reliable data, but the collection, evaluation, and utilization of such data are highly problematical from a political perspective” (Narayanan & Fahey, 1982, p. 32). Sanderson (2003) asserts that research itself is a political act: those who fund it have more influence than others. For example, policy makers sometimes favor evidence that supports politically easy, quick-fix solutions in order to avoid costly, complex alternatives (Fitzgibbon, 2003).

The political model, however, also helps to explain cooperative behavior by decision makers, including in the online distance education sector. Berge (2001) and Porto and Aje (2004) indicate that responsibility for online courses and programs tends to straddle organizational boundaries, which can introduce political factors into the decision making process. Although the involvement of actors from different parts of an institution could lead to conflict (Petrides, 2002b), it could also be the basis for cooperation,

including the sharing of data and the incorporation of multiple points of view in the interpretation of those data (Oliver & Conole, 2003). In fact, given opposition to online distance education from many traditional quarters within colleges, its growth can be seen as testament to the political skills of its proponents. They have had to advocate convincingly, build coalitions, bargain and make compromises that serve the interests of multiple parties in order to give this sector a chance to develop (Burge, 2008).

Whether the political model of decision making explains cooperative or combative behavior, it is particularly applicable to colleges and universities. This model assumes that multiple individuals and groups are involved in the process because no single individual has the power, expertise, or information to make decisions alone (Lyles & Thomas, 1988; Taylor, 1990). This process fits closely with the organization of higher education institutions, where shared governance among numerous actors with conflicting goals, interests, and values is common (Birnbaum, 1992; Mignot-Gerard, 2003; Pacheco, 1999). Kater and Levin (2005) assert that the political model is relevant to community colleges. In these institutions, lobbying, bargaining, coalition building, and other activities predicted by the political model are just as likely as in four-year colleges and universities (Anderson et al., 2002; Eisenhardt & Zbaracki, 1992; Findlen, 2000; Mignot-Gerard, 2003; Narayanan & Fahey, 1982).

Citing thirteen separate studies, Eisenhardt and Zbaracki (1992) assert that the empirical support for the political model is so strong that there is little debate remaining about its main premises: "... (1) organizations are comprised of people with partially conflicting preferences, (2) strategic decision making is ultimately political in the sense

that powerful people get what they want, and (3) people engage in political tactics...” (p. 27). Thus the model should provide a useful guide to the actual decision making behavior of community college leaders as they address online distance education.

Empirical Evidence for Political Decision Making

Empirical evidence indicates that politics has shaped higher education decision making for decades. For instance, Pfeffer and Moore (1980) showed that at a state university, academic departments with more power (as measured by enrollments and the revenue they generated from grants) received more faculty slots and a greater proportion of the budget than weaker ones. Similarly, Mignot-Gerard (2003) detected extensive political behavior, such as conflict and alliance building, in the environment of shared governance at universities. Stanley’s (2005) case study of San Jacinto College, a two-year institution in Texas, revealed that political expedience drove decision making during an unanticipated round of budget cutting.

Politics also can be a serious obstacle to data-based decision making. Brock et al.’s (2007) study of the Achieving the Dream institutions found that at some colleges faculty resisted participation because they feared the results of the data gathering would be punishment for poor performance. This aligns with other empirical studies that suggest professors are generally far less invested in building a culture of evidence than senior college leaders in part because they believe accountability concerns are overblown and that the types of data that can be gathered will fail to measure the true impact of a college education on students (Bers & Calhoun, 2002; Burke & Minassians, 2002; Pacheco, 1999; Jenkins & Kerrigan, 2008; Skolits & Graybeal, 2007). Given the

collegial nature of community college governance, such indifference and fear from a major constituency is a serious challenge. Greaves and Sorenson's (1999) case study found that long-standing political divisions within a California community college district completely stymied an effort to introduce data-based decision making by its leaders.

Political pressures external to higher education institutions also influence the use of data in decision making, according to several empirical studies. In a case study of two California community colleges, for instance, Laden (1997) reported that their leaders admitted that politics and economics drove their decision making more than research or analysis. Mariasingam and Hanna (2006) and Fitzgibbon (2003) warn that if external funding for academic programs is based on measures of quality and efficiency, an institution may be tempted to manipulate data to meet those measures rather than employ them objectively for improvement. This is particularly true if the college badly needs the money and believes the accountability measures are poorly designed or impossible to meet. Rather than attempt to retool their operations to try to meet a standard they believe is irrelevant or unrealistic, institutional leaders may find it easier to feed legislators or education agencies manipulated data. Noland's (2006) study of stakeholder perceptions in Tennessee, for example, indicates that the combination of tying money to institutional effectiveness ratings and not aligning those ratings with primary campus concerns led colleges to try to game the system to protect their budgets.

Empirical research suggests that political factors influence decision making about online distance education as well. For example, Conole, Carusi, de Laat, Wilcox, and Darby (2006) show that a major nationwide distance education effort in the United

Kingdom collapsed in part because of conflict between the commercial goals of an independent company that was charged with coordinating the initiative and the academic interests of its erstwhile partners in higher education institutions, who were supposed to provide the courses. The company pushed a data-based approach to decision making, but the universities involved felt the company's focus on cost effectiveness paid too little attention to the needs of student learning.

Some studies show that within community colleges politics also shapes the use of data in decision making about online distance education. In her study of 15 two-year institutions in six states, Cox (2005) argues that political and societal pressures lead to a ritual need for community colleges to stand for principles like access and that rhetorical support for those principles tends to trump and even obstruct an objective analysis of empirical data. For instance, administrators—who tended to support online programs more than faculty—claimed that increased access was a major goal of distance education. However, Cox (2005) found that these institutions' online courses mostly served existing, not new, students. College leaders also cited the need to compete with other institutions in online distance education. Cox shows, however, that the internal fear generated by such claims and the resulting political leverage for change appear to have been more important than real evidence of rivals in the market.

Sachs' (2004) case study of Northern Virginia Community College's distance education program also revealed the importance of political issues. As the program grew from a small entrepreneurial effort to a large mainstream one that included many instructors and staff, some faculty and academic administrators became uncomfortable

with its placement in the organizational structure. A Vice President of Instructional and Information Technology had responsibility for online distance education rather than the academic administration. Courses and pedagogy, traditionally the province of the academic side of an institution, were strongly influenced by the technology division. The latter's focus on innovation and growth tended to clash with the former's concern with academic quality and consistency. Yet the effort could not succeed without the involvement of faculty and the support of their supervisors, so the strategy for the online program, "...though imperfect, has been to actively form new alliances and partnerships in the college..." (p. 28).

Such diplomacy highlights the positive impact that political behavior can have on the growth of online distance education. In a mixed-methods study of department chairs in schools of agriculture in land grant universities, Schauer, Rockwell, Fritz, and Marx (2005) found that these leaders perceived a rough division of responsibility between faculty and administration in distance education. The need for cooperation among these levels to create a coherent program suggests the importance of political factors in decision making and the need for political skills among decision makers. Similarly, Burge's (2008) study of the reflections of "pioneer practitioners" reveals that the need for political action, such as finding allies, is particularly important in distance education because of the many opponents to this innovation. These practitioners reported that in their experience political factors often took precedence over objective, rational arguments. However, data and politics were not always at odds. "Acquiring reliable and

strong allies involves gaining informed champions of distance education in and beyond one's institution and knowing their specific interests around innovation" (p. 10).

Shortcomings of Political Decision Making Theories

Eisenhardt and Zbaracki (1992) argue that the political model of decision making is the single most coherent one available, and there is certainly ample empirical evidence of its explanatory power. Yet it does not explain everything. The first part of this review showed some decision makers acting consistently with rational choice models despite the presence of political factors. The second part of this review revealed that a lack of time and other practical obstacles to data-based decision making are sometimes more important than political ones. Eisenhardt and Zbaracki (1992) warn against overemphasizing the influence of political factors: "Traditional theorists have underestimated the degree to which executives will put aside parochial interests for the good of the firm" (p. 27). Thus, the political model of decision making—like the rational choice and incremental theories—represents one piece of the puzzle. It provides insight into how the differing preferences, interests, and values of multiple actors generally influence a community college's decision making process, as they advocate, bargain and jockey for power. Depending on the circumstances, such factors may encourage the hoarding or sharing of data, and self-interested or collective-minded analysis of such data. The literature reviewed thus far suggests that community college choices about online distance education are best understood using some combination of multiple models. Before examining how to do so, however, one more piece of the puzzle needs to be explored.

Constructivist Decision Making

This section will describe the basic tenets of constructivist decision making theories, including their argument that factors other than objective data influence socially constructed understandings of reality, which in turn affect decision making. It will also examine the empirical evidence for this theory in community college and online distance education decisions. It concludes with a discussion of the shortcomings of constructivist theories of decision making.

Constructivist Theories of Decision Making

Constructivist decision making theories represent another alternative to the rational choice model. Rational choice assumes that an objective reality exists “out there” that can be discovered through the collection and logical analysis of data, and that understanding can then drive decisions. Constructivist theories, on the other hand, posit that reality is socially constructed. This occurs through a process of dialogue, which is shaped by the experiences and world views of the decision makers and the context in which they operate (Dutton, 1993; Mumby & Putnam, 1992; Taylor, 1990). Understanding humans, in other words, may explain as much about decision making as understanding data (Clark et al., 2000; Dowd, 2005).

Rational choice theory also implies that knowledge—gained from data collection and interpretation—precedes action. In this scenario, the decision maker gathers and analyzes data, and then takes action. Constructivist theories, in contrast, argue that decisions to act can precede analysis when a situation is so uncertain that passively

gathering information is unlikely to provide meaningful knowledge (Daft & Weick, 1984). Instead, the taking of action clarifies issues for subsequent analysis.

The role of information. Constructivist theories consider information and its interpretation to be important in decision making, but they argue that the “hard” data sought in the rational choice model represent just one among many sources of knowledge (Dutton, 1993). In fact, in situations of great uncertainty, such data may be scarce. The rationalist approach seeks to erase that uncertainty because it assumes that good decisions rest upon a well-informed understanding of what is happening. This understanding is gained through thorough data collection and objective analysis of the data.

Constructivist theories, on the other hand, tend to embrace uncertainty as an opportunity to learn (Eddy, 2003; Mumby & Putnam, 1992). This learning occurs through action, which in turn is informed by the intuition and experience of decision makers (Sanderson, 2003). Moreover, taking action can not only help to increase understanding of an ambiguous situation, but also actually work to create reality itself. This is the premise of the concept of enactment, which is defined by Daft and Weick (1984) as inventing the environment. From this perspective, active experimentation helps an organization to learn by doing, but also to shape its surroundings. “This type of organization tends to develop and market a product, based on what it thinks it can sell. An organization in this mode tends to construct markets rather than waiting for an assessment of demand to tell it what to produce” (Daft & Weick, 1984, p. 289).

In the higher education context, a college considering becoming the first in its region to offer an academic program via online distance education may have little data on

student demand or support needs to draw upon in making its decision. Enactment theory suggests that experimentation—offering a few courses to test demand and gauge student needs, for instance—may be the best way to inform decision making in this case. Moreover, if this test is successful, it may create, or enact, a market where there was none before.

Besides experimentation, constructivist theories argue that practitioner experience is another valuable source of “soft” data that can influence decisions (Oliver & Conole, 2003). Speaking of proponents of data-based decision making, Sanderson (2003) remarks, “...by focusing on ‘formal’ scientific and technical knowledge, they neglect the key role played in problem solving by ‘practical wisdom’ and ‘informal’ tacit knowledge” (p. 340). Experience is the source of such wisdom, according to Sanderson, which makes leaders aware of the importance of contextual factors, like political pressures, in making choices.

Constructivist scholars clearly place more emphasis on the humans involved than the data (Eddy, 2006; Hansen & Borden, 2006; Perkins, 2001; Petrides, 2002b). “...it is the meaning that subjects give to data and inferences drawn from the data that are important” (Cohen, Manion, & Morrison, 2000, p. 106). Petrides (2002b) posits a transformation of data (basic facts) into information (where the data are placed into context) and then into knowledge (when that information is evaluated for meaning). Humans are responsible for both of these progressions. The personal experiences, biases and perceptions of the decision makers as well as the culture of the organization will be the starting point for constructivist interpretation. From these factors, “conceptual

schemes” are developed to explain what is happening (Daft & Weick, 1984, p. 286).

This understanding then can shape decision making. If new conditions resemble an event an organization has faced before, for example, that previous event may help to frame the meaning decision makers give to the new situation. If the previous event was seen as a crisis, the new situation may be interpreted that way as well. Similarly, if individual or organizational tendencies are traditional or conservative, major changes in the environment may be interpreted as negative or threatening and the resulting decisions may reflect caution or defensiveness. The same environmental changes might be viewed as an opportunity by a more risk-accepting leader or institution, which might make decisions that are bolder and more entrepreneurial.

Placing the decision maker at the core of the process is the central tenet of a concept called the “culture of inquiry” (*Creating a culture of inquiry*, 2005). Dowd (2005) explains that, “We must understand that how we decide what information to collect, whom to involve in data interpretation, and how to communicate results can be as important as the results themselves. This is the essential difference between a culture of evidence and culture of inquiry: The emphasis shifts from the data to the decision-maker as the locus of change” (p. 2). Although the culture of inquiry considers data gathering and analysis important, therefore, it also recognizes that they hinge on “...the dispositions and behaviors of the people who teach in and administer programs at colleges” (Dowd, 2005, p. 5). For instance, leaders must be willing to challenge the data that are gathered, to undertake professional development so they can make their own educated analyses, and to discuss alternate conclusions with other stakeholders.

In fact, the constructivist literature emphasizes that group dialogue among practitioners can bring different perspectives to light and deepen collective understanding of complex situations (Dowd, 2003; Gayawali et al., 1997; Sanderson, 2003). This highlights the importance of interpretation, which is another key difference with rational choice theories. Unlike the objective analysis envisioned in data-based decision making, the constructivist literature has firmly established the significance of differing perceptions held by key actors in making choices (Daft & Weick, 1984; Dutton, 1993; Lyles & Thomas, 1988; Simons, 2003; Thomas & McDaniel, 1990). The variety of views flows from disparate experiences, perspectives, and contextual factors that influence decision makers, such as time pressures and quantities of information they must digest (Dutton, 1993; Thomas & McDaniel, 1990). “Interpretation is the process of translating these events, of developing models of understanding, of bringing out meaning, and of assembling conceptual schemes among key managers,” according to Daft and Weick (1984, p. 286).

For constructivists, this “sense making” is more likely to be driven by personal, political, practical, historical, and cultural factors than by rational ones (Petrides, 2002a). Eddy (2003a) defines sense making as, “...the process by which individuals interpret changes around them and adjust their thinking and understanding of events accordingly” (p. 453). For example, a college with an entrepreneurial culture that embraces technological change may make sense of the growth of the Internet by interpreting it as an opportunity to launch an online distance education effort, while a more traditional institution might understand this change as a threat to established classroom practices. It

is not the change itself, but the interpretation—which in turn is driven by the culture and experiences of the institution and its members—that shapes the collective understanding of what is happening and what it means.

The constructivist perspective is relevant to higher education institutions. The dialogue among those with differing views and interests emphasized by Gayawali et al. (1997) is a requirement of the collegial system of governance in most colleges and universities (Birnbaum, 1992). Moreover, constructivist theories suggest that this type of debate allows those involved to actively try to shape the collective meaning that is assigned to decisions (Dutton, 1993; Taylor, 1990). Besides individual experiences and world views, the culture, rules, and accepted behaviors of an institution help to influence these interpretations (Eddy, 2006; Mumby & Putnam, 1992). Professors at a college with a long history of faculty-administration animosity, for instance, might perceive a genuinely offered “olive branch” by a new president as a fraudulent or manipulative act. Thus, the meaning of the president’s decision is determined by the culture of the institution more than his or her intention. The faculty’s reaction is consistent with the norms of the college, and the president may have to engage in repeated friendly gestures to begin to create a new atmosphere.

Constructivist decision making theory and online distance education.

Constructivist ideas about decision making can be found in the research on online distance education. The emergent nature of this sector of higher education, for instance, is often cited as a barrier to data-based decision making. Mariasingam and Hanna (2006) argue that the rapid growth of online courses and programs makes them extremely

difficult to plan for, organize, and assess. In addition, the quickly changing and advancing nature of technology means that colleges are constantly reinventing distance education: the shift from videoconferencing to web-based classes is one example. This makes it hard to find relevant, timely information to base decisions upon (Bulger, 2003) and casts doubt on the feasibility of a rational, data-based approach to decision making for online distance education (Paolucci & Gambescia, 2007). Rapid changes in online distance education also suggest the utility of enactment theory, which posits that active experimentation is more likely to produce knowledge in situations that are new or uncertain than passive data gathering and analysis (Daft & Weick, 1984). Indeed, Oliver and Conole (2003) suggest welcoming ambiguity in online distance education as an opportunity to learn rather than trying to eliminate it.

Other constructivist themes can be found in the literature on online distance education. Oliver and Conole (2003) emphasize the important role of practitioner experience in understanding online distance education. They argue that the involvement of online distance education administrators in research will boost both its quality and their own confidence in their decision making. This argument clearly aligns with the concept of a culture of inquiry, in which the questions of institutional leaders take center stage (Dowd, 2005). For example, online distance education practitioners' experience with a certain pedagogical approach might lead to data gathering and analysis of its effectiveness. This would be a far more narrow approach than called for by the rational choice model—which would suggest examining and comparing all possible online pedagogies—but it would provide a quick answer about the effectiveness of the current

practice, might suggest refinements, and most important, by appealing to practitioners' curiosity, might lead to more questions and thus more research. The culture of inquiry is an iterative cycle, therefore, involving the questions posed by the online distance education leaders, the data generated by research, and the varying interpretations of the data by the leaders as they seek answers to their questions and also develop new questions.

Watson (2004) argues that this cycle is good because both information and debate about it are necessary for good decisions. Thus calls for group dialogue among practitioners—face-to-face if possible—also appear in the research on online distance education. Sellers (2005), for example, worries that the reliance on email and web searches for data reduces direct contact between higher education professionals and risks the loss of understanding that comes from viewing body language or hearing the tone in a voice.

In summary, constructivist theories emphasize the importance of experimentation, practitioner intuition and experience, and dialogue in creating an understanding of reality. A review of the empirical support for these ideas is included next.

Empirical Evidence for Constructivist Decision Making

Several studies support constructivist models for understanding decision making in higher education, including with respect to community colleges and online distance education. For instance, skepticism on campus about data-based decision making is at least partly grounded in socially constructed realities. Multiple studies have documented that faculty and staff feel that accountability measures insult their professionalism

(Pacheco, 1999) and could unfairly punish them for factors—like student preparation—over which they have little control (Brock et al., 2007). Faculty express additional concerns that most research on their work is performed by outsiders who do not understand it (Bers & Calhoun, 2002; Laden, 1997, 2002; Lohmann, 1998), and that other, non-objective or non-rational factors (intuition, values) ought to drive decisions more than data (Simons et al., 2003).

The emergent nature of online distance education also presents the kind of uncertainty that enactment theory suggests should be met with intuition and active experimentation. Conole, Carusi, de Laat, Wilcox, and Darby (2006) argue that one cause of the failure of a large online distance education effort in the United Kingdom was its leaders' inability to anticipate the future of this fast changing sector. An early planning document related to the development of technology for the effort, for instance, focused only on initial needs and did not try to anticipate further changes that would occur as courses were actually developed and delivered. Conole et al. (2006) suggest this focus on the present resulted at least partly from the fact that the future was unpredictable since a project of this type and scale had never been attempted before in the U.K. The leaders failed to grasp the extent of the complexity involved in online distance education, including the need to bring those with knowledge of technology, business, and education together.

As noted previously, Owen and Demb's (2004) and Sachs' (2004) case studies found that even community colleges with a history of using data to make decisions struggled to implement such an approach in online distance education. The uncertain

consequences of technological advances were particularly challenging for them. Owen and Demb conclude, “For institutions at the leading edge of innovating with technology, the outcomes of the new educational programs are unpredictable. Ironically, without substantial investment there will not be enough data to evaluate the worth of the experiment” (p. 659). Without data to analyze before making a decision, the college in this study had to launch its effort to generate the information that would help it assess its progress and make future plans. In this case, action preceded analysis. It should be noted that such risk taking can pay off in terms of data collection. Many of the learning management systems now available to host online courses produce significant amounts of data about student participation and performance in these classes, which can then inform decision making (Kolowich, 2010).

In a study that drew on the expertise of directors of online programs financially supported by the Fund for the Improvement of Post-Secondary Education, Meyer, Bruwelheide, and Poulin (2007) found that in some cases objective data were available to decision makers and in others it was not. Given that reality, the authors conclude that the practical experience of such leaders is a vital alternative source of information for decision making. This conforms closely to Oliver and Conole’s (2003) argument that the “intuitive practice” (p. 393) of those in the field is a valuable source of knowledge, especially if dialogue about those practices can occur among multiple practitioners. One long-time practitioner stated that, “Most of what I learned about leading a distance program came as a result of visiting and talking to others at other colleges and universities, or simply by trial and error” (Hite, Hite, Howell & Crandall, 2008).

In reviewing a study of a project that linked British secondary schools and universities to promote teacher research on their own practices, Simons et al. (2003) found a progression from rational to constructivist behavior. An early objective to gather and analyze quantitative data gave way to a focus on helping teachers ask and answer their own research questions. “The replacement of the term *evidence-based* practice with *evidence-informed* practice during the life of the Programme reinforced the role of teacher volition in interpretation and judgment in use of research...” (p. 351). Thus it was the meaning assigned to the evidence gathered that actually gave it legitimacy rather than the data themselves. The idea that data will drive the decisions shifted to teachers choosing what data to gather, interpreting what that data meant, and then deciding how their new understanding should shape practice. This focus on the human collection, processing, and analysis of data and teacher control over how to use the results in decision making is consistent with the culture of inquiry described above (Dowd, 2005).

Burge’s (2008) study of the experience of 44 “pioneer practitioners” in distance education is another illustration of the ideas behind the culture of inquiry. This research was based on the premise that in online distance education, practitioner experience is one of the best sources of knowledge, which can help prevent decision makers from repeating past mistakes and from reinventing the wheel. This knowledge could begin to transform the fundamental uncertainty of online distance education, Burge argues, into a series of more well-defined and solvable problems. In particular, dialogue among practitioners, combining their experience and intuition about the limited available data, can provide a

basis for effective decision making. Data play just one part in a human-driven process of learning and understanding.

Shortcomings of Constructivist Decision Making Theories

Despite the empirical support for the usefulness of constructivist theories in explaining some online distance education decision making behavior, they have substantial limitations. Constructivist models do not account for a variety of the factors explained by the rational choice, incremental, and political models. Although some studies suggest that leaders' own actions can construct reality (Owen & Demb, 2004), for instance, there are also objective facts "out there," like the cost of learning management systems (Clinton, 2002) and enrollment rates of online students (Allen & Seaman, 2010b), that can be discovered by the data collection and analysis suggested by the rational choice model. Uncertainty and practitioner intuition are clearly factors in online distance education (Bray et al., 2007; Hite et al., 2008), but that has not prevented detailed, strategic planning about it at many colleges (Allen & Seaman, 2007; Cejda and Leist, 2006). In fact, Bess and Dee (2008) argue that the rational paradigm tends to predominate in higher education administration so decisions can be made quickly and with minimum complications. Moreover, while the group dialogue called for by constructivist theory appears in some studies of online distance education (Hite et al., 2008), so do efforts to impose individual or group perspectives on other people as predicted by the political model (Conole et al., 2006; Cox, 2005). Furthermore, even if decision makers do value open, group discussion, empirical research suggests that they will struggle to find the time for it (Wright and Howell, 2004).

In fact, what often emerges from the literature is evidence for multiple models. For instance, Bulger's (2003) dissertation on a joint university-industry distance education program found a mixture of political and incremental decision making. Both Chapman (2006) and Magjuka, Shi and Bonk (2005) completed case studies of graduate level distance education programs with similar results. Each discovered evidence that the emergent nature of online distance education forced these programs to use a mixture of experimentation, political expediency, quantitative data (when available), and qualitative assessment of individual perceptions to make decisions. Burge's (2008) analysis of interviews with 44 distance education practitioners reached similar conclusions. In short, while constructivist theories are helpful, so are rational, incremental, and political models.

A number of scholars cite the value of combining the explanatory power of these models. In perhaps the most complex theoretical work available, Bulger (2003) developed a grounded theory of distance education decision making. Drawing on Thompson's (1967) work, she hypothesizes that the model most helpful in explaining an online distance education choice depends on whether decision makers agree on both institutional goals and the methods to reach those goals (which implies a rational approach), agree on goals but not on methods (the incremental approach), or agree on methods but not on goals (the political approach).

Bulger (2003) also suggests that a combination of these approaches could be useful in comprehending a decision. For instance, in explaining how a university designed a distance education program for a corporate partner's employees, she found

both the incremental and political models helpful. Because neither partner had been involved in such a venture before and had little past experience as a basis for making decisions, most of the design was developed through trial and error. Both the university and corporation agreed, for example, that an assessment of employee needs was an important goal, but they were unsure how to conduct it. The corporation lacked time and resources—common factors in incremental models—for the extensive survey proposed by the university, so instead employee focus groups and interviews of their supervisors were used. The political model, however, explained a different aspect of the design decision: the use of videoconferencing instead of web-based technologies as the delivery method. The corporation preferred the latter but the university disagreed. As the program could not be run without the university's faculty, who preferred videoconferencing, it had the political leverage to prevail.

Oliver and Conole (2003) similarly argue that online distance education is not likely to be understood by just one approach—such as a rational choice—and that multiple models are likely to yield the fullest explanation. Sachs (2004) asserts that elements of the rational approach can interact effectively with constructivist ideas. For example, planning can not only eliminate doubt but also provide a framework with which to consider and debate possible alternative futures.

Blending the data called for in rational choice theory and the dialogue central to constructivism also may offer the chance to bring together those who collect information and those who make decisions. Goho and Webb (2003) describe the gap between positivist institutional researchers and often intuitive higher education leaders as the

“planning dilemma.” The literature abounds with advice for institutional research offices to place their reports in a context that can be understood by decision makers, to know the modes of thinking of administrators, and to collaborate with faculty (Ferren & Aylesworth, 2001; Howard, 2001; Petrides, 2002a, 2002b; Sharps & Martin, 2002).

The concept of a culture of inquiry can capture interactive relationships between constructivist and rationalist theories. It suggests that both rationalist data gathering and analysis and constructivist sense making may have their place and that a hybrid of these approaches is possible (Dowd, 2005). Because a culture of inquiry focuses on the questions and interpretations of decision makers, it aligns with constructivist ideas about practitioner experience and tacit knowledge as well as group dialogue. Once the decision makers’ questions are asked, however, the culture of inquiry considers the thorough collection and objective analysis of data called for in the rational choice model as one viable method of exploring those questions. Results of this rational process are not necessarily considered the definitive answer, but as one piece of evidence for leaders to interpret as they make decisions. Dowd (2005) notes, for instance, that community colleges can learn from comparing data on their own performance—on enrollments, costs, etc.—to similarly situated “peer institutions.” Because no two colleges are exactly alike, however, decision makers must interpret such comparative data carefully to account for differences. Lower costs per student at one institution do not necessarily prove it has more efficient operations if it is in a region where it can pay lower wages or obtain supplies more cheaply than a peer college can. Although rationally developed data and analysis are useful in the culture of inquiry, the final interpretation must come from

the decision makers who draw on their own experience and dialogue to determine the meaning of the data.

Hansen and Borden (2006) suggest action research as another way to blend rationalism and constructivism. They argue that despite the resources put into institutional research over the years, data still impact decisions too little because analysts and leaders are isolated from each other. With action research, decision makers would be directly involved in the development of topics and methods for information collection. Since they often would bring their own agendas to the process, the idea of objectivity inherent in rational choice theory could be lost. However, the relevance of the data to practitioner concerns and the collaborative nature of its gathering and interpretation would make it more likely to influence choices and to sway other constituents of the institution. This might be particularly useful in situations in which an issue is new—such as online distance education—or not well understood. The blending of action and research in this approach reinforces the idea that practitioner experimentation can contribute to knowledge creation instead of the possession of data being a prerequisite to leadership decisions and action (Daft & Weick, 1984).

Cook and Ley (2008) provide an example of successful action research in the development of a marketing plan for a graduate school's distance education program. A team of faculty, marketing staff, and distance education administrators wanted to understand how big the market might be for online courses leading to certificates and Masters degrees as well as which marketing tactics were most effective for attracting students. As they launched their first classes, they kept track of enrollment data, the

number of marketing contacts made by phone and by faculty visits to remote sites near where the students lived, and the impact of different course scheduling patterns.

Enrollment grew rapidly and they learned that the quality of their product mattered less at first than the trust they built with their student customers. In addition, their early experience showed that consistency—in living up to promises about course scheduling and other important services—was crucial and this shaped their approach in later phases of the marketing effort. The combination used here of objectively gathered data and group dialogue in interpreting them shows a blend of the rational choice and constructivist models.

In summary, constructivism—like the other theories reviewed in this chapter—is helpful in explaining some aspects of online distance education decision making.

However, none of these models by themselves appear as useful as an approach that would utilize multiple models.

Bringing the Models Together: Employing Contingency Theory as a Conceptual Framework

The literature reviewed in the previous four sections shows that rational choice, incremental, political, and constructivist decision making models are relevant to online distance education. For example, Adams and Seagren's (2004) study of online distance education at three Midwest community colleges revealed leaders behaving in ways that were consistent with both rational choice and incremental theories. Cox (2005) and Sachs (2004) each found rational and political explanations for decision making in their research on online distance education at community colleges. Moreover, the empirical

evidence suggests that multiple models could explain different aspects of the same situation. For instance, Owen and Demb (2004) observed behavior that was consistent with both rationalist and constructivist theories in their case study of a community college working to integrate technology into both traditional and online distance education. It would be helpful, therefore, to have a mechanism to bring these theories together, combining their strengths to explore multiple dimensions of decision making.

Contingency models offer such a mechanism. These models contend that multiple theories can explain decision making depending on the context (Tarter & Hoy, 1998). The assumptions behind Daft and Weick's (1984) model of organizations as interpretation systems make it especially relevant for research on the role of data in making decisions. For instance, Daft and Weick assume that organizations must interact with their external environment and thus need information about it. The rapidly advancing technology, growing student demand, and shifting competition from other institutions that are part of each college's external environment makes it particularly relevant to online distance education. Daft and Weick (1984) suggest that gathering information, interpreting it (deciding what it means), and learning from it—which involves taking action or at least developing a new way of understanding a situation—are closely associated with decision making. They assume that an organization's interpretation of data is actually a shared understanding of the meaning of those data developed by its key leaders. This fits well with the empirical reality of community college online distance education, in which decision making authority tends to be spread

among multiple actors, including chief academic officers, directors of technology, deans, and faculty (Adams & Seagren, 2004; Cox, 2005; Sachs, 2004).

Daft and Weick (1984) assume that organizations differ systematically in how they collect, interpret, and use data for decision making. They posit that these differences are caused by variations along two dimensions: the extent to which an organization's leaders believe they can analyze its external environment and the degree to which the organization interacts with that environment. The intersection of these two dimensions, Daft and Weick (1984) assert, creates four modes of organizational behavior related to the collection, interpretation, and use of data in making decisions. Three of these modes align with the decision making theories that are relevant to this study.

The first mode includes "*discovering*" organizations, which have leaders who believe they can analyze the external environment. This may be because it is stable or familiar to them. These organizations also interact briskly with the external environment, perhaps because their leaders perceive it as competitive or threatening and judge that engaging it is the best way to survive. Their constant interaction with the environment gives them ample opportunity to collect data about it. Their leaders' confidence in their ability to analyze that environment encourages them to interpret these data objectively to get the clearest possible understanding of their surroundings so they can make decisions that will help the organization thrive. This mode of behavior, therefore, corresponds closely to the rational choice model: discovering organizations are gathering large volumes of information and then analyzing it objectively in order to make decisions that

maximize the chances of reaching their goals (Lyles & Thomas, 1988; Tarter & Hoy, 1998).

“*Enacting*” organizations—Daft and Weick’s (1984) second mode—are also actively engaged with their external environment, but their leaders believe they can not analyze it effectively. This may be because it is changing too fast or is unfamiliar to them. Rapid change could make it difficult to collect data relevant to the situation at hand. Moreover, lack of confidence in the ability to understand the environment would probably discourage data gathering in the first place. Faced with this uncertainty, leaders need other mechanisms for making decisions without relying on data, because they still have chosen to be active in the environment. Daft and Weick (1984) suggest such mechanisms could include trial and error—small variations on the status quo as predicted by the incremental model (Lindblom, 1979). More conservative, risk-averse institutions might favor such incremental steps. More aggressive, risk-tolerant organizations might engage in more active experimentation, involving substantial new initiatives, as predicted by the constructivist model (Daft & Weick, 1984). For instance, instead of surveying potential students about their interest in a new online academic program, an *enacting* institution might offer the first few courses in the curriculum on a pilot basis to see how many students will enroll. In this example, the organization is actually creating a new reality. Instead of trying to make projections about a potential market, it is monitoring an actual one that it has helped construct. It is embracing uncertainty as an opportunity to learn and thus this mode of behavior aligns closely with constructivist theories (Eddy, 2003; Mumby & Putnam, 1992; Oliver & Conole, 2003).

Unlike *discovering* and *enacting* organizations, those in an “*undirected viewing*” mode do not actively interact with the external environment. In this third mode, Daft and Weick (1984) suggest that the lack of interaction may be caused by organizational leaders’ perceptions that their surroundings offer little benefit or threat. Because the environment is assumed to be unimportant, these leaders do not actively seek data about it and consequently are not confident they understand it well. They choose not to spend resources on data collection and analysis on a topic that is deemed of low priority. Instead, they tend to obtain information about the environment only by chance, such as in informal conversations with customers or colleagues in other organizations in their field. Because differing experiences and perspectives among each leader may lead them to develop contrasting individual perceptions of such data, it is necessary to debate these perceptions and ultimately negotiate a single, organizational interpretation. Daft and Weick (1984) suggest that this debate will be iterative and could well be prolonged. Coalition building is likely to be needed to reach consensus on an interpretation of the data and a decision about how to react to them. Such debate, negotiation, coalition formation, and consensus seeking are all characteristics of the political model of decision making (Lyles & Thomas, 1988).

An organization in a “*conditioned viewing*” mode is the final type in Daft and Weick’s (1984) model, but it will not be helpful in this study. This is because it has much in common with a bureaucratic model of decision making, which assumes that an organization has a highly regimented set of decision making processes, a hierarchical power structure, and a relatively static environment. None of these assumptions fit well

with community college decision making about online distance education. As noted earlier, these institutions tend to feature shared governance in which a shifting collection of actors, with varying levels of responsibility and often differing objectives, are involved in making decisions about online distance education (Adams & Seagren, 2004; Cox, 2005; Kater & Levin, 2005; Sachs, 2004). This is neither a hierarchical nor a regimented system. Rapidly growing enrollments and advancing technology also create a constantly changing environment, not a static one (Allen & Seaman, 2010b; Sachs, 2004).

In summary, the *discovering*, *enacting* and *undirected viewing* modes of Daft and Weick's (1984) contingency theory draw on all of the models—rational choice, incremental, political, and constructivist—that the literature suggests are relevant to community college online distance education decision making. It provides, therefore, a helpful conceptual framework to begin exploring this topic.

For this study, the decision making system—including the leaders involved in online distance education at a community college and the context in which they operate—serves as the unit of analysis. This reflects Daft and Weick's (1984) assumption that an organization's interpretation of data is actually the shared meanings that its major leaders develop together about those data. This dissertation consists of case studies of several community colleges, which aligns with Daft and Weick's (1984) contention that differing institutional and environmental contexts may lead to different modes of behavior regarding the collection, analysis, and use of information to make decisions. The *discovering*, *enacting*, and *undirected viewing* modes suggest some

potential frameworks for the development of the research design, criteria for site selection, and coding categories for data analysis.

CHAPTER 3

METHODOLOGY

This chapter describes the methodology employed in this study on the role of data in community college academic leaders' decision making about online distance education. It outlines the qualitative research perspective, the case study strategy of inquiry, and the site selection criteria and process. It then describes the methods of data collection and analysis, measures used to promote reliability and validity, and pilot testing. Next it discusses the role of the researcher. Finally, it addresses delimitations and limitations of the study.

Research Perspective

This study uses a qualitative research design. Such an approach is called for when a phenomenon is not well understood and the purpose of the study is exploratory (Marshall & Rossman, 1995; Stake, 1995). As noted in Chapter 2, few studies have examined the role that data play in decision making about online distance education in community colleges (Adams & Seagren, 2004; Compore, 2003; Cox, 2005; Owen & Demb, 2004). The purposes of this study, therefore, are exploratory in nature.

Stake (1995) asserts that a qualitative approach is appropriate for examining open-ended research questions that seek both expected and unexpected connections

among variables. This study aligns closely with that idea, searching for patterns that may be consistent with Daft and Weick's (1984) model of organizations as interpretation systems, but also for new patterns that may not have been identified in previous studies. This dissertation research seeks to build and refine theory, therefore, and qualitative methods are particularly appropriate for that goal (Corbin & Strauss, 1990). Moreover, Daft and Weick's (1984) model has not been used previously as a conceptual framework to explore online distance education decision making. Qualitative research makes sense when a novel theoretical perspective is introduced to study a problem (Creswell, 2003; Marshall & Rossman, 1995).

A qualitative approach also is appropriate when a holistic understanding of a phenomenon is needed, encompassing its context and differing perceptions about it held by those involved (Miles & Huberman, 1994; Stake, 1995). The empirical research on community colleges (Brock et al., 2007; Cox, 2005; Sachs, 2004) suggests the relevance of rational, practical, political, personal, and cultural factors to decision making. The literature review also suggests that environmental and institutional factors influence how decision makers gather, interpret, and use data and that these factors will differ with the context of each organization. Thus, a holistic view that considers all of these factors is needed.

Finally, qualitative research is ideal for exploring a phenomenon that involves multiple variables that cannot be controlled and that must be studied in its natural setting (Creswell, 2003; Lee, 1999; Marshall & Rossman, 1995). Stake (1995) points to the complexity of human behavior and the difficulty of determining cause and effect among

the many factors interacting in any situation involving human beings. The literature review suggests the myriad possible variables—practical ones like time and resources available for data collection and analysis, political ones such as competing interests and values, and environmental ones like rapidly changing technology—that may contribute to decision making about online distance education. It is difficult to imagine controlling for such variables. Moreover, because of the importance of context described above, community college decision making needs to be studied at the institutions themselves to gain an understanding of that context and its role in shaping decision processes and outcomes.

Strategy of Inquiry

This research employs the case study method as its strategy of inquiry. This method's origins lie in several social science disciplines, such as anthropology and political science, but it is also popular in business, education, and social work (Stake, 1995). Case studies are considered particularly appropriate for higher education because of the great diversity—such as size, age, mission, and control—of colleges and universities in the U.S. (Kyburz-Graber, 2004). Yin (2003) defines this approach as, “...an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident” (p. 13). Stake (1995) concurs, noting that a goal of this method is to, “...appreciate the uniqueness and complexity...” of the case, including, “...its embeddedness and interaction with its contexts” (p. 16).

Stake (1995) asserts that case studies help a researcher to understand rather than explain a phenomenon, and Yin (2003) emphasizes that they answer “how” and “what” questions. The research questions in this study ask how and to what extent community college academic leaders use data in making decisions about online distance education, what data they cite as being influential, how strong the influence of data are, how the emergent nature of online distance education may influence the availability of data and the ways decision makers use them, and what decision making processes leaders may use under different conditions of data availability and different levels of data quality.

Case study research can be informed by a theoretical framework to shape how the data are gathered and interpreted (Yin, 2003). Daft and Weick’s (1984) model provides that type of conceptual organization for this study. Case studies also require more than one source of data (Creswell, 2003; Stake, 1995). Yin (2003) argues that the data need, “to converge in a triangulating fashion...” (p. 14). Without this degree of triangulation, the subjectivity of the researcher’s interpretation may call the conclusions of the study into question. As will be described below, this study relies on multiple sources of evidence with the objective of triangulation.

This research employs a multiple case study design, exploring how and to what extent academic leaders in three community colleges use data to make decisions about online distance education. Yin (2003) argues that multiple case studies are particularly suitable to explore “contrasting situations” (p. 54) and that they are likely to produce results with greater validity than those from a single case. Examining several cases is appropriate because the literature suggests that leaders in different two-year institutions

do not behave the same when confronted with choices about online distance education (Adams & Seagren, 2004; Compore, 2003; Cox, 2005; Goho & Webb, 2003; Owen & Demb, 2004; Sachs, 2004). This evidence aligns with Daft and Weick's (1984) model as well. It posits that organizations differ systematically in how they collect, interpret, and use data for decision making. Daft and Weick (1984) further argue that variations in the extent to which an organization's leaders perceive that they can analyze the external environment and the degree to which the organization interacts with that environment are the key factors that influence these differences in institutional decision making processes.

This dissertation is an example of what Stake (1995) refers to as an “instrumental” case study, in which the individual cases are explored to learn more about a general issue: the use of data in decision making. Examining this issue at three selected community colleges provides the contextual variety that the literature suggests is important.

The cases in this dissertation are three community colleges, and more specifically their “system” for decision making about online distance education, including the institutional and environmental factors that influence it. This system is analyzed through the reported perceptions and experiences described by academic decision makers. The literature suggests that at most colleges this includes multiple people—such as presidents, chief academic officers, deans, technology directors and faculty—although it is possible that decision making about online distance education could be controlled by a single individual (Adams & Seagren, 2004; Cox, 2005; Sachs, 2004). Daft and Weick's (1984) model of organizations as interpretation systems conceptualizes the interpretation of data

and its subsequent use in decision making as a process that is shared among the key leaders involved. This construct can be used for institutions with many people involved in decision making or very few. The literature also makes clear that the distribution of decision making responsibilities for online distance education within each college is unique (Cox, 2005; Sachs, 2004). Thus the unit of analysis in this dissertation, the decision making system, is flexible enough to encompass the varying personnel and processes that different institutions employ.

Site Selection

The site selection process ensured that the three selected cases had variations in context that allowed for a rich exploration of community college decision making about online distance education. In qualitative research, selection of case study sites should be purposeful, using criteria such as accessibility and the likeliness that a particular site will allow the research questions to be explored productively (Stake, 1995; Yin, 2003). It was important for each college in the study to have an active online distance education effort. Institutions not actively engaged in this sector are unlikely to have made enough decisions about it to make them fruitful places to research.

Community colleges in Massachusetts were chosen as appropriate sites for conducting this study given the growth of online distance education in these institutions over the last few years; the number of online course sections that one college offered grew more than eighteen-fold in eight years, for instance (Northern Essex Community College, 2005, 2009, 2010). This has compelled academic leaders at these colleges to make many choices. Moreover, these 15 colleges vary significantly in the size of their

student enrollment, the maturity of their online distance education efforts, and their settings, with institutions in cities, suburbs, and rural areas (*Massachusetts community colleges*, 2008; Massachusetts Colleges Online, 2008). This variety is important because theoretical and empirical literature suggest that context may influence the use of data in decision making (Daft & Weick, 1984; Owen & Demb, 2004).

These sites were accessible because the researcher has professional connections with multiple individuals at the statewide and institutional level that are knowledgeable about the online distance education efforts at the 15 community colleges. This helped to gain entrance for the case studies. More important, it allowed the researcher to consult with these practitioners about the many contextual issues that the literature suggests are relevant to the use of data in decision making about online distance education. Along with a review of institutional web sites and other relevant documents—to be described in more detail below—these consultations helped to assure that three cases with the desired mix of contexts were selected.

Two of the 15 Massachusetts community colleges were eliminated at the outset of the site selection process. Northern Essex Community College was not studied because it is the researcher's own institution and given his substantial involvement in online distance education there, the potential for bias in the research was too great. Middlesex Community College also was not studied. A member of the dissertation committee for this study was a leader in online distance education at this institution and again this might call into question the objectivity of the study.

Five of the remaining 13 community colleges also were removed from the pool of potential sites early in the selection process. One of these had such a small online distance education effort that it raised questions about whether it had made enough decisions to be a rich site to study. This institution and another of the eliminated sites also had experienced high turnover of key personnel and organizational instability making it hard to conduct research on their campuses. The other three colleges were eliminated because despite repeated requests they failed to return a one-page survey (described in greater detail below) sent to all the institutions in the selection pool. Without the data from this survey it was extremely difficult to measure these three colleges in terms of the site selection criteria, and their unwillingness to answer the questions suggested that they would not have approved research at their campuses.

Five criteria were employed to select three cases—labeled under the pseudonyms Wilder, Yankee, and Zorn Valley Community Colleges from this point forward in this study—from among the remaining eight Massachusetts community colleges in the pool. The first criterion was the maturity of the online distance education effort at the institution. Both the literature review and Daft and Weick's (1984) model suggest that organizations that have been involved in a particular sector longer and more deeply are more likely to have generated data about it and to feel comfortable in using those data to make decisions, while those newer to that sector may face more obstacles to employing data in this way. Thus three colleges with varying levels of maturity in their online distance education efforts were sought for the study to explore the role maturity may play in the use of data in decision making. More specifically, the site selection process sought

colleges with online distance education efforts of high maturity (many courses and multiple programs fully online), moderate maturity (some courses and at least one program fully online), and low maturity (a few courses online and plans to offer a fully online program).

Indicators of maturity included the age of the online distance education effort, the number of online courses offered, and the number of fully online programs available at each institution as of Fall 2008. Searches of institutional websites, analysis of a survey already conducted by the Massachusetts Colleges Online (MCO) consortium, and a one-page survey sent to each of the institutions in the pool (see Appendix 1) were used to measure these indicators (see Table 1).

Based on these indicators, Wilder Community College was found to have an online distance education effort of high maturity, Yankee Community College an effort of moderate maturity, and Zorn Valley Community College an effort of low maturity (see Table 2). Wilder and Yankee Community Colleges each offered their first online courses in 1999/2000, while Zorn Valley did not offer one until 2003. As of Fall 2008, Wilder had eight degrees and four certificate programs fully online, compared to four certificates for Yankee, and zero degrees or certificates for Zorn Valley Community College, which was just seeking approval from its accrediting agency to offer such online programs at that time. Wilder offered over 100 online courses compared to 62 for Yankee and 26 for Zorn Valley in Fall 2008.

The second criterion for site selection in this study was the centrality of data and research to the institution. The literature suggests that colleges that value the collection

Table 1
Site Selection Criteria, Indicators and Measurement Methods

Selection Criteria	Indicators of Criteria	Measurement Methods
Maturity of the Institution's Online Distance Education (ODE) Effort	1. Age of ODE Effort 2. Number of online courses in Fall 2008 3. Number of fully online programs in Fall 2008	Institutional website searches, MCO survey, and one-page survey sent to the leaders of ODE at each college in the pool
Centrality of Data and Research to the Institution	1. Achieving the Dream college? 2. Position title and educational background of the institutional research director 3. Data displays on the college website	Achieving the Dream information, institutional website searches, and consultations with key informants knowledgeable about institutional research in the Massachusetts community colleges
Organizational Structure and Leadership of the Online Distance Education Effort	1. Position titles of colleges' online distance education leaders and degree of shared decision making 2. Percentage of online courses taught under the Division of Continuing Education contract	MCO list of institutional liaisons, institutional website searches, and one-page survey sent to the leaders of ODE at each college in the pool
Level of Interaction between Institutions' Online Distance Education Efforts and the External Environment	1. Level of participation in MCO consortium 2. Level of interaction with other organizations in the environment	MCO document showing institutional benefits of membership and one-page survey sent to the leaders of ODE at each college in the pool
Perceptions of the Analyzability of the External Environment by Institutions' Online Distance Education leaders	Reported perceptions of the leaders	One-page survey sent to the leaders of ODE at each college in the pool

and analysis of data in general also are likely to do so in specific fields of operation, such as online distance education (Owen & Demb, 2004; Sachs, 2004). Numerous studies document that other colleges, on the other hand, struggle to establish a culture of

evidence overall and particularly in online distance education (Brock et al., 2007; Burge, 2008; Compara, 2003; Morest & Jenkins, 2007). The site selection process, therefore, sought three Massachusetts community colleges with differing levels of emphasis on data and research in their overall operations to explore how this factor may influence the use of data in decision making about online distance education. More specifically, the process sought colleges where the centrality of data and research was high, where it was moderate, and where it was low.

The site selection process employed three indicators of the centrality of data and research to an institution. The first was whether the college had been chosen to participate in the Achieving the Dream initiative, which aims to build a culture of evidence by encouraging institutions to collect and analyze data to improve student outcomes (Brock et al., 2007). The second was the position title and educational background of those responsible for leading institutional research at the colleges. The literature suggests that if these individuals have doctoral degrees and hold positions of considerable power and responsibility—Vice Presidents or Deans, for instance—data are more likely to be used in decision making (Delaney, 2001; Morest & Jenkins, 2007). The third indicator of the centrality of data and research was the amount of data displayed on the college's website. A review of Achieving the Dream Grant information and institutional websites, and consultations with key informants knowledgeable about institutional research in the Massachusetts community colleges were used to measure these indicators.

Based on these indicators as of Fall 2009, the centrality of data and research appeared to be high at Wilder Community College, moderate at Yankee Community College, and low at Zorn Valley Community College. Wilder is part of the Achieving the Dream initiative and had an extensive fact book on its website with detailed data on the institution, its students, enrollment, employees, and finances. Yankee is not an Achieving the Dream college, it had an institutional research web page under construction and a “quick facts” document on its website that contains some tables and graphs with data about its students and limited data on its courses. Zorn Valley is also not an Achieving the Dream institution, had no institutional research web page, and its website had just a very brief overview section with extremely limited data about the institution. Wilder had an Executive Dean of Institutional Effectiveness with a Ph.D., Yankee had a Director of Planning and Assessment with an M.S., and Zorn Valley had a Director of Institutional Research, Planning, and Grants Development with a Ph.D.

The third criterion for site selection was the organizational structure and leadership of online distance education at the institution. The literature indicates that political factors are relevant to the use of data in decision making, particularly in higher education institutions where multiple actors with competing preferences are common (Birnbaum, 1992; Lyles & Thomas, 1988). Whether online distance education decision making authority is shared among multiple positions or is more concentrated is one key factor, for instance. A second important aspect is whether a college’s full-time faculty play a large role in online distance education or whether adjunct instructors teach most of the courses (Burge, 2008; Cox, 2005; Mignot-Gerard, 2003; Sachs, 2004). Three

community colleges with differing organizational structures for online distance education were sought, therefore, to explore what role political factors may play. More specifically, the site selection process sought colleges with a high degree, a moderate degree, and a low degree of shared decision making for online distance education, and colleges with a high degree, a moderate degree, and a low degree of involvement by full-time faculty in the online effort.

Two indicators of the organizational structure and leadership for the online distance education effort were used in this site selection process. The first was the position title of those responsible for online distance education and the degree to which they shared decision making authority with others. The second was the percentage of online courses taught under the Division of Continuing Education (DCE) contract, which suggests the strength of the role played by adjunct faculty in online distance education. Reviews of institutional websites, MCO documents listing the online distance education liaisons for each college, and a one-page survey sent to each of the institutions in the pool were used to measure these indicators.

Based on these indicators as of Fall 2009, Zorn Valley Community College had the highest degree of shared decision making, with a relatively new Academic Technology Coordinator working with the Academic Vice President and assistant deans, who determined which online courses to offer. Yankee Community College had a moderate degree of shared decision making, with an experienced Dean of Distance Education working with the college's President on the online distance education effort. Wilder Community College had a low degree of shared decision making, with its highly

experienced Dean of Distance Education given significant freedom to make decisions about online distance education. Wilder had the lowest degree of involvement by full-time faculty in its online distance education effort, with 90 percent of online courses taught under the DCE contract. Zorn Valley had a moderate degree of full-time faculty involvement, with 60 percent of online courses taught under the DCE contract. Yankee had the highest degree of full-time faculty involvement, with 33 percent of online courses taught under the DCE contract.

The fourth criterion for site selection was the level of interaction between the institution's online distance education effort and the external environment. Daft and Weick (1984) posit that such interaction is one of two key factors that influence the use of data in decision making. Thus the site selection process sought three Massachusetts community colleges whose online distance education efforts exhibited varying levels of interaction with their external environment. More specifically, the process sought colleges with a high degree, a moderate degree, and a low degree of interaction between their online distance education efforts and the external environment.

Two indicators of institutional interaction with the online distance education external environment were used. The first was the extent to which the community colleges participate in the MCO consortium, which promotes cooperation among state public higher education institutions in online distance education—such as joint academic programs and course brokering—to meet student needs. An MCO document that details the financial benefits each college derives from the consortium and the number of other MCO services (e.g., professional development, joint program development activities, use

of the MCO Portal website) each takes advantage of was used to measure this indicator. The second indicator was the extent of each college's interaction with businesses, non-profit organizations, high schools, and other institutions in the external environment related to online distance education. Examples of such activities could include online dual enrollment courses provided to high schools and fully online certificate programs offered to employees of a business or hospital. A one-page survey sent to each of the institutions in the pool was used to measure this indicator.

Based on these indicators as of Fall 2009, Wilder Community College's online distance education effort had a high degree of interaction with its external environment. It had about ten partnerships with external organizations to offer online distance education, including non-profit and government groups. It derived more than \$90,000 in financial benefits and used five services from MCO. Yankee Community College's online distance education effort had a moderate degree of interaction with its external environment. It was just beginning to pursue its first partnership with an external organization, and derived \$35,000 in financial benefits and used five services from MCO. Zorn Valley Community College's online distance education effort had a low degree of interaction with its external environment. It did not have any partnerships with external organizations. Although it used six MCO services, it derived less than \$20,000 in financial benefits from its participation in the consortium.

The final criterion in the site selection process for this study was the perceptions of the institutions' online distance education leaders about the analyzability of their external environment. The degree to which an organization's leaders believe they can

analyze their environment is the second key factor that Daft and Weick's (1984) model advances to explain whether and how data are used in decision making. Leaders that perceive they can figure out what is happening in their environment are far more likely to try to gather and then employ data about it to make decisions than those that believe they cannot comprehend their environment. The site selection process, therefore, sought three community colleges with variations in the perceptions of their online distance education leaders about the analyzability of their external environment. More specifically, the process sought colleges with a high degree of confidence, a moderate degree of confidence, and a low degree of confidence among their online distance education leaders concerning their ability to analyze the external environment.

The indicator of this criterion was the reported perceptions of the leaders themselves. A one-page survey sent to each of the institutions in the pool was used to measure this indicator. In the survey, leaders were asked to rate their confidence levels (confident, somewhat confident, or not confident) in eight distinct situations: their ability to forecast trends in online distance education related to enrollments, technology, finances, and competition both one year and three years from now.

Based on this indicator as of Fall 2009, Wilder Community College's online distance education leaders had a high degree of confidence in their ability to analyze the external environment, answering "confident" in five of the eight situations asked about in the survey and "somewhat confident" in the other three situations. Yankee Community College's online distance education leaders had a moderate degree of confidence in their ability to analyze the external environment, answering "confident" in four of the

situations and “somewhat confident” in the other four. Zorn Valley Community College’s online distance education leaders had a low degree of confidence in their ability to analyze the external environment, answering “somewhat confident” in three of the situations and “not confident” in the other five situations.

Table 2 indicates that Wilder, Yankee, and Zorn Valley Community Colleges possess differing characteristics across all five of the site selection criteria—maturity of their online distance education efforts, centrality of data and research to their operations, organizational structure and leadership for online distance education, interaction with their external environment, and perceptions of the analyzability of that environment—and were thus the most promising sites at which to conduct research. The variation in context was important to achieve in this multiple case study because the literature suggests that colleges’ use of data in decision making about online distance education differs depending on their circumstances.

Once Wilder, Yankee, and Zorn Valley Community Colleges were selected, the online distance education leaders from each were contacted and they each agreed to serve as research sites. Formal permission from each college was then sought and received.

It should be noted that the actual research findings (described in Chapter 4), differed with regard to the site selection analysis with respect to one indicator: percentage of online courses taught under the Division of Continuing Education contract. While the site selection criterion—particularly the answers to a question on the one-page survey sent to the online distance education leaders at each college—suggested that Wilder Community College had the lowest level of full-time faculty involvement in online

Table 2
Site Selection Results

Institution: Site Selection Criteria:	Wilder Community College	Yankee Community College	Zorn Valley Community College
Maturity of Online Distance Education (ODE) Effort	High	Moderate	Low
Centrality of Data and Research	High	Moderate	Low
Organizational Structure and Leadership of ODE Effort	Low degree of shared decision making Low full-time faculty involvement	Moderate degree of shared decision making High full-time faculty involvement	High degree of shared decision making Moderate full-time faculty involvement
Level of Interaction with the External Environment	High	Moderate	Low
Perceptions of Ability to Analyze the External Environment	High	Moderate	Low

distance education and Yankee Community College had the highest, the interviews indicated the opposite was true. There are two possible causes of this discrepancy. First, the online distance education leaders at Wilder and Yankee may have misunderstood the question being posed on the one-page survey during the site selection process. More likely, these leaders answered correctly but the indicator itself was flawed. This is because full-time faculty can teach courses in addition to their regular workload at their colleges under the DCE contract. The interviews revealed, for example, that while most online courses at Wilder were taught under this contract, many of these were being instructed by full-timers teaching as adjuncts. Thus, full-time faculty online involvement

at Wilder was high. The interviews also revealed that full-time faculty participation in online courses at Yankee was far lower than the site selection indicator suggested.

Although the data provided in Table 2 is thus incorrect with respect to this indicator, the variability among the site selection criteria remained intact because Yankee and Wilder Community Colleges simply switched places in terms of the level of full-time faculty involvement in online distance education. This variability was the chief goal of the site selection process, so this issue did not undermine the integrity of the study.

Data Collection

Key informant interviews were the primary method of data collection in this study. Interviews are an efficient way to gather significant amounts of information across cases, particularly when they target the people most knowledgeable about the topic. The interview process also enables the pursuit of unexpected issues that arise during the conversation (Creswell, 2003; Lee, 1999). Stake (1995) argues that interviews are the primary method to capture the multiple perceptions of reality held by the individuals involved in a case.

The literature suggests that chief academic officers, technology directors, deans, department chairs, and other faculty can be key decision makers about online distance education, depending on the circumstances of the institution being studied (Adams & Seagren, 2004; Cox, 2005; Sachs, 2004). Therefore, interviews with individuals in these types of positions were conducted at the three selected community colleges. The researcher used consultations with the Massachusetts Colleges Online liaison at each of these institutions as well as searches of their websites to develop a list of individuals

knowledgeable about online distance education decision making to be interviewed. This was appropriate because each college has a unique mix of players involved in online distance education. No matter what the organizational structure, however, administrators, department chairs, and faculty were interviewed at all of the case sites because of the key role these groups play in online distance education. On each campus, eight face-to-face or telephone interviews were conducted to discover the perceptions of the key decision makers and also to triangulate what they said.

A semi-structured interview protocol was used (see Appendix 2). Study participants first were asked to briefly describe the most important aspects of their college's online distance education effort and their own role in it to provide information about context and the interviewee's perspective. Then they were asked to identify major decisions about online distance education made at their college in the last few years. The study participants were asked to describe the process involved in making each decision that they identified, from the first realization that a decision might be necessary, through any intermediate steps, to its ultimate announcement and implementation. They also were asked what role data played throughout the steps of the decision making process, and how useful and relevant the data were in that process. They were asked if they could think of any data that would have been helpful in making the decision that the college did not have access to.

To gauge how unique these decisions were in terms of the use of data, the study participants were asked how much the process they described was similar to or differed from processes used in other decisions about online distance education at the college.

They were asked whether data seem to play more, less, or about the same role in decisions about online distance education at their institution versus decisions about other issues. Finally, study participants were asked to describe an online distance education decision that was made largely in the absence of data to get a sense of the other factors that influence the decision making process.

When leaders at the same college cited different major decisions, they were asked about the decisions raised in other interviews for purposes of triangulation. Although this approach produced numerous types of decisions within an institution (and especially across the three colleges), each case nonetheless was bound by the key question involved: the role of data in the decisions. The study kept the names of the colleges and study participants confidential to encourage as open a discussion as possible with the leaders (Lee, 1999; Stake, 1995).

For purposes of organizing the research, each of the three colleges were referred to by a letter—X, Y and Z—during the research phase. Each of the participants were referred to by a letter (their institution) and a unique number: X1-X8, etc. Any documents produced in the research (interview question/answer sheets, analysis log, transcriptions of interviews) only used these identifiers and not institution or participant names. A single document linking the identity of each participant and his or her contact information (position, phone number and email address) and their college with their letter and number identifier was kept during the research in a locked file cabinet to which only the researcher had access. At the end of the research process, this document was destroyed. In the dissertation, pseudonyms were employed for the colleges and general

information about them and participants was used to help the reader understand the context of the cases, but not in a way that could lead to identification of either. For instance, participants were described by their role (faculty member, administrator) at the institution, but again not with the specificity that would allow them to be identified.

Yin (2003) argues that case studies should use multiple sources of evidence to compensate for the limitations of each data collection method. For instance, an interview relies on the recollection and honesty of the participants in answering the questions, rather than on direct observation of decision making in its natural setting (Creswell, 2003). This study, therefore, also employed document review. Written documents present the well-considered arguments of those involved in the decision making process and even though they still may contain hidden agendas, they are at least not affected by the presence of the researcher (Creswell, 2003; Lee, 1999; Stake, 1995). Analyses of the three selected community colleges' strategic plans, reports to accreditors, minutes from meetings, institutional research reports, union-management agreements related to online distance education, and an array of other documents were conducted to gain an understanding of the role of data in their decision making. Study participants also were asked to provide copies of data reports that they described as being important to their choices. If confidentiality concerns existed about doing this, they were asked if specific data could be removed from the document or if the type of data involved could be described generally without providing the specific data themselves. Such descriptions and documents allowed inquiry into the nature of the available data and how consistent they were with the ways in which participants reported that they were used.

Stake (1995) emphasizes the importance of monitoring the progress of data collection, because it can be extensive in case study research, especially when it involves multiple cases. This study employed NVivo software to help organize and store data as they were collected. Interview transcripts and documents were stored in NVivo, which allowed both complete documents and portions of them to be organized and categorized in multiple ways.

Methods of Analysis

Creswell (2003) argues that analysis of data gathered from interviews and documents begins with organization and then progresses through a general review and coding of the data. The interviews in this study were tape-recorded and transcribed verbatim. The written words from the interviews and documents were read for an initial impression and to begin identifying common themes. This allowed for the creation of files on each case within NVivo for purposes of organization.

The three cases were analyzed separately first, with a view to creating a descriptive profile of each college's online distance education decision making process. These are found in Chapter 4. This analysis involved the search for and identification of patterns in the data through coding (Corbin & Strauss, 1990; Creswell, 2003). Coding entails the identification of categories to sort the data for interpretation as well as key variables and the states those variables can take (Creswell, 2003; Stake, 1995). A first round of coding was performed to identify the context for decision making at each school and to categorize types of decisions (online distance education vs. others), the process used for decision making (origin of the decision, participants involved, approaches used,

timing), the basis for decisions (data or other factors, including politics and economics), and the subject of the decisions (academic issues, information technology, budgets, other). Other codes included the history, organization, and characteristics of the online distance education effort at each college.

Together these elements provided the raw material for a brief overview of each institution, its online distance education effort, and its decision making context, including the influence of data. They also supplied a more detailed description of five recent decisions—two at Yankee, one at Zorn Valley, and two at Wilder—made about online distance education at the three colleges. These decisions were chosen because the most information was available about them—interview participants discussed them more or the most relevant documents were accessible—because they represented distinct and complete decisions (in contrast, some interview participants discussed decision making processes that were in progress but not yet finished), and because they seemed to illustrate—either as examples or exceptions—decision making realities at the college in question. Thus Chapter 4 provides three richly described cases of community college online distance education decision making. That chapter seeks what Stake (1995) calls “naturalistic generalization” (p. 86): a thick description that “rings true” to the reader.

A second round of coding followed this, leading to the analysis provided in Chapter 5 that addresses the research questions. The literature and theory provided a partial foundation for this round of coding. The four decision making models explored in the Chapter 2 literature review—rational choice, incremental, political, and constructivist—and their corresponding modes in Daft and Weick’s (1984) model served

as an initial set of categories. Lee (1999) describes axial coding as a process in which, “...the researcher proposes several categories...and selects a single category and then judges all the data as to whether or not they fit within the selected category...This process is repeated until all the data have been evaluated against all categories and classified...” (p. 48). This study used axial coding to compare the decision making behaviors described in each of the five decisions explored in Chapter 4 against what the rational choice, incremental, political, and constructivist models predict.

Appendix 3 contains a matrix with a page dedicated to each stage of the decision making process (data collection, data analysis, decision criteria and mechanics, and data in the aftermath of the decision), with subcategories for each of those stages running in horizontal rows and the four decision making models running in vertical columns. Within each cell are tentative codes developed prior to the second round of coding. For example, on the “Data Collection” page, one of the subcategories is the “types of data” collected to make a decision. Inside of each cell in that row are codes corresponding to what a particular model predicts about that variable. The rational choice model, for instance, expects decision makers to gather hard—precisely measureable, often quantitative—data while the constructivist model expects them to also consider soft data, such as the intuition of decision makers. Sometimes a cell will contain several possible types of codes. In the above example, the cell in the “types of data” row and “rational choice” column contains both the “hard data” code and also a set of potential codes relating to types of hard data: costs, enrollment, etc. The researcher matched the

accounts provided about each of the five decisions against the four models laid out in this matrix.

The codes presented in these cells of Appendix 3 were tentative and left room for additional potential codes to emerge both within the columns dedicated to the four models—note that the word “other” often appears in these cells—but also in a fifth empty column. This was because it was possible that behaviors described in the interviews or documents within each case would not fit one of the decision making models. In addition to the axial coding and pattern matching exercise described above, therefore, this study also pursued open coding. Lee (1999) defines open coding as “...an unrestricted mode in which the researcher identifies the ‘naturally occurring’ categories depicted by the data themselves” (p. 48). Because the literature on online distance education decision making is limited, this study searched for new themes that might emerge from the cases. Stake (1995) suggests that once a theme is identified in one document or interview, confirming evidence must be sought in all the other ones in a process of triangulation. The open coding process involved the pursuit of alternative explanations of decision making behavior separate from what rational choice, incremental, political, and constructivist models predict. As will be discussed in Chapter 5, however, these theories largely explained the decision making behavior described in Chapter 4; significant new themes did not emerge from the open coding.

The results of the axial and open coding on each of the five decisions using the matrix in Appendix 3 were then analyzed to help answer the research questions. Particular subcategories in the matrix were matched to appropriate parts of the research

questions. For instance, the second research question asks *what* data about online distance education were cited by community college leaders as influences on their decision making? The researcher analyzed the excerpts from interviews and documents that were coded under the “Types of Data Valued” subcategory to address this question. Similarly, the excerpts coded in the “Scope of Data Collection,” “Assumptions about Data Collectability,” “Assumptions about Analytical Capabilities,” and “Number of Alternatives Considered” subcategories were analyzed to answer the part of the first research question that asks to *what extent* community college academic leaders use data when making decisions about online distance education? That research question also asks how such data are used. The excerpts coded under the “Approaches/Methods of Analysis” subcategory were analyzed to answer this question. Finally, the excerpts coded under the “Basis for Making the Decision” subcategory were used to answer the part of the second research question that asks how strong an influence data played in decision making about online distance education.

A similar process was followed to analyze results related to the third research question, which asks how the emergent nature of online distance education influences the availability of data and the ways in which community college academic leaders use data to make decisions? Excerpts from the interviews and documents coded in the “Assumptions about Data Availability” and “Approach to Uncertainty” subcategories of Appendix 3 were analyzed to address this question.

The tentative coding matrix in Appendix 3 was also the starting point for addressing the fourth research question, which asks what decision making processes

community college academic leaders use under different conditions of data availability and different levels of data quality? The analysis here involved comparing the behavior predicted by the four decision making models explored in Chapter 2 (shown in the columns of the matrix in Appendix 3) against the actual behavior described in the five decisions in Chapter 4. Thus all the subcategories (shown in the rows of the matrix) were potentially relevant. However, the axial and open coding of the interviews and documents describing these decisions produced far more activity in some of the subcategories than others. NVivo has a query feature that provides frequencies for the coded material in each cell of the tentative coding matrix. This feature indicated that in all of the cells of the matrix combined, excerpts from the 24 interviews and approximately 80 documents that comprise the data of this study were coded 336 times. The “Basis for Decision Making” subcategory had the highest frequency of coded excerpts: 72. The “Data Collection and Analysis to Assess the Decision’s Impact” subcategory had the lowest frequency: just six. This subcategory and the “Feedback for Future Decisions” and “Number of Alternatives Considered” subcategories—which each had a frequency of 15—were left out of the analysis because so few coded excerpts addressed them. All the other subcategories were included for the analysis related to the fourth research question.

Two of the subcategories in the coding matrix were combined for the purposes of this analysis because the data from the interviews and documents tended not to distinguish between them. The interview participants mostly discussed the “Assumptions about Data Collectability” and “Assumptions about Analytical Capabilities”

subcategories together so it made sense to treat them as a single issue. For instance, at Zorn Valley Community College multiple interview participants pointed out that resources for data collection and analysis were limited. With this combination, the analysis related to the fourth research question considered eight separate aspects of (or themes about) decision making, which are listed in the rows of Table 9 (see Chapter 5).

The next step was to match those aspects of decision making with the actual behavior reported about the five decisions in Chapter 4. Table 9 shows the five decisions in the columns. Within each cell, the decision making model is listed if there is evidence from the coded excerpts that behavior in the relevant decision was consistent with the decision making model. For instance, in the Zorn Valley LMS decision, the Basis for Decision Making theme had evidence of both rational choice and political behavior. The evidence had to be strong enough to provide a clear example of the predicted behavior for the model to be listed. In Zorn Valley's LMS decision, there was evidence that both optimization (the college was clearly trying to pick the best system based on several goals and multiple measurable criteria) and power (the leverage provided by a unanimous recommendation for a particular system) influenced the decision, so both the rational choice and political models are listed.

Table 9 shows that each of the five decisions provided evidence of behavior predicted by multiple models. In each, however, there was also a predominant model, which was determined by the number of times a particular model was listed in each column of the table. Thus, the judgment in Chapter 5 that the behavior in the Wilder online hosting decision was predominantly consistent with the rational choice model

flows from the fact that there is evidence for behavior predicted by that model in all eight rows (or decision making themes) of Table 9.

The results summarized in Table 9 provided the basis for the cross-case analysis at the end of Chapter 5. It allowed some broad conclusions to be drawn about the usefulness and the completeness of the rational choice, incremental, political, and constructivist models for understanding community college decision making about online distance education, and in which situations each was likely to be most helpful.

This analysis extended to the value of Daft & Weick's (1984) model of organizations as interpretation systems for predicting the behavior of the three case study institutions. To do this, each college was first placed within the four quadrants (or decision making modes) of this model based on its behavior related to two key variables: its interaction with the external environment and its belief in its ability to analyze that environment (see Figure 4 in Chapter 5). Both the site selection research described above and the study data collected from interviews and document review at each site provided the basis for this placement. Interactions with the external environment were coded in NVivo, for example. The five decisions were then also placed with the Daft and Weick (1984) quadrants. This placement, however, was not based on the model's two key variables of interaction with, and analyzability of, the environment. Instead, the conclusions drawn about the decision making model that best fit each decision—from the analysis described above and summarized in Table 9—served as the basis for placement in the four quadrants. As explained in Chapter 2, rational choice decisions belong in the discovering quadrant, constructivist decisions in the enacting quadrant, and political

decisions in the undirected viewing quadrant (see Figure 4). This allowed identification of situations in which Daft and Weick's (1984) model failed to predict the behavior in a particular decision making process, and provided possible alternative explanations for the behavior. For example, the model suggests that political theory is most likely to explain Zorn Valley Community College's decision making processes, but rational choice actually characterized its learning management system decision. Analysis of such contradictions then provided suggestions for revisions to Daft and Weick's (1984) model.

The researcher's evolving analysis of the data with respect to all four research questions was captured in an "analysis log" within NVivo. This running set of hypotheses and commentary on the data allowed the researcher to keep track of the myriad issues and challenges presented by the analysis and to systematically address them (Corbin & Strauss, 1990; Lee, 1999). The following excerpt, for instance, describes the decision about which subcategories of Appendix 3 to include in the analysis of the fourth research question:

I began analyzing my query results from the tentative coding framework. I identified the categories coded the most: decision basis, assumptions about data availability, types of data collected, assumptions about goals, methods of analysis, and (combined) capabilities for data collection and analysis. Although it had fewer 'hits,' I also threw in the approach to uncertainty because it seemed so closely related to the emergence of online distance education. I'm leaving out the two categories under the aftermath of decision heading as neither had many hits and this sector never seemed to generate much juice in the interviews.

Measures to Promote Reliability and Validity

Given that a primary characteristic of case study research is the inability to control variables, it was vital to take other steps to promote reliability and validity in this

study (Lee, 1999; Yin, 2003). Stake (1995) emphasizes the importance of thick description to promote validity. Decision making in this study was described in enough detail in Chapter 4 for readers to gauge the comprehensiveness and potential bias in the researcher's reports and to make judgments of their own. Stake (1995) also warns of the dangers of misinterpretation in qualitative research. For its most significant assertions and conclusions, this study provided the most detailed evidence, analysis, and discussion of alternative explanations and interpretations. For instance, Chapter 5 included an examination of possible explanations for a shift from behavior characterized by the political model to rational choice at Yankee Community College. It examined the evidence that a direct effort to reduce political behavior was responsible for this change versus a more indirect factor: substantial employee turnover that helped to change attitudes.

Multiple forms of triangulation were employed to promote reliability and validity. For example, the study included methodological triangulation, that is, gathering information from both interviews and document review (Stake, 1995). Data reports that leaders at the three institutions provided were examined to see if they were consistent with the ways in which those leaders reported that data were used. A prominent example is Zorn Valley's 70-page background document comprising the data it gathered on alternative learning management systems. Other documents, such as accreditation self-studies, were reviewed to check assertions made in interviews. Moreover, the study built validity into the research design by asking people in different roles (administration, faculty, staff) at each college to describe the same decision.

The study also employed data-source triangulation, "...to see if what we are observing and reporting carries the same meaning when found under different circumstances" (Stake, 1995, p. 113). For instance, if data strongly influenced one decision at a college, was this an anomaly or was there evidence that data influenced other decisions too? Zorn Valley's learning management system decision was described as unusually focused on data by many interview participants, for example. These participants were also asked to review a summary description of their case to see if they believed it accurately captured both their answers to the interview questions and their overall perspective on how decisions were made. This process is called member checking (Creswell, 2003). About half of the interview participants responded to this request; most described the summaries as accurate, and the researcher took into account the comments of those few that made suggestions for changes in revising Chapter 4.

The study also used theory triangulation, which involves applying alternate theoretical viewpoints to analyze the multiple possible interpretations that can be made about a phenomenon (Stake, 1995). For example, descriptions of decision making drawn from the interviews and document review were compared against what rational, incremental, political, and constructivist theories predict. Such analytical comparisons help to protect against bias (Corbin & Strauss, 1990). The narrative description of each case also incorporates information that does not fit existing theories or themes that are developed in the analysis. Daft and Weick's (1984) model predicts that rational choice would best describe Wilder Community College's decision making processes, for instance, but the constructivist model characterized its online health program decision

best. The data from the case suggested that the emergent nature of this situation overshadowed the college's rationalist impulses. Finally, the open coding process sought alternative explanations for the use of data in online distance education decision making as one other form of theoretical triangulation (Creswell, 2003; Lee, 1999; Stake, 1995).

Pilot Testing

Prior to collecting data at the three selected sites, the study employed pilot testing of the interview questions as another measure to promote reliability and validity. Yin (2003) argues that such testing serves as a check on the methodological procedures to be used in the study, and provides feedback on how to improve those procedures. The pilot testing helped gauge whether the preliminary interview questions developed during the writing of the dissertation proposal were understood by the study participants and generated meaningful data that addressed the research questions.

Four pilot interviews each were conducted at Middlesex and Northern Essex Community Colleges. By using these two institutions that were eliminated at the outset of the site selection process, the remaining Massachusetts community colleges were preserved for the potential pool from which to draw the actual cases. In addition, both were accessible to the researcher and have active online distance education programs that provided a rich environment to test the interview questions and the willingness of study participants to share documents. Across the two institutions, three administrators and five faculty were interviewed. Among the latter, one was a program coordinator, one a department chair, and one worked part-time as an online course instructional designer. All eight of the pilot interview participants had taught online courses. Thus the pilot

involved a similar number of interviews as were conducted at each of the three actual research sites and with participants in similar positions and roles.

The original interview protocol was refined based on what was learned in the pilot testing. For instance, opportunities to ask questions that would help with triangulation were limited in the interviews at Northern Essex and Middlesex. A substantial portion of interview time was taken up with preliminary questions related to participants' personal experiences with online distance education. To remedy this, two questions were dropped from the original protocol and additional triangulating probing questions were added. The order of the questions in the final protocol also was shuffled to address participants' knowledge of specific decisions first before turning to more general questions about the use of data in decision making at their college. Moreover, the wording of several questions was changed from the original protocol to focus more on the relevance of data to decision making as opposed to the availability of data—the former was discussed much more extensively in the pilot interviews than the latter—and to more explicitly ask participants about the use of data in decisions about topics other than online distance education to gain a greater understanding of the context at each institution. Finally, interview participants proved willing to share documents related to the use of data in decision making, which for the most part presaged the attitudes of participants at the actual research sites.

Role of the Researcher

The role of the researcher is a source of bias that must be accounted for in case studies (Creswell, 2003; Lee, 1999). Stake (1995) suggests that since this bias is

unavoidable, the researcher's perspective should be acknowledged and explored. As a former community college professor who taught online courses and now an administrator, the researcher has been both the subject and maker of decisions about online distance education. He served on both sides of a union-management distance education committee that deals with contractual issues related to this topic. From this experience, he brought to the study both a desire to promote wise decisions about online distance education and a skepticism that substantial data on it exist or that by themselves those data can overcome other factors—personal, political, bureaucratic, or environmental—that may influence leaders' choices. He did suspect that data may play a more modest, but still useful, role in guiding the thinking of academic leaders in the emergent field of online distance education and wished to explore how that could happen. Besides acknowledging this tilt toward the “culture of inquiry” perspective (Dowd, 2005), the researcher explicitly sought examples of the availability of data and their employment in ways that rationalist theory predicts. In fact, as Chapter 5 makes clear, strong evidence for the availability of data and the value of rational choice theory—at least in certain situations—emerged in the study.

Given the researcher's position as an academic leader at one Massachusetts community college and the competitive nature of online distance education, interviewees at other two-year institutions in the Commonwealth might have been somewhat reluctant to fully disclose their thinking and approaches to decision making on this subject, not to mention the data they possessed. To address this concern, the researcher explained that the participants' identities would remain confidential and that the information they

provided would be used purely for the purposes of research. He strove to set a tone in interviews of open-minded inquiry. The goal was to explore the use of data in decision making, not to make claims about an institution's effectiveness in using data or making decisions, nor to judge whether its online distance education effort was successful or not. Although some isolated instances of reticence to share data occurred, the general willingness of interview participants to provide documents and discuss sensitive topics suggest that the researcher's professional role was not a large barrier to data collection. Interview participants at all three case sites, for instance, chose to discuss decisions that could be perceived as not reflecting well on them individually, on their colleagues, on their college, or its leaders. Multiple Zorn Valley interview participants discussed criticism of their institution by its accrediting agency, for instance, while an administrator at Yankee chose to describe a decision that was clearly a painful, personal defeat.

Delimitations and Limitations

The research design used in this study contains a number of limitations. First, a case study examines a phenomenon at a single point in time rather than longitudinally (Stake, 1995; Yin, 2003). The realities of the decision making context at Zorn Valley Community College during its learning management decision making process (described in Chapter 4), for example, may not reflect the situation years before or after that decision. Although the multiple decisions made by Yankee and Wilder Community College described in this study did occur at different times and thus provide some sense of change in the decision making context at these institutions, they still represent relative

snapshots in the history of those colleges. Conclusions about how organizational context and decision making change over time, therefore, can not be made from this research.

A second limitation of the case study approach is the inability to control variables as the phenomenon is studied in its natural setting (Stake, 1995; Yin, 2003). For instance, the three institutions examined in this study were on different schedules for external accreditation. Zorn Valley had recently finished its ten year accreditation process at the time of the interviews, and was reacting to recommendations related to planning that were having a direct impact on leaders' thinking about the use of data in decision making. Wilder Community College was preparing for its ten year process at the time of the study, so it had not had a chance to react to that outside assessment yet. Many other variables were influencing the three institutions in different ways as well. This means it is not possible to draw conclusions about cause and effect between variables in research of this type. Many factors may have been encouraging Zorn Valley to use data more in decision making, including its accreditation results, but these factors can not be tested at the other colleges if they are not experiencing the variables in the same way.

A related limitation of the case study method is the difficulty of separating a phenomenon of interest from its context (Stake, 1995; Yin, 2003). The literature suggests that many contextual factors may influence decision making. Daft and Weick (1984) posit, for instance, that interaction with the external environment is such a factor. The site selection process for this study tried to measure institutional interaction with the environment primarily by examining the number of partners each college had in online

distance education activities and by its participation in the Massachusetts Colleges Online consortium. The research findings made clear, however, that these measurements had limitations. As a relatively isolated, rural institution, Zorn Valley Community College had fewer available potential partners than the other two case study sites, for instance. Nevertheless, it is possible that a small number of partnerships could be so deep and rich that they represent substantial interaction with the environment. In fact, Zorn Valley's online distance education effort was born in a grant-sponsored partnership with another higher education institution. Thus its interaction with the environment was more substantial than the site selection criteria suggested. In this situation, Zorn Valley's context—its rural location—was deeply intertwined with a variable of interest: the extent of its interaction with its external environment. The inability to distinguish clearly between the two suggests that conclusions must be drawn with great care about the influence of the two factors on each other. It also indicates the importance of developing more sophisticated measures of organizational interaction with the environment in future studies. Assessing a partnership's depth (the number of years it has existed, the number of employees involved or dollars committed, for example) or the percentage of opportunities for partnerships that an institution has taken advantage of in its region are two possible approaches to providing a more complete measurement.

The data collection methods used in this study also have limitations. The recollection and perceptions of the decision makers who were interviewed strongly shaped the research. Study participants' faulty memories (storytelling effects), lack of direct knowledge of decisions being discussed, and biased responses due to the presence

of the researcher himself (self-presentation effects) are all potential shortcomings of interviews (Creswell, 2003). The possibility that interview participants were trying to present their institution's approach to decision making in the most rational light possible in this study, for instance, is discussed in Chapter 5. Documents that were reviewed can contain hidden agendas not apparent to the researcher (Creswell, 2003). This study examined several reports to accrediting agencies, for example. It is obviously in a college's interest to provide a positive account of its activities to these agencies, and thus assertions made in such reports had to be interpreted in this light and checked by other means when possible.

This multiple case study examined the decision making processes of community college academic leaders. Specifically, it explored how and to what extent these leaders use data to make decisions about online distance education at three institutions. The research was confined to a study of three community colleges in a single state. Thus, it is not possible to generalize the study's results to all community college academic leaders, to leaders of other types of higher education institutions, or to decisions about issues other than online distance education. Such delimitations are to be expected when performing qualitative research on a topic that is relatively unexplored in the literature (Marshall & Rossman, 1995). Rather than proving any theoretical propositions about the use of data in decision making, therefore, the results of this study provide insights that advance understanding about this topic, which can be explored in other contexts and with other methods in the future.

CHAPTER 4

INSTITUTIONAL NARRATIVES

Introduction

This chapter provides a descriptive account of online distance education decision making at three Massachusetts community colleges, using a case study approach. Each of the three institutions—whose confidentiality is maintained by the use of pseudonyms—is described in turn, including a brief summary of its online distance education effort, a discussion of its decision making context and the role that data play in it, and a close examination of the decision making processes that were used in specific online distance education decisions.

The case studies are based on 24 interviews of online distance education decision makers conducted between January and May 2010 as well as the review of approximately 80 documents. The individuals interviewed and documents examined at each institution reflected its unique organization, history, and culture of online distance education.

Eight interviews were conducted with Yankee Community College employees, one via telephone in January 2010 and the rest in-person, on campus over a two-day visit the following month. Two full-time faculty—one of them a department chair—two adjunct instructors, and four administrators (including a Dean, a Vice President, a Director, and a Coordinator) were interviewed. Seven of the eight interview participants

worked in Academic Affairs and one in the Information Technology area of the college. More than 30 documents from Yankee were reviewed as well. The majority of these were pages from the college's web site, but they also included minutes from college Senate meetings, rubrics to rate learning management and e-portfolio systems, application forms and rubrics related to the development of new online courses, institutional research studies, and academic policies related to online distance education.

Eight interviews were conducted with Zorn Valley Community College employees in March and April 2010, one via telephone and seven others in-person during two campus visits. Two full-time faculty—one of them a department chair—one professional staff member, and five administrators (including two Vice Presidents, a Director, and two Assistant Deans) were interviewed. Six of the eight interview participants worked in Academic Affairs, one in Administration and Finance, and one in Institutional Research. Twenty documents from Zorn Valley were reviewed as well. Almost half of these were pages from the college's web site, but they also included a report on online distance education written for Zorn Valley's accrediting agency, several spreadsheets summarizing annual data about online distance education at the college, and multiple extensive descriptions and comparisons of various learning management systems (LMS).

Eight interviews were conducted with Wilder Community College employees between February and May 2010, five via telephone and three in-person during campus visits. Four full-time faculty—one of them a department chair—one staff member who also worked as an adjunct instructor at Wilder, and three administrators (including two

Deans and a Coordinator) were interviewed. Seven of the eight interview participants worked in Academic Affairs, and one worked in both Academic Affairs and on an external grant in which the college was engaged. Twenty-eight documents from Wilder were reviewed as well. Over half of these were pages from the college's web site, but they also included Wilder's self-study for its ten year accreditation process, several institutional research and academic department reports summarizing data about online distance education and other issues at the college, the local faculty union-management agreement on distance education, a press article, and a press release issued by Wilder.

Yankee Community College

Background

Yankee Community College is a two-year public, Associate degree granting institution with a single campus serving a suburban population and an enrollment of approximately 6000 students, according to the Carnegie Foundation's classification (2010). The college is more than 50 years old and offers more than 100 Associate degree and certificate programs (*Massachusetts community colleges*, 2008).

Online distance education began at Yankee in the late 1990s, with a majority of those interviewed present at the start or soon thereafter. They described how online courses evolved from earlier forms of distance education, such as video-conferenced classes. There was broad agreement among the interview participants that the online effort relied heavily on adjunct instructors in the early years because of substantial resistance from full-time faculty. Concerns about the quality of teaching and learning in online college courses, the work involved for already busy full-time faculty in online

curriculum development, the potential to drain enrollments from traditional classes, and the fear that the college administration was pushing this on the faculty and might even be trying to undermine the collective bargaining agreement all fed this early opposition from full-time faculty members. One full-time professor commented:

There was resistance to it, in terms of legitimacy: the academic integrity issue and...at the time there was every year something new that Administration wanted them to do. Now they wanted them to do distance education, and some of them felt that the Administration was kind of dumping it on their lap and telling them they should be doing more of this.

An adjunct instructor added:

It does take a lot of time to teach too, and I think they [full-time faculty] are maxed out. They are going to department meetings. They are advising students. They are sitting on other committees. They are having to do an awful lot in addition to teaching, and I just don't think they have the time.

The interview participants agreed that over time many of these concerns proved unfounded—traditional courses were not eliminated even as the number of online courses grew, for instance—and more full-time professors began to teach online. An administrator involved in online distance education remarked about the ratio between adjuncts and full-timers, "...we are now moving with full-time faculty coming on board. We are not 50/50 yet, but we are picking up new faculty."

There was a consensus among the interview participants that growth and continuous change characterize the online distance education effort at Yankee Community College. The Yankee website confirms one administrator's estimate that more than 70 online courses are now offered and that four certificate programs have 100 percent, and more than 20 Associate degree programs have 80 percent, of their courses

available online. Student enrollment has also grown rapidly. “In 2002, we had like 600 registrations and now we are pushing 3000,” each semester, said one administrator.

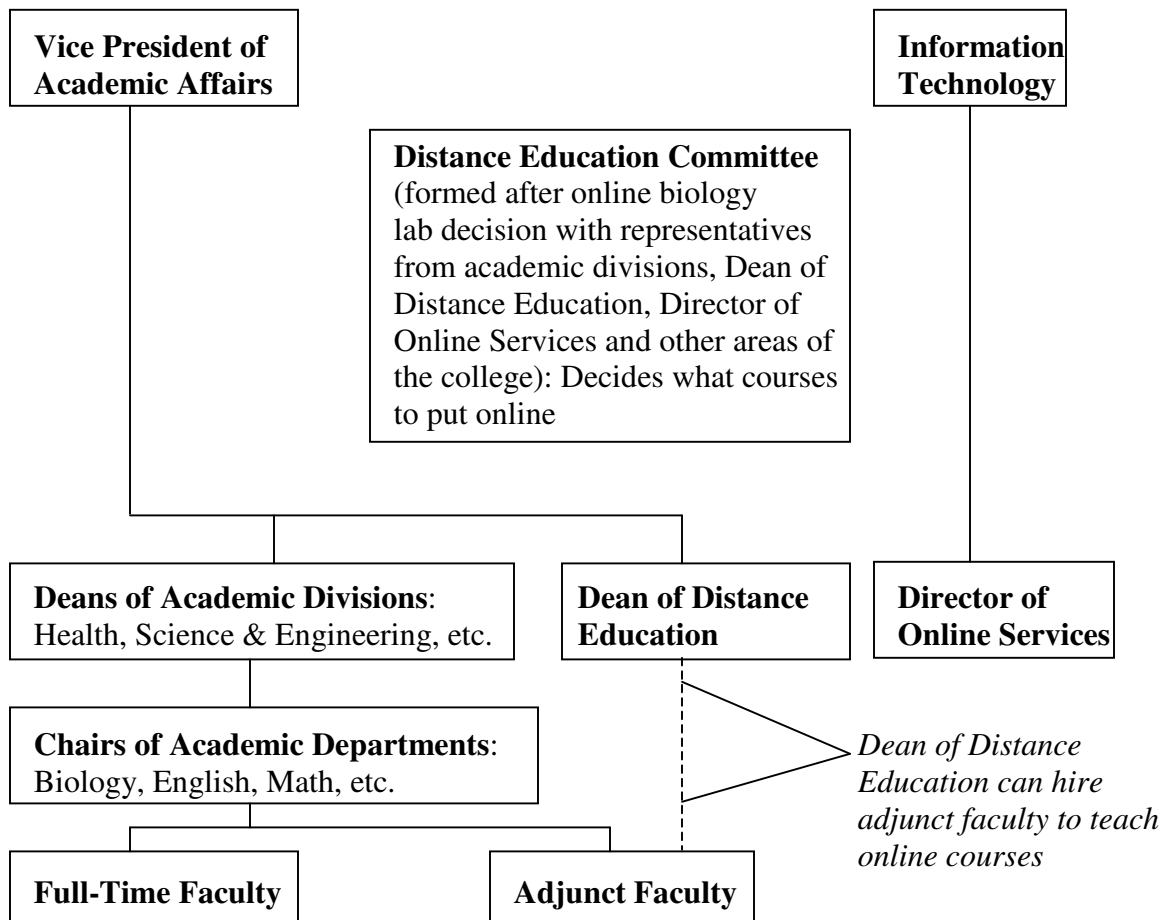
Interview participants remarked that the growth of online distance education has helped in absorbing large overall enrollment increases in recent years and eased the strain on existing classroom space. One full-time professor commented, “...right now where there is such a crush in enrollments, it’s perfect. It couldn’t come at a better time when we have so many offerings.” Another said, “There is this sort of push for online ed., to compensate for the facilities, lack of facilities that we have here.” Wide agreement existed, however, that an old learning management system (LMS) was a substantial obstacle to growth and new techniques in the online courses. An online professor said, “...we have good tech support for our students and that kind of thing but in terms of the technology we would need to really push forward I think.” An administrator concurred, “...we don’t have all the bells and whistles.”

The president is an important supporter of online distance education at Yankee, according to several of the administrators interviewed. One described the president as a “cheerleader” who made it clear to the Vice President of Academic Affairs and the Dean of Distance Education that it was their job to expand online education at the college.

This same administrator described the Vice President’s job as setting a positive environment for, and removing obstacles to, this growth. The Dean of Distance Education was cited by all those interviewed as the key player. Many also mentioned the Director of Online Services and his staff, who provide technical support for online courses. One administrator remarked that this group was the “lean, mean machine” that

made online distance education work at Yankee. There is also a distance education MACER (Management Association Committee on Employee Relations) at the college required under the collective bargaining agreement between faculty and the Massachusetts Community Colleges. An adjunct instructor that serves on the committee described it as “pretty agreeable,” despite some issues of contention such as class size.

Figure 1
Online Distance Education Organizational Chart: Yankee Community College



A number of those interviewed remarked that organizationally online distance education, although part of academic affairs, is distinct from the divisions that house academic departments and faculty (see Figure 1). They explained that it began in the

Continuing Education Division and even when that organization was dissolved in 2006 in a move to a “one college concept,” the Dean of Distance Education’s responsibility for online courses was kept separate from the deans of the academic divisions. One administrator described this role as “autonomous.” A full-time faculty member remarked:

...the important thing here is there is no formal divisional meeting or division process for distance learning. It is separate and distinct...the decisions are made in a way that is much less formal than at the division level...it really only takes the Distance Education Dean, and whoever she needs to answer to, to run full tilt with something in distance learning.

Regarding hiring, for instance, several administrators described the relationship between the academic division deans and the Dean of Distance Education as “collaborative,” but not all the faculty agreed. One online instructor said:

...the hiring decisions in terms of specifically with adjuncts that are made independently by Distance Learning has also become sort of a hot-button issue at times...we have had a few incidents just recently where that being separate has caused some controversy...if [the Dean of Distance Education] chooses to run a course and needs an instructor, she can hire an instructor...there are some territorial issues.

On adjunct instructor interviewed explained, “I report to the Distance Education Dean now; it used to be someone in my discipline.” This organizational separateness of online distance education has influenced decision making at the college.

Decision Making and Data at Yankee Community College

When asked about the decision making environment at Yankee, and particularly the place of data in that environment, differences of opinion emerged between the faculty

and administrators interviewed. Several of the former did not see data playing a visible role very often. One said, "...if data is being used in any way that is formal, it's not being done in a way that is made clear." For instance, although several administrators knew why a planned LMS purchase had been cancelled recently, none of the faculty interviewed did. Instructors speculated that external pressures—demands of accrediting agencies, budget cuts by the state—more often drove decisions than data. Full-time professors interviewed talked about explicit opposition among some faculty to a data-driven approach. One explained:

We actually recently had (this is anecdotal) but one of our college priorities, instead of long range planning we do a two-year Priority Cycle. One of the college priorities had the term data-driven in it and almost could not get through the Senate because it said we would make data-driven decisions. There was this huge backlash.

A Yankee document that lists the annual priorities confirms that the term "data-driven" was dropped from the language. Another full-time instructor noted disagreement at Yankee:

I think that there is a divide and I think that the Administration and some faculty really rely on data; and I think that others feel like it is kind of a pain; like, 'I have enough to go on in my every day experience. What do I need IR for? They can't tell me anything that I don't already know'...in recent years there has been this assessment push and faculty are very resistant to that. 'We know that our students are learning...why do we need to sort of waste our time playing with numbers?'...they say, 'we already have enough to do...how do we find the time to do more?'

The administrators interviewed were more likely to say data influenced decision making. They cited the role that data played in helping the college obtain Perkins and Title III grants and in designing first year experience activities. One provided an example:

Through the Perkins grant when we did the first year experience survey a couple of years ago. We gathered data, one of the obvious things the students were telling us was that they didn't think that advising played a very big role in their life and we said, 'my goodness, how can that be?' So we used both college money and resources and Perkins grant money and other grants too to really make some significant staffing and also physical changes in the placement of the advising center and raising consciousness about it and doing advising training and changing some ways in which we do advising, and that was based on data.

Another administrator interviewed discussed a decision about software to be used by the information technology staff that was influenced by surveys done with the college community. Another spoke about the close attention paid to student enrollment and course completion rates at Yankee. Both an administrator and two faculty members also argued that the committee-driven decision making process that tends to prevail at Yankee promotes a thorough consideration of issues. Still an administrator involved in online distance education at the college acknowledged faculty skepticism about the role of data in decision making, "There is always going to be conflict. A lot of times, they don't think decisions are data-driven, and maybe sometimes they aren't. Nothing says it always has to be. There is a definite divergence."

The interviews produced examples of decisions that appeared to be influenced by data and others that were not. The degree of existing knowledge about a particular issue, its importance, and resource constraints seemed to explain the differences, according to several of those interviewed. Lack of staff in the institutional research office was cited by two administrators: "Do I want more data? Yes. But my wanting and my getting it are two different things," said one. The other explained:

...we have used less data in the decision-making in the last six months to a year only because it has been almost impossible to get anything non-

routine out of IR. When you go to them with any kind of inquiry, they come back with, ‘we are swamped’...

This administrator argued that this was often not a problem because decision makers had a “robust intuition” about many issues, while other decisions did not present high risk if made without data. It is when the risks and unknowns are more significant that data are needed:

I would say there is a limit to the number of things you can go deeply into. And so you save that for when you need it. If I can’t find my keys, I don’t call the police because I know I will find them eventually. If I can’t find my kid, I will call the police because there is a difference. If it is a bad enough situation...Developmental math nationally is an issue and because robust intuition has consistently failed and past practice has consistently failed, we made a decision to bring in as much data as we can because we are lost. [Instead,] something like, ‘should we try and run another section of Poly Sci online? Well, the last three we ran filled and the cost of failure is small, so what the hell?’ And for that, intuition is good enough.

A similar pattern of decision making related to online distance education at Yankee Community College emerged in the interviews. Complex, high-impact decisions were more likely to involve a thorough process and the collection and analysis of data. For instance, at the time of the interviews, a large committee with wide representation was leading an effort to choose a new LMS for online courses. In describing the need for a thorough process, one administrator said:

This is big; it’s going to take a long time. Most things—I wouldn’t say most—a lot of these decisions at the college are not going to take a whole nine months or 15 months, but things that are going to affect a lot of people, you really have to take your time and get it right. We know that decisions that are wrong won’t sit well.

The committee was gathering extensive data from vendors and planned to ask faculty and staff to test different systems with a rubric to compare them. A review of this rubric

indicates that it asks testers to rate the importance of 19 different aspects of four different LMS products as well as the quality of each system in each of those areas. Two administrators deeply involved in the process said that while price and compatibility with other administrative computing systems would be important, faculty feedback would be the crucial factor in making a decision.

On the other hand, little research went into a decision to offer an upper level math course online several years ago. The course failed to attract students. “I guess we didn’t do our homework...sometimes it depends if the cost is not too high, you may want to say, ‘let’s try it...,’” explained an administrator. There was wide agreement among those interviewed that the Dean of Distance Education worked hard to gather input on decisions even if time and resources constrained formal data gathering and analysis. One faculty member commented:

Yes, that Dean is very good about asking questions...Something will happen and she will send an email to all of us and say does anyone else have anything on this that you can give me? Is this an isolated incident or have you experienced it? So yeah, that kind of informal data that she collects often helps to feed decisions that she makes...

Many of those interviewed believed that the value of data to online distance education decision making was greater than in other types of decisions at Yankee. Some faculty and administrators argued this was true because online distance education always had to prove its academic legitimacy compared to more traditional delivery formats. As one administrator explained:

I think in the very beginning there was some question about this. I mean I think everybody harbored that thought like it’s probably not going to work as well as face-to-face...So, I think we are all really keyed to the data thing. You don’t want to have something so high profile, important, and

useful, bomb. So there are tons of data we compare for this...course completion [in online classes]...is 74 percent now compared to the all college percentage of 76 percent.

Another administrator felt that data were needed more for online distance education because Yankee had less experience with it: “With the onsite courses we have a pretty good intuition at this point of what is going to make it, what is not going to make it. With online, that intuition is still developing...” The political legitimacy that data could provide was also mentioned in the interviews. An administrator involved in online distance education remarked, “We try to really use the data; this way even if it is small data—even though I include the faculty—no one can come back and say, ‘you made that decision on your own.’” In speaking of the LMS decision, a full-time professor suggested that, “...the illusion of input by faculty to look at other platforms...” was an attempt to claim an inclusive process without actually delivering one. This professor seemed to be implying that the effort to build political legitimacy would fail if the outcomes of decision making did not reflect actual faculty input.

There were differing opinions about the availability and reliability of data in online distance education compared to other issues at Yankee. Both faculty and administrators interviewed argued that relevant data were not as easily found or used in online distance education. Regarding the LMS decision, several pointed out that the rapid entrance, exit, and mergers of firms in this industry and the inherent unwillingness of vendors or other colleges to share all their data about the performance of these systems left Yankee in the dark about crucial aspects of the issue. Others mentioned the lower response rates to student evaluations in online versus traditional courses as leaving gaps

in data about student attitudes. Still others pointed to the unpredictable nature of a rapidly growing, technologically changing sector like online distance education. When asked how decisions could be made in such an environment, one online instructor suggested, “Instinct, I guess; you know Distance Learning now is not going to be the same Distance Learning ten years from now; it is not going to be the same even five years from now. There is a certain amount of guessing that you have to do.”

On the other hand, some interview participants argued that lags in the availability of data and inherent uncertainty about the future were common in other aspects of life at Yankee, including the recent, unprecedented growth in overall enrollments brought on by an economic recession. Moreover, several mentioned the ease with which learning management systems tracked student activity and grades online, and that faculty in traditional courses were starting to employ these systems so they could have access to such data too.

Some of the debate about the use, availability, and value of data in decision making at Yankee Community College may flow from uncertainty about the college’s strategy for online distance education. Although distance learning is mentioned in the college’s extended mission statement—along with many other curriculum delivery methods—it does not appear in any of the college’s annual priorities over the last five years. These priorities are an alternative to a strategic plan for the college. Thus, while online distance education seems to fit with the mission Yankee has set for itself to provide multiple ways for students in its region to access education, it has not risen to the

level of other priorities such as increasing diversity or creating a first year experience for students.

This sense of uncertainty revealed in the documents about Yankee's online distance education goals and their place in the college's overall strategy was echoed in the interviews. Faculty in particular doubted that there was a clear plan for online distance education. One commented:

I have never really seen DL decisions as being data-driven; it has just been this process that we are finding our way through...It is still fresh and new...It is more like it is just kind of going on...just something that is happening. You know, there are not a lot of very public decisions about it....

An administrator admitted that the college's policy on hybrid online-classroom courses was not really coherent. In fact, many of those interviewed agreed that to the extent Yankee had a goal for online distance education, it was simply to expand. Some of the administrators most closely involved suggested that there actually was a more focused strategy: to get all of the courses for particular certificate and degree programs offered online. This goal, however, is not mentioned in the college priorities or other documents reviewed. The college has made progress towards getting full degrees online, but a significant problem has dogged this effort. A decision made several years ago has made this goal far more difficult to attain. This decision—and one that followed from it—will now be examined in greater detail to get a better understanding of the decision making process for online distance education at Yankee Community College.

A Close Examination of Two Yankee Online Distance Education Decisions

Determining which courses should be offered online has involved important and at times contentious decisions at Yankee Community College. This section will examine a decision to remove two online classes in 2007 and a different decision making process for approving courses that has evolved since then.

Taking biology labs offline. In the early days of online distance education at Yankee Community College, it was far easier procedurally to put an existing course online than to create a new course. As one full-time faculty member described the latter process, "...a decision starts with the department; from there it moves to the division; from there it goes to curriculum; from there it goes to Senate and once Senate approves; a course can run..." This thorough procedure involving faculty, department chairs, academic division deans, a curriculum committee, and finally the college Senate provided multiple levels of approval for any new course. Once on the books, however, little in the way of further scrutiny was necessary to move such a course to an online delivery format. As an online professor explained, "...the only requirement is a Chair and Dean signature; it is not necessarily approval...they just have to be made aware of it. So it really is...between the faculty member and the Dean of Distance Education." In other words, in the early years of the online effort at Yankee, a faculty member who wanted to put an existing course online only needed the Dean of (then) Continuing Education's approval to do so. According to faculty and administrators, such approval was likely more often than not, given the encouragement that Dean was getting to expand online distance education.

The Dean of Continuing Education made regular announcements to all faculty asking if they wished to put classes online, according to an administrator who was interviewed. No full-time biology professors, however, expressed interest; an instructor who was interviewed suggested that they did not have the time or “inclination” to get involved. Nevertheless, an adjunct instructor agreed to move two existing biology classes into a hybrid format in the year 2000, with the labs occurring on campus and the lecture available online. The following year it became impossible for that instructor to continue to come to campus, according to both an administrator and a faculty member, and so the question arose as to whether the lab portions of these classes could be put online. The Dean of Continuing Education assented to this. No other formal approvals were necessary at that time.

The lab portion of these two courses involved a variety of activities meant to simulate the experience students would have in a real biology laboratory. According to an online instructor familiar with this case, it included:

...online lab components using some prepackaged online like virtual experiments, as well as things that are free on the Internet, places like the Howard Hughes Institute that have simulations and have lots of opportunities for online studies in the sciences using those materials and meeting the same objectives, except it is not a hands-on lab; virtual microscope and things like that, which continued to really improve...data...exists out there as to the efficacy of using online simulation, virtual dissections, for example. There are places that use those routinely because of costs. It is a lot easier to rerun the simulation than it is to get another preserved specimen, and there also is the animal rights issue.

These two courses ran this way for about five years without issue.

In 2006, however, the full-time biology faculty began to raise questions about these courses, according to multiple faculty and administrators interviewed. They asked why the courses had not been developed by a full-time professor and for information about the adjunct instructor since they did not know who was teaching it. More fundamentally, they challenged the idea that the student experience in the lab could be successfully simulated online. As one professor put it, "...it was the feeling of the science faculty that that [simulation] wasn't enough and that you did have to have two hands-on labs in person. Data exists out there for how well those simulations work. I don't think that our faculty was interested in that basically, they're feeling it was not good enough..." An administrator concurred, "Now the biologists have taken the position that the lab is the lab, and if you are not [physically] in a lab, then you're not in a lab." According to another administrator:

They had concerns that students doing the course were not doing as well as other students...they had some criticisms of the lab: 'it doesn't follow the labs we do directly on campus. Students are not touching a microscope. It is important for students to look through a microscope.'

The hands-on experience in the lab was viewed as crucial by these faculty members.

"...there is that tactile aspect to science where students should be handling the equipment and the different tools..." commented a full-time professor.

The Dean of Continuing Education and the instructor of the course worked to allay these concerns. The former pointed out repeated requests over the years issued to the faculty to develop courses for online delivery, according to an administrator interviewed. The Dean felt such general calls for participation were more appropriate than approaching particular professors, whether full or part time. The Dean also pointed

out that the course instructor had originally been hired by the academic division dean that supervised the Biology Department and was considered to be one of the best online teachers at Yankee. The full-time faculty were invited to look at the online course materials and also to view demonstrations of the types of laboratory simulations that were available on the web so that they could see their sophistication and quality. Finally, data on the success of the students that had taken the online lab over the years were gathered. An instructor who was interviewed explained, “They did pull up some numbers...students in the online labs were not any worse in the next science class than the students that had taken the on campus labs.” Although these data were discarded after the decision was made, an administrator that reviewed them agreed, “...the course completion was fine...students who took [the] online course went on to other courses and were just as successful; so there was no divergence in the grades.”

These data and arguments did not assuage the full-time biology faculty. “The data did exist for that but it did not matter,” said one instructor. The issue was one of principle and did not hang on course completion rates as far as the full-time biology professors were concerned. An administrator remarked, “...the Biology Department has taken a firm theological position that you cannot teach a lab science online, period, end of conversation, thank you very much.” Another administrator concurred:

...the Department doesn't want an online; they don't want anyone graduating from here having taken two lab sciences and not be on campus for any of the labs...Data didn't necessarily play a part nor would have data assisted in this case. I think the feeling is that everybody has to go through a lab course on-site and there was going to be no divergence from it.

Given the intensity of this opposition and the authority of the Dean of Continuing Education to keep the course online, the full-time biology faculty chose to take the issue to the college Senate. One full-time faculty member who was in the Senate at the time explained:

...it sort of really came to a head and I think there was a change made once the issue came up at Senate and it became more of a college-wide concern...[the Senate is] representative of all five Academic Divisions...It is not just faculty; it is an all-college Body. It includes administrators, staff, and includes faculty. Some members have voting privileges and others don't. Administrators don't do any voting.

The full-time biology professors brought forward a motion demanding that science classes with labs must have approval of their department to go online.

The minutes from the Senate meeting read in part:

Motion: *Courses with online science laboratory sections, both proposed and existing, shall go through the curriculum approval process as new or revised course proposals.* An abundance of debate regarding the most appropriate method and best arena to grapple with the issue of ensuring online science laboratory sections are effective [ensued]...

A faculty member who was present remembered it as, "...a conversation at one meeting about how, sort of the logistics of the class. Could you achieve the outcomes?" while an administrator that was there said, "...the person got up and gave an impassioned plea and they bought it and they passed it." An attempt during the debate to move the discussion to another forum failed, and eventually the biology professors' motion passed by a large margin. The minutes conclude:

A vote on the motion to move the...original motion to the Academic Standards Committee failed: 6-17-6...Eventually, a motion was made to call the question regarding the original motion which passed: 20-3-2...the original motion was then passed: 20-6-2.

The impact of this decision was substantial. Existing online science courses with labs now had to go through the curriculum approval process, the first step of which was department review. As the Biology Department approved of neither of the two online biology course labs, these courses were forced to return to hybrid status, with the labs again being taught on campus as of Fall 2007, according to administrators and faculty interviewed. One non-biology science class that was online, including its lab, did make it through the process and is still available to online students. Subsequent attempts to move other science courses with labs online have failed to win approval. In speaking of the full-time science faculty, an administrator involved in these efforts said, "...I attempted to meet with them to put another course online following the procedures; letting them know the steps and it was very clear that they were never going to approve anything...they didn't want any part of it." This meant Yankee Community College was offering just one online science course, while most Associate Degree programs require two. According to one frustrated administrator, "...it is really creating an issue for us because it is preventing us from doing some complete degree programs [online]."

Perceptions differ to this day about the forces behind this decision. The full-time biology professors believe it was necessary to protect the integrity of the academic experience for students and their role in curriculum approval. As one professor put it, "...some people in Science that are faculty who are teaching the next level course...say in conversation that they felt like the student sort of was not prepared for the next level." Advocates of the online biology labs, on the other hand, perceive more of a political decision that trumped the data showing that students were being served well by the online

labs. “Data wasn’t going to help,” said one administrator. Referring to the settlement of the issue in the Senate, a faculty member remarked, “It’s kind of a political thing.”

Another administrator complained, “We have tried to do some major decisions in terms of completing degree programs online but the Biology Department has nullified that for reasons of its own.” A faculty member outside of the sciences that witnessed the decision making process expressed uncertainty:

Unfortunately, with the whole lab thing, that issue I think first emerged in the Senate. I think that issue was something that the department and the Dean tried to resolve; I guess they had some conversations about it...I would like to say that these faculty have looked at the data and it is not just a personal bias, feeling about: ‘I just feel this way about biology,’ but they actually have looked, gone to IR and actually asked for some data; I would like to think that. You know they are not just going on hunches, right? I would like to think that.

Approving new online courses. In addition to the changes required by the Senate resolution on science classes with labs that were described in the previous section, Yankee Community College has altered the process for considering and approving all online courses in the last few years. It has created a more elaborate system of review, involving many more people, than the old process in which a faculty member and the Dean of Distance Education could decide on their own to put a course online. There was some disagreement among interview participants about why this new system was created. One administrator said that it was simply to help with the rapid expansion of online courses being offered. But others saw it more as an effort to widen the responsibility for decision making in this area. A full-time faculty member commented that the purpose was to, “...move away from [having] one point person making all the decisions to now

the shared governance and the shared responsibility and that sort of thing.” An administrator concurred: “I think they have broadened the input, the stakeholders.”

The centerpiece of the new system is a Distance Education Committee that formed in the last several years. According to an administrator interviewed, the Dean of Distance Education started with the idea of staffing the committee with disinterested, objective people:

...started off the committee with members of the academic affairs staff who were not involved. None of the deans because they would have, not a say in it, but a stake in it...[they] tried to choose neutral people. One of the department chairs indicated that he thought that was unfair, and he wanted department chairs involved or departments involved.

This led to an effort to include representatives from each of the academic divisions. In describing the current composition of the committee, an adjunct instructor said, “I think they just have the different divisions represented.” An administrator concurred saying the, “Committee consists of 14 or 15 people...mostly representatives for deans.” The Dean of Distance Education, the Director of Online Services, and some others less directly involved in online courses—such as the college’s professional development coordinator—also serve on the committee, according to faculty and administrators who were interviewed.

The impetus for a proposal to put a course online can come from two sources. First, professors themselves may decide that they would like to develop such a class. Second, the Distance Education Committee solicits new proposals on a regular basis, according to multiple faculty and administrators interviewed. As described by one committee member, “...there is a whole process where every year we send out an email

saying if you would like to run a distance education course, please let us know and here are the forms...” Another member pointed out that in addition the Dean of Distance Education, “...provides us with a wish list, which would be the courses that would be ideal to have...,” so the academic division deans and faculty in those areas can be approached to see if anyone is willing to develop the class. Whether volunteering or recruited, the interested faculty member must then fill out a three-page proposal form describing the course. A review of this form indicates that besides their own signature, proposing instructors must have the library dean, their program or department chair, and their division dean sign the form. The latter two people must also check a box for whether they agree or disagree that the course should go online.

The form asks a series of questions that represent a first cut at data gathering by the Distance Education Committee. According to a committee member, they are trying to find out:

...where does this particular course fit within the program already? So we see, is it one of these programs that is 80% online and if we could get two to three or more courses on it, it would be 100%...whether it is required or an elective course...if it is a required course, we might pay more attention to it because there are students who cannot get that course during the semester that it is offered on campus...We also look at the registration on-campus in the previous semester for the face-to-face courses...

The form also asks the proposer for course objectives and assessment methods, if they have taught online before, the issues or problems anticipated in developing the course, the materials or resources students will need to complete the course successfully, the library resources that will be required, and the technology that will be used to deliver the

course. Once the form is filled out and the required signatures are obtained, it is forwarded to the Distance Education Committee.

The Dean of Distance Education gathers additional data on each course. According to a committee member, “We look at enrollment in similar courses in the program or simply similar courses in Distance Education already, and if they are pretty robust, we have good reason to think it might be robust too. We also look to see if we have competing courses in Distance Education.” The Dean then summarizes these data and the information provided on the forms for all the committee members. According to an administrator, this is provided on:

...a spreadsheet with the courses...what the enrollment was for the last two semesters; what the enrollment in the program is and how this course would be conceived; would it be a general elective; is it a program requirement...what program it might fit in...

This allows the committee members to easily compare the proposed courses. The Dean of Distance Education also provides an opinion about each proposal so that members of the committee that can not attend the decision meeting will know the rationale and can make their views known beforehand, according to an administrator interviewed.

The actual decision about which courses will be approved for online delivery is made at a meeting of the Distance Education Committee, according to multiple faculty and administrators interviewed. An online instructor summarized the process from start to finish:

...decisions, so far as I can see, the conversations and the decisions I see a lot of it happening between faculty and their department and the department and the Dean and then the Dean of Distance Education plays a huge role. Then typically, course proposals or issues will be presented to

the Committee, and the Committee will try to work through any issues with the course proposal.

The committee can approve, disapprove, or place a course “on hold” for online development. On hold means, “...great, develop it, but let’s make sure this other one goes first or that is a perfect course to put online but it is an elective, so let’s get the required courses online first,” according to a committee member. Just under 40 percent of the proposed courses for both Fall 2008 and Spring 2009 were approved, according to summary documents from the committee that were reviewed for this study.

Both faculty and administrators interviewed tended to agree on the forces that drive these decisions. The institutional desire to expand online distance education and the pressure on limited classroom space caused by a recent surge in enrollment provide encouragement to approve new online courses. “So far the decisions we have made are mostly ‘add more’ and what we’ve looked at there are enrollments which have steadily increased, and course completion rates which this past semester have actually hit parity with on-site courses,” said one administrator. A full-time faculty member commented, “..the decision to run a course online is often prompted by things that have nothing to do with the course. I mean at Yankee we are busting at the seams, there are literally no more classrooms.” Yet there are also restraining factors, like a limited budget for the stipends that faculty receive when they develop an online course. According to a committee member, “...it is a pretty carefully constructed decision-making process. Finance enters into it; because there is a certain amount of money that is given to people to develop courses...” The specifics of individual course proposals can also lead to disapproval or being placed on hold. Said an administrator:

Then if it comes down to, here is a person [faculty proposer] we have never heard of before...first time to do this course in this program...little bit iffy because some of the technical requirements are pretty steep...so then you think twice before you say 'yes'...

Those interviewed also largely agreed that it was data about these various driving forces that helped the committee to reach its decisions. In addressing the materials that the Dean of Distance Education provides committee members, an administrator commented that the data are, "...probably more information than they want about how we make a decision on what course runs..." Speaking of the application forms and the spreadsheets the committee reviews, a member said:

...it's driven by that paperwork; the paperwork comes in, we determine whether we do this course, the money factors because you have to pay for development...Also, when you start developing courses, you can develop too many at one time and you can't handle it...So that is another determining factor...the more courses we put online, the more support we have to give to the students and faculty and it's a lot of pressure.

Another committee member noted that, "...there are tons of data we compare for this...It plays a huge role...It is almost the only way we can make the decision appropriately and feel comfortable." A third committee member said, "...we try to make it [the decision] on fact...probably 99% based on fact." A committee document provides an example. It describes a decision to recommend development of one course over another. Both were required by a particular program that was largely online, but the recommended course was also required or served as an elective in other programs and thus, "...would have more of a universal appeal to students," and make enrollment more likely.

In summary, Yankee Community College's approach to decision making about which courses to offer online evolved from one that featured neither data gathering nor

widespread faculty and staff participation—and that was highly contentious in the case of the biology lab decision—to one that involved many more people and groups and that centered on data collection and analysis. The interviews and documents did not explicitly reveal the reason for this change, but made clear that all constituencies preferred the new procedures to the old ones. In this case, the role of data and the question of power—who made the decisions—were closely linked. The inclusive nature and focus on data of the new course development process seemed to give it legitimacy around campus.

Zorn Valley Community College

Background

Zorn Valley Community College is a two-year public, Associate degree granting institution with a single campus serving a rural population and an enrollment of approximately 2000 students, according to the Carnegie Foundation’s classification (2010). Zorn Valley was founded nearly 50 years ago and offers approximately 50 Associate degree and certificate programs (*Massachusetts community colleges*, 2008).

Although Zorn Valley was involved in other forms of distance learning earlier, online distance education really began with the awarding of a large grant to Zorn Valley and a partnering higher education institution in 2003, according to faculty, staff, and administrators interviewed, and according to an accreditation self-study that was reviewed. The college’s administration was the impetus for this development. One administrator described it as “...heavy pressure the first few years...” while a professor said there was, “...an administrative push to get more people online.” The goal of the grant was to increase student access while taking advantage of a partnership with another

college to compensate for Zorn Valley's limited capacity in terms of technological infrastructure, money, faculty, and student enrollment.

Progress was slow at first with only one instructor teaching online in 2005, according to a professor interviewed for this study. Three administrators and the accreditation self-study also indicated that Zorn Valley has a long tradition of support for the Liberal Arts and direct faculty-student interaction, and this may have discouraged early faculty participation in online distance education. One administrator commented, "I would say because of the history, culture, and location of the place, becoming fully online or planning carefully particular programs is not a high priority. There is really a strong sense of personal connection here." Another remarked, "...there is kind of the default position in a lot of the cases that what is traditional, is more sound." Nonetheless, a few faculty pioneers began to put courses—particularly in the Humanities—online and played an important role in convincing other instructors to get involved, according to both professors and administrators interviewed. The Zorn Valley online distance education self-study indicates that most online students are also taking traditional on-campus courses at the college, which suggests that the online effort has not attracted many new students but is offering greater flexibility to existing ones.

The interview participants and documents reviewed suggest that the online distance education effort at Zorn Valley has grown significantly but is still rather modest. A college document with detailed statistics about the effort shows that only 29 online classes were offered in the fall 2009 semester, but this represented more than a quintupling of courses compared to fall 2004. No programs have all their required

courses online, but an Associate degree in Liberal Arts is close. One faculty member pointed out that the Associate degree in Liberal Arts could be completed if students take science courses from other colleges through the MCO consortium. Both administrators and faculty interviewed reported that a challenge to further expansion is the relatively large proportion of courses taught by a small number of professors. At this college, new instructor recruitment is hindered by limited funding for training, the small overall size of the faculty, and some lingering resistance to online distance education. An administrator commented, "I think there is institutional interest certainly amongst the faculty, but I do not necessarily feel like I can say there is a will to do a lot."

Two administrators pointed toward the wider impact that the effort is having on pedagogy in all classes. More faculty were incorporating online components into their regular on-campus courses. There were almost twice as many traditional classes in fall 2009 that were using web-based enhancements as there were online courses, for example. Another administrator and an instructor were less sure of such impact: "...there are many things we are just starting to get into. We have not had a lot of discussion about pedagogy and online," said the instructor. Despite the somewhat uneven sense of progress in online distance education, many of those interviewed expressed satisfaction with the effort. A faculty member explained, "We got more serious about making it a part of the college. I would say that within the last five years it has become less something we dabbled in and more something we do." Two administrators agreed:

There are so many other things much more critical to deal with here that I am satisfied...if we continue to bring new people in [to the online effort]....It is respected and credible. Those are major accomplishments.

It is only beginning to come together as a program. I think its focus is sort of spread out in a number of areas but...it is being seen now as something that is becoming more important than it was initially.

There was wide agreement among those interviewed about the organizational structure for online distance education at Zorn Valley (see Figure 2). The current structure is relatively new, however, and follows a period that involved significant turnover in some personnel who provided leadership for academic technology at the college, according to a faculty member and several administrators. A professor expressed some concerns about the lingering effects of such turnover:

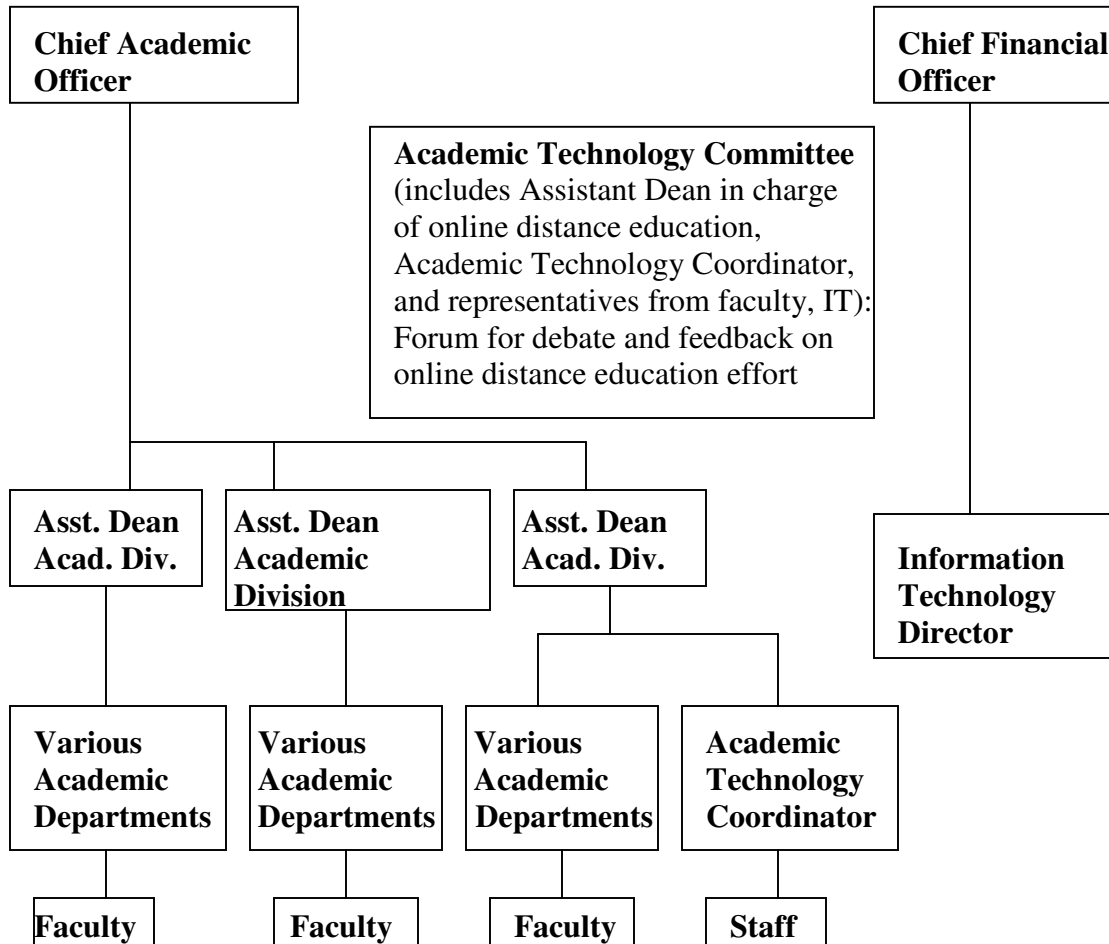
It is not as well managed from the top as I would like it to be...hopefully some of that will change, but for a long time there was nobody managing the process from the conceptual perspective...there was nobody really making decisions.

Two administrators and a faculty member suggested that both the President and Board of Trustees are supportive of online distance education, but only weigh in on major decisions about it. The Chief Academic Officer (CAO) is a key decision maker, but one of the three assistant deans that leads academic divisions and report to the CAO provides direction on a daily basis for online distance education, according to all those interviewed. The Academic Technology (AT) Coordinator reports to this assistant dean. There was wide agreement about the importance of this position, which has a challenging mix of duties. An administrator explained:

...it is a strange position because on one hand, you are supposed to be doing sort of grunt work...you're sending in trouble tickets [on the LMS], and then you are also supposed to be doing not just AT, in the sense of online; you're also running the Media Department; you are supposed to be running the Computer Lab, and...they are wanting that person to be sort of a head strategic thinker.

Figure 2

Online Distance Education Organizational Chart: Zorn Valley Community College



There was also consensus among those interviewed that some disagreement existed between the AT Coordinator and some of the academic division assistant deans, who are responsible for finding instructors to put new courses online. The AT Coordinator was pushing for more rapid expansion of online courses while also advocating for highly qualified and trained faculty. The assistant deans, working with a limited pool of available instructors, tended to believe a slower pace for course development made sense. Most of those interviewed also described the Information

Technology (IT) Department—which provides technical support for the online effort—and the Chief Financial Officer (CFO) to whom it reports as important and helpful players in online distance education. Finally, an Academic Technology Committee provides a forum for debate and feedback on the effort, and this committee includes faculty, the AT Coordinator, the academic assistant dean in charge of online distance education, and representatives from Information Technology and student services.

Decision Making and Data at Zorn Valley Community College

There was general consensus among the interview participants that Zorn Valley had struggled to some extent with planning and using data in its decision making, but that efforts were being made to change this. A faculty member worried, “I am constantly surprised at what is not being counted...there is a huge amount of data that we are just not even asking about.” An administrator said that analysis was actually the problem:

...we capture a lot of data, but we do not use it...we have practices in place and you ask, ‘Why are we doing it, or at least who is benefiting from it?’ No one ever has looked to see what the true cost of this process is really. We are trying to do more of that.

Another administrator commented that, “...data doesn’t drive any decisions; it informs decisions. NEASC found us a little weak in that area: actually using data that we collect in a more productive way.” In fact, six of the eight interview participants mentioned that the New England Association of Schools and Colleges—Zorn Valley’s accrediting agency—had expressed concern about the college not using data enough in its decision making during Zorn Valley’s ten-year review. On the other hand, both faculty and

administrators interviewed suggested that the Chief Academic Officer, in particular, was pushing to use data more in decision making. An administrator explained:

The [accreditation] self-study process was a good one in that respect...the Executive Council has agreed to the Self-Study Steering Committee continuing to play a role in reviewing data as well as communicating data. It's what we clearly want...This is very tricky to do. Building an evidenced-based environment; that is a major cultural change and I think we have more people understanding what that means and interested in it than before, but we certainly have not gotten there yet.

Decisions related to an E-Portfolio system over the last few years illustrate some of the efforts toward, and challenges to, a more data based decision making process. An administrator summarized the story in this way:

When assessment was forced upon the school, [a college-wide team was developed and its] choice was to go the E-Portfolio route...[the team] developed a very ambitious project...For about a year [the team] worked together to test E-Portfolio software. They did a fantastic job. [The team] chose one. And then spent a year implementing it and then [the team] rejected it because it was too complicated.

A different administrator and a faculty member described how the team set careful criteria for the E-Portfolio system, investigated vendors, and collected data on each possibility. The administrator explained, "...they had a terrific source of data collection...it was developed in a very clear way. Sometimes when pilots end up with the people saying it is not working, at least it suggests an honest process." All the interview participants that discussed the E-Portfolio described a thorough, data-informed process and also tended to agree on the reasons why the implementation did not succeed.

A professor said:

I think more than anything, the biggest issue was that we just didn't have the time and energy to deal with it and we needed more people who could do it, and that is something we run into all the time.

An administrator commented:

I do not think it has been a smooth operation because of a couple of reasons: (1) I am not sure that everyone actually had the time to implement the system and (2) the technology was not working right. The technology was too complicated for the registrar's office.

The small size of Zorn Valley Community College and its impact on planning, decision making, and online distance education came up repeatedly in the interviews.

For example, the resources available for institutional research (IR) to support planning and data collection are extremely limited. An administrator explained that the IR Director is responsible for planning and grant writing, for reporting all externally required data, and for in-house research: "The smaller the institution, the more apt you are to find people doing multiple tasks." A different administrator agreed:

...the overriding issue that I have with data is it takes a long time to collect...you are in a better position having had the data; I do not question that. However, in stretch times with little staff, the cost benefit analysis, I am not so sure about. I do not know, maybe at a bigger institution; you need a bigger Institutional Research Department or something.

Similar challenges are felt in the Academic Technology and Information Technology areas. A staff member pointed out that the former relies heavily on work study students to complete tasks, and in speaking of the ability to provide data to administrators for decision making said, "I am not always great about giving them input when they need it, because I am deluged with my workload...Things go slow in a small campus and a small staff." An instructor and an administrator pointed out that the IT Department decided to host its LMS externally a few years ago because the burden on its limited staff of local hosting had become too great. A faculty member commented:

...one of the things that we cannot get the state to understand is that there are economies of scale. They keep trying to give us a proportionate number of administration and staff. We keep saying, okay, it does not work this way. If you need to load your courses into Datatel...it does not matter how many courses you have, you still have to have at least one person to do that. It is going to take them the same amount of time, because the processing time is not the problem...it is the set-up time.

Zorn Valley's size directly affects the extent and pace of the online distance education effort too. Faculty, staff, and administrators interviewed worried that the effort was too dependent on a few instructors who teach many of the online courses. "We are way under-staffed for the number of online courses that we are teaching," said a professor. A staff member agreed, "We really don't have the depth and breadth to be able to have a quality online program per se. If we lose an online instructor in history then that knocks out five of our online classes." Said an administrator, "...I would like to see...more depth...most of the teachers; they do not want to be teaching a lot of classes online." Moreover, the number of students is limited. An administrator commented:

I really do not see this institution as ever really having a sizeable set of online programs. It is hard enough to get a program together that is viable on campus because of the population...It is too hard to get to a critical mass.

On the other hand, multiple interview participants pointed out benefits of being small. Fewer administrators, faculty, and staff can make communication easier and even reduce the need for heavy data collection. An administrator explained:

I think that is part of the culture here in general; it is pretty flat...maybe the size of the institution has a lot to do with it. There is a lot of just conversation and so the communication may not be formal in the form of memos, but it is largely just everyone talking amongst each other and trying to come to a conclusion.

A small organization has other advantages. One administrator who had worked at a larger college pointed out that it was easier to make changes in the online distance education effort at Zorn Valley because it affected fewer people. Another summarized the costs and benefits this way: “Some schools are in a position to be more nimble because they are smaller, but conversely, they also have fewer resources to support the process.”

The goals for online distance education at Zorn Valley are closely linked to the college’s mission of student access, student success, and academic excellence, according to a report written for the college’s accreditation agency. The report notes that online classes give students another way to access a college education and that professional development for faculty has been provided to help develop quality curriculum and teaching to ensure that students are successful. Online distance education has been featured in the college’s strategic and annual action plans as well. The accreditation report made it clear that the focus of attention since the initial planning for the grant that helped launch the online effort at Zorn Valley has been getting as much of the Liberal Arts program online as possible. Grant objectives also helped to drive planning around the effort in its early stages. Finally, the Academic Technology area has its own mission statement, which includes distance learning applications as one of a number of its responsibilities.

Despite the apparent alignment between the college’s strategic goals and those for online distance education expressed in the accreditation report and mission statement, the value of and need for planning in online distance education is a matter of debate at Zorn

Valley. Multiple interview participants reported that there is disagreement about whether a broader Academic Technology Plan, of which online distance education would be part, was needed right away. One advocate argued:

We have a hard time on this campus in planning. So I fight with that, and I know everybody does here, because we are so short staffed. I think there needs to be a technology plan that is created that is partially including an academic technology plan...it needs to be a group effort with people who have time or are given time to take care of it...

An administrator who disagreed that a plan was urgent said:

...attempts to have a long-term plan for distance education at this college do not seem real...if we can kind of use the online to undermine some of the complacency and other stuff like pedagogy and use of technology, then that is a really valuable result...So we are not developing an AT plan yet.

A faculty member was not sure that the lack of an AT plan had caused much trouble so far:

...we haven't had as much planning in this area; partially because it is actually doing okay...we have a good spread of courses and I think that is because basically the CAO and her staff have done a good job of going, 'okay, we are not kind of doing broad-scale planning; on the other hand, we have an intuitive sense that we need another one of these, and we need another one of those,' and so on, and so we are not doing things like offering a lot of online classes that are not running.

This debate extends to the value of using data to make decisions. Some of the study participants believe that data are badly needed in online distance education and the college is collecting them. One faculty member explained, "I think everything is scrutinized more with online courses, because I think they are still considered new...everything gets questioned and scrutinized..." Another said, "people have an intuitive grasp of the data in the regular courses which is mostly accurate...but we don't have that intuition for online, so we actually use more actual data, I think, to do our

planning.” The reporting requirements of the large grant that launched the Zorn Valley online distance education effort prompted significant data gathering, according to faculty, staff and administrators interviewed, and this has continued under the AT Coordinator.

An AT staff member described some of this data collection:

...two reports that my department runs regularly. One is a semester-based [report]; that is strictly in distance learning: [reporting on] the numbers, users. And that’s matured since I have gotten here to include things like the headcount and the duplicated headcount...We have done at least three if not four surveys of students and faculty on the Learning Management System and how my department is doing.

These reports were reviewed for this study and reveal extensive data collected on numerous topics over several years.

Despite these efforts, some interview participants expressed doubts that the right data were being collected or even could be. One administrator said data are:

...not as yet really used routinely. The data right now is sort of a curiosity that can support a decision but does not drive a decision...Right now we are just trying to feel our way, and try to figure out what data it is we need to collect that will actually help us make better decisions...it’s informational at best.

Faculty and administrators, moreover, deplored the low response rates on student evaluations for online courses. Two administrators commented:

...the evaluation system for online education sucks. It is useless...in terms of actually being able to compare persistence, success in the next course, quality teaching; there is not enough stuff and it is not selected out in the way that I really could do that effectively.

I would like to start getting into questions about the types of students who are best served by online programs based upon cognitive information that we have on the students’ development, learning styles, etc. Are there certain disciplines that are better being delivered online than others? The efficacy data is not available...

Even if they were, a faculty member lamented that they might not be used: "...we do not tend to have that kind of deep reflectiveness..."

Given these challenges and the limited time and energy a small college like Zorn Valley can bring to bear, some interview participants openly questioned the value of extensive collection of hard data. One faculty member said:

...You can spend lots and lots of man hours at your institution trying to prove that online students are older or that they are coming from this region...but you already know that, you know? I would agree that you need to keep an eye on those things but I think sometimes people get actually overly concerned that we have to find all of this data... my sense is that often Administration at schools might get a little hung up on...hard data and to be afraid of anecdotal data.

An administrator agreed that anecdotal information or intuition were often sufficient:

I am not sure how much this has to do with us being a small school, but I sort of know who I am dealing with and I sort of know what is going on...many of these decisions are not rocket science to me...if I were King of the World, I would be looking and I would be going, 'okay, I want a couple of Economics courses here; where are the Engineering courses?' I mean I would be looking at pockets across the campus, saying that is what we need to be offering. I do not need a lot of data for that.

The range of opinions about data and planning encountered in the interviews and the clear challenges to extensive data collection and analysis at a small school in a relatively new field like online distance education do not suggest at first glance that Zorn Valley Community College would produce a detailed example of data driven decision making. Nevertheless, faced with a crucial problem concerning the future of its online distance education effort, Zorn Valley engaged in thorough, data-rich research and analysis that strongly influenced a decision described in the next section.

A Close Examination of Zorn Valley Online Distance Education Decisions

The interviews at Zorn Valley Community College focused primarily on one major online distance education decision. In fact, when asked to describe such a decision, six of the eight interview participants chose a recent one about the learning management system (LMS), and seven were able to provide detailed information about it. This section will examine the LMS decision first and then place it in context by briefly exploring several others.

Choosing a learning management system. Faculty, staff, and administrators agreed that intense faculty dissatisfaction with Zorn Valley's existing LMS—Blackboard—was the origin of this decision. "There were a lot of complaints about it," said one administrator. Another explained, "...we had some irate, unhappy faculty who were threatening to no longer use Blackboard, and we were going to lose them." An online instructor added, "It was not suitable. It got buggy. We got very poor support, and so on, and the faculty pushed against this." Moreover, the version of the Blackboard LMS that the college was using was being phased out, providing an opportunity to consider alternatives. An administrator said, "I think there was the sense that Blackboard is a business, and we are small potatoes and the support was never there and it was never going to be there." While some of the dissatisfaction became known anecdotally, the Academic Technology staff was also closely documenting faculty and student attitudes. An instructor recalled that, "...they did a lot of relentless polling of faculty and...kept track of every single faculty complaint about Blackboard." A staff member in Academic Technology reported:

We got feedback from faculty and students on the system...students were yelling...‘This is not working well...I am having trouble...The version of the browser I am using is not working; it is shutting me out of my system...’

By 2008, the unhappiness had reached a point that the Academic Technology Committee brought the concerns to the CAO, according to faculty, staff, and administrators interviewed.

The Chief Academic Officer agreed that the problem should be explored and asked the Academic Technology Committee to lead the effort, the study participants explained. An administrator recalled that the CAO, “...concluded that we really had to explore a change to the learning management system. Then [the CAO] just kept an eye on the planning.” The Academic Technology Committee created a separate group to explore alternative learning management systems. A staff member explained:

We set up a subcommittee; some of the people are from [the Academic Technology Committee]...a couple...were not...We had three administrative type people...someone from IT who addresses some of these types of things. The Director from IT started joining us as well. This was awesome. We had three faculty members as well...and we did research.

Faculty, staff, and administrators interviewed for this study agreed that the subcommittee had all the key constituencies on campus involved and that it was the foundation for a process that engendered wide participation in the decision making. An administrator commented that, “...it was very collegial, collaborative; everyone felt they played a role in it and had some input; that they were embracing this process.”

The Academic Technology Coordinator led the subcommittee and together they developed an initial plan to explore different learning management systems and a

timeline for the research, stretching as long as two years. An administrator remembered that it was "...a very ambitious plan...So, part of our task was to trim down what [the Academic Technology Coordinator] thought needed to be done to something realistic." A staff member agreed that the CAO determined, "...this might be too long; we cannot do this...Based on the input, we shortened the process..." Nevertheless, Zorn Valley worked for over a year, beginning with webinars provided by LMS vendors in fall 2008, before a decision was made, according to faculty, staff, and administrators interviewed.

The subcommittee wanted to consider as many learning management systems as possible and committee members began gathering data on six of them. This included direct requests for information from vendors, vendor visits, research on the Internet, and speaking with other colleges, according to those interviewed. A staff member recalled that faculty and staff were invited to the vendor presentations to get a sense of what each LMS offered, while the AT Coordinator examined technical and cost issues. There was wide agreement among the interview participants that by late spring 2009, several of the systems had been eliminated. Sometimes this was because a vendor was slow to provide information. The subcommittee, said a staff member:

...did not like the fact that they said to us, 'no, they are not going to get back to us within a week and a half or two weeks,' when we sent them an informational questionnaire to fill out and everybody else was getting back to us in a day and a half.

Despite early interest in the Angel LMS, an administrator and staff member said that support for it soured when it was purchased by Blackboard, which also had been eliminated as a contender given Zorn Valley's past negative experience with it. The

interview participants indicated that this first round of research led to the designation of three LMS finalists.

A second round of research and analysis ensued in fall 2009. Again it began with a debate over the scope of the work. Despite suggestions from two key administrative decision makers that only two systems be piloted to save time and energy, the Academic Technology Coordinator's view that all three LMS finalists each should be piloted by two different faculty with live courses prevailed, according to those interviewed. These live pilots allowed data to be gathered from both students and six experienced online instructors. The piloting faculty members filled out detailed questionnaires and used a common rubric to rate their LMS. One of these instructors said, "I felt I had fairly documented my experience piloting it. I think probably everybody felt that way for the piloting faculty..." Another professor agreed, "...the people that tested them for the course created some really wonderful data for the rest of us to look at." Besides this research, which helped to capture faculty and student impressions of the usability of the LMS, other instructors examined specific features of all three finalists and compared them. As one administrator described this part of the process, "...they took one piece, such as grading. Then, two people looked at grading in each of the systems. It was a really thorough process." Meanwhile, the subcommittee continued to examine other crucial aspects, such as the cost of each system and their ease of migration from Blackboard, according to an instructor and an administrator.

Faculty, administrators, and staff interviewed agreed that presentations to the college community made by the faculty piloting the three finalist LMS systems were crucial for gathering wider feedback. One of the faculty pilots remarked:

I think it was a combination of we did these information sessions where we presented what we had done and kind of described the system and the learning environment: the pros and cons from our experience. I think that combined with the documentation of the rubric that we completed informed their decision.

In fact, some of those interviewed felt that the amount of data gathered for this decision was overwhelming. An instructor said, “To give you my opinion, the data collected was almost overkill. There was a huge amount of data...I found to an extent surveys and questionnaires that I filled out as a pilot faculty member were just arduous.” One administrator admitted that, “...it was viewed as overkill, but in this instance, better overkill than the opposite...”

The subcommittee believed that the research pointed to an open source learning management system as clearly the best choice for the college and made that recommendation to the Academic Technology Committee, according to three different administrators interviewed. One of them remarked, “Then, it was sold to Administration...” This effort to “sell” the recommendation was as detailed and data-focused as the research had been, and the “sales pitch” had two components. First, two different reports were written to explain the recommendation. A staff member described the first of these as a 70-page background document of all the data collected about each of the three LMS finalists. A review of this document indicates an extraordinary amount of detail, including faculty and student feedback from the pilots, cost data, technical data,

and migration information. Realizing that this document was too long for busy administrators to digest, the Academic Technology Committee worked to condense it into a 14-page summary that compared the three finalists. A staff member described the process, "...I knew I needed to summarize that to compare these three things...14 different categories we looked at...they came up with a rating scale...The students, the faculty...the IT folks: everybody used the same scale." One of the administrators that received the summary described it this way:

The data was really comparative...in my final report. I have charts that compare their prices...lists of pieces useable and not useable, a list of the colleges that use the one we want to make sure that there were other community colleges...it was specific and detailed and relevant...

The second component of the effort to explain the recommendation was a meeting in late 2009 between representatives of the Academic Technology Committee and the CAO and CFO, according to faculty, staff, and administrators interviewed. These decision makers found the written summary report and oral presentation convincing, particularly the unanimous recommendation of the subcommittee and Academic Technology Committee, and endorsed their choice of the open source LMS. According to those present at the meeting, the data and research process were important factors. One administrator said:

I think the process they used to study the options was phenomenal. I was blown away with how thorough it was; it was just impressive. Any faculty member who wanted to be engaged in the process was engaged in it...We sought outside counsel and assistance with the project. Lots of research, lots of reading, lots of meetings...

Another administrator admitted:

When they actually finished their report; this is not something I wanted to approve, but their report was very, very thorough. We had a meeting with about six people who were mostly involved...and at that point, we were able to say, '...yeah, we will go with this.'

An online instructor summarized the impact of the research process and summary report:

"People were happy with it, and ultimately that is what mattered. People felt like they knew what was going on, like they could make a decision, which is not always the case."

The President of Zorn Valley Community College's approval represented the final step in the decision making process. Even with the CAO and CFO endorsing the open source solution, the President had concerns, particularly about the reliability of the technical support likely to be provided with an open source LMS versus a large, established vendor like Blackboard. Said one administrator:

...the President knew enough...that he wanted the biggest player, because he has been in institutions where they went with, as this institution did...a software or technology that had a much smaller penetration, market penetration and it was either acquired or it fell by the wayside...

The key factor in winning Presidential support turned out to be the opinion of another initial skeptic of an open source LMS, according to several administrators. One explained the situation:

Interestingly, when the IT Director first went into this process...he was not at all supportive of an open source introduction and when we came out of the process he was in complete support and I actually strategically used him...the IT Director was able to assuage the President's concern about that; to go in and sort of use his credibility and credentials to say, 'I support this.' That helped in the decision-making process...

Although the reliability of support for the LMS was the most important factor, according to those interviewed, cost also played a role for the President and other decision makers. The open source LMS that Zorn Valley chose is far less expensive than

the other competitors. From the start of the process, the CFO urged the Academic Technology Committee not to make cost the deciding factor, but said one administrator:

...others involved in the process were much more attuned to that and much more concerned about that...it turned out to be a win-win all the way around, from a financial standpoint and from all the enthusiasm people are showing for the software...

Pointing out that the new open source software would cost less than one-third what Zorn Valley was paying for Blackboard, one administrator said of the decision makers, "I don't want to be overly cynical about it, but I am sure they noticed that, too." Two faculty members interviewed also believed price was important. When asked if she was surprised that the college had chosen an open source LMS, one remarked, "Not at all because it is cheap." Others, however, were surprised at the decision. Said one administrator:

I just didn't think really that the higher Administration was going to okay it; and shocked to an extent that the President and the Executive Council, the Chief Academic Officer were willing to go out on a limb and go with an open source system.

Surprised or not, the faculty, staff, and administrators interviewed for this study agreed that data played a large role in this LMS decision. Said one administrator:

I had incredible confidence in the data because I was incredibly impressed with the process and the fact that they analyzed it and sliced and diced the data in so many different ways and involved so many different faculty...I really was confident and comfortable with the data that we used and how it was analyzed and how we arrived at the decision.

Others also felt this pride and offered repeatedly to share their data and research with other colleges. Several faculty and administrators cited the importance of the LMS

decision as a reason why data played such a large role. An online instructor said, “You know, you do not want to have to make that decision many times and so you want it to be right [the first time].” Almost every interview participant, however, also pointed to the work style of the Academic Technology Coordinator as a reason why data were so involved. Quipped one professor, “We actually had a rather substantial amount of data, which is [the AT Coordinator]. That is very much [the AT Coordinator]...kind of does data with a howitzer.”

There was also agreement among those interviewed that the strong role of data in the LMS choice was not typical of online distance education decision making at Zorn Valley. Said one administrator:

I think it was exceptional. I do not think it is typical if only because of the impact and the magnitude of the decision and the financial impact, professional development impact, support impact were so great...if you were trying to do something like that for every decision, you would be paralyzed with analysis.

A faculty member agreed:

It was definitely a special case at least from my perspective. We actually sat down and had a true analytical process that was bottom up and top down...this decision required a lot of thoughtfulness, especially with our faculty, because the people were pissed...and if we messed this one up, we were going to lose a good portion of our online teaching; they were just going to walk...

Nevertheless, some of those interviewed did think the capacity for data based decision making at Zorn Valley was growing and that the LMS decision contributed to the development of that capacity. An administrator explained:

I do not think we could have done that a few years ago because there were not enough people who were used to professional development. There were not enough people who were technically savvy and working online.

There was not common conversation about online related stuff the way there is now. So I do not think we could have done any decision making process of this quality three years ago.

An instructor agreed, “In essence, it was probably atypical. I think we are more data-driven now than we were then.”

Other online distance education decisions. No other decision was discussed by enough interview participants in sufficient detail to provide a rich description of it. Several other online distance education decisions did come up in the interviews, however, and a brief examination of them provides some context regarding the role of data in decision making. In particular, this section will briefly explore the decision to start online distance education at Zorn Valley Community College, how faculty are picked to teach online courses, and how courses themselves are chosen for online delivery.

The decision to launch online distance education at Zorn Valley through a grant partnership with another college showed some evidence of the use of data, but overall, the decision appeared to be driven by other forces. Those interviewed, for example, did not believe that hard data influenced the initial decision. A faculty member recalled:

I think we did it because it was the cool thing to do because there was a lot of publicity and press about online education being of value, particularly for people in rural communities...we didn't know whether our population was going to accept it. We didn't know whether we had the faculty expertise; it turns out we actually didn't. It all has been learning by doing from the very beginning.

An administrator agreed:

The original decision to go into online was not data based at all...I think the external expectation that we offer stuff and make it available that way; you know as a creative way to do a couple of things: (1) to increase enrollment (2) to compete in the marketplace...Competition is fierce...That was sort of why we got into it and that wasn't a decision based on data.

An online instructor argued that while hard data may not have been present, the decision was still sound, however:

Did they have a spreadsheet in front of them with statistics saying there is this many people in the county not being served? Probably not. But did they know intuitively, based on information in the real world, that there was a need? Absolutely. So were they proven correct? Absolutely... that's a kind of data.

Once launched, however, both faculty and administrators interviewed for this study were able to point to aspects of the online distance education grant partnership that involved a role for data in decision making. To some extent, this was driven by the external review process required by the grant itself. An administrator recalled, "...we had periodic external reviewers looking at things...[they] did see a lot of quality variance in the courses, which I wouldn't argue with." In fact, a number of those interviewed said that course quality became a priority for Zorn Valley after this. A faculty member also noted that the online distance education leaders at both partner institutions developed a careful process to compare student needs and course demand so that the right courses would be developed using maps or flowcharts. Another instructor felt that this grant-related activity helped to substitute for in-depth planning at Zorn Valley:

So it was more about the grant expectations than it was to institutional needs, in my sense. It turns out that the grant expectations weren't all that bad; these were general education courses, and when you have a small population you want the most common courses to be available online.

However, no, I do not think there has been any broad thinking about how we should set-up our online learning system at all.

Faculty, staff, and administrators interviewed agreed that the necessities of launching the online effort also drove the choice of faculty to teach online more than data. “Early on, we were not too precise about who taught,” recalled an administrator. An online instructor explained in more detail:

What you can’t do with online learning is say to a math teacher, ‘we need math online for this liberal arts degree so you need to teach...by next year you need to be teaching math online’...you know all the reasons why that’s a mistake. What we did is [ask], you know, ‘who is interested?’

Some of those interviewed felt data still were not being used much to choose new online instructors. A staff member complained, “Some of the assistant deans will push through an instructor just because they want an online course in a certain program, and that’s incorrect.” An administrator admitted that the process is not scientific:

When I say something like, I want [a specific professor] to teach online; why? Because he is conscientious as hell; he is a good teacher. I am assuming that will transfer over to online...Now, someone will give you a lot of national studies saying, ‘no, it’s not the same, you need careful training.’ I would be surprised if they do not say that. I knew he would be a good teacher online because he was a good teacher face-to-face.

A faculty member agreed with that assessment of the process:

Who gets to teach online is pretty careful but it has been done based on what the assistant deans know about who is pretty good...it generally doesn’t pick bad teachers; it doesn’t necessarily pick people who know something about online teaching; it picks somebody who knows something about teaching. So it may not pick great professors either.

The choice of faculty, in turn, has tended to drive the courses that have been approved for delivery online at Zorn Valley, according to those interviewed.

An administrator explained:

...what typically happens...when you start, you do not care what the course is. Any faculty member who is interested in developing an online course...It is not until much later that you really can begin to say, 'what is it we really need here?'

Another administrator confirmed this:

It started off more as a sporadic experiment, this course or that course; I do not think [data] is used much at all to determine whether a course is done because again if a faculty member wants to do it, we are still so early in the development...we are just glad to have the interest of people to do it... Because I think our primary objective in online education right now is growth, and the more growth you have, the less careful you are in how you do it.

The result has been more a patchwork of online courses being offered than a carefully constructed curriculum. A third administrator opined:

A weakness you will see is that we lack online courses in areas that we should have, and that basically represents the nature of faculty. You know, if you examine our business offerings, they are not exactly wall to wall...when you are not developing Introduction to Business courses and you are developing your second Music/Jazz course, you are sort of like, 'what is going on here?' But, I am not sure that is not a practical strategy. CAOs tend to think it is not a practical strategy. They tend to think, 'schedule the Goddamn courses.'

Nevertheless, several of the interview participants questioned the need for extensive data in choosing courses at this early stage in Zorn Valley's online distance education effort. A faculty member commented, "...you can grow the program by adding a course here and adding a course there without great direction; it's plausible..."

An administrator agreed:

I mean I would be looking at pockets across the campus, saying that is what we need to be offering. I do not need a lot of data for that. I can look at a course schedule, which is data, but anyway.

In some cases, the college has chosen to discontinue online courses because they are not working well. Even here, however, such decisions appear to be more the result of instructor perceptions than hard data analysis. An administrator provided an example, “A new hire we have here—she is terrifically sharp. She developed a hybrid [English] 101. Interestingly, she is not at all sure that it is appropriate. We are actually not running it in the fall.” The uneven nature of the role of data in these decisions about course and faculty choice and in launching the online distance education effort at Zorn Valley aligns with the sense of those interviewed that the strong influence of data on the LMS decision making process was the exception rather than rule.

Wilder Community College

Background

Wilder Community College is a two-year, public, Associate degree granting institution with multiple campuses serving an urban population and an enrollment of approximately 8000 students, according to the Carnegie Foundation’s classification (2010). Wilder is about 40 years old and offers approximately 70 Associate degree and certificate programs (*Massachusetts community colleges*, 2008).

Online distance education started at Wilder in the late 1990s with the help of a state grant, according to the interview participants, most of whom worked at the college at that time. Wilder had been engaged in other forms of distance education for decades

as part of a twin commitment to innovation and access for students. As one administrator explained:

I think [Wilder] has always been sensitive to the idea of innovation and...especially access and affordability for a particular constituency—in our case an urban population. So I guess when we look at distance education...it is rooted more in our innovative legacy, our heritage...But it is also another way of offering access and flexibility and cost-effective education to a constituency that is starved for money, for time, and from the strain of commitments that family and jobs...bring about. That has been with us from day one, when the college first opened.

This commitment led the current president of Wilder to emphasize online distance education in the college's strategic plan as early as the year 2000. An administrator said the goal was to, "...develop flexible programs for students and distance learning was one of the flexible programs." Competition was also a driver in Wilder's innovative approach. "If we see that other colleges across the country are starting to offer something, we scramble to try and find a way to offer it..." commented a professor.

Three faculty members who were interviewed described a core of enthusiastic instructors that plunged into online distance education at the beginning and participation grew from there. An administrator pointed out, however, that some faculty resisted this innovation and that has led to a tendency to scrutinize online distance education at Wilder carefully.

All interview participants agreed that the online distance education effort at Wilder was large and growing fast. In the year 2000, the college offered four online classes with 108 students and by Spring 2009 it had 112 such classes with over 1000 students, according to the college's accreditation self-study. Thirty-five full-time faculty and approximately 50 adjuncts taught online in 2009. An administrator pointed out that Wilder now has 10 Associate Degree and 9 certificate programs completely online. "It is

a hell of a revenue stream,” commented another administrator. There was wide agreement that a lack of space to absorb enrollment increases at the college was another driver of online growth. “I mean the college is committed to expanding online education. As you know, we are maxed-out in terms of physical space,” explained a dean. The online distance education effort has also grown in terms of support for students, training for faculty, and its impact on other types of classes. An administrator explained, “...it’s a comprehensive program in that we have all the online support services for students, including tutoring, mentoring, and advising.” An instructor agreed, “...we have opened up dialogue about different learning styles, different ways of learning online, moving into virtual spaces, cloud computing, and things like that. Not only have we influenced sort of face-to-face traditional courses [but also] creating hybrids.” All faculty who want to teach online must take a training course. “We want to be certain that the students are getting a good education,” commented a full-time professor.

Wilder has relied on both partnerships and a knack for grasping opportunities in building its online distance education program. It was an early member of the Massachusetts Colleges Online (MCO) consortium, according to an administrator, and has been an active participant since. It has agreements with several other community colleges in the state to offer online programs jointly. In addition, an administrator said, “We have developed some nice articulation agreements with four-year schools so our students can transfer to other colleges as third year students and continue face-to-face or online.” Wilder has also learned how to seize opportunities while minimizing risk. The

initial plunge into online distance education was calculated carefully, according to an administrator:

The initial risk, remember, was not really much of a risk because we...got money from the state for a Campus Improvement Grant. So if that was a total failure, it wasn't an investment from the college, it was an investment from the state...

Similarly, the college chose a learning management system (LMS) in the early days of the effort because it offered both short and long term benefits. An administrator recalled:

One of the reasons to go with [the LMS] was because we purchased the perpetual license. We didn't have a lot of money back then and for \$20,000, we were able to get all the upgrades and maintain that software system for a one-time fee and minimal maintenance costs.

All interview participants agreed that the Dean of Distance Education is the most important decision maker at Wilder Community College (see Figure 3). An administrator explained that the Dean has:

...a lot of empowerment because the President appointed [the Dean] to develop the program...work with all the Academic Deans, as far as program development and...report directly to the Vice President of Academic and Student Support/Student Services. [The Dean doesn't] have a lot of barriers as far as getting things done...

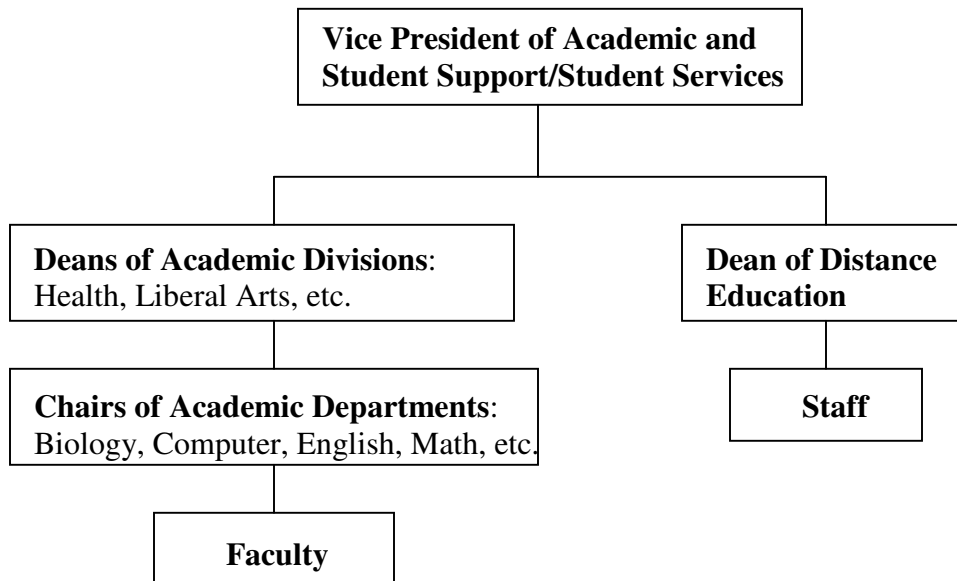
This relationship with the President has been particularly important as the college has had four different Academic Vice Presidents—to whom the Dean reports—over the last decade, according to a faculty member and the accreditation self-study. The Dean of Distance Education shares authority with the academic division deans for developing courses and staffing them with instructors, but a faculty member points out, "...we have had a turnover in the Deanery..." This has further cemented the Dean of Distance Education's significant role. According to an administrator, "[The dean] is the key

player...In the time I have been here, I would say that definitely [the Dean] is the Guru here—the ‘go to person’ for online.” The Dean is supported by a small staff. A member of this team commented:

...we have four full-time people in the online operation...we have two permanent part-time people. Then we have a collection of casual part-time people...For our revenue stream, we are the most efficient, by far...organization in the college.

Figure3

Online Distance Education Organizational Chart: Wilder Community College



Despite the Dean of Distance Education’s strong influence, collaboration is a central component of online distance education at Wilder. An administrator explained, “In order to hire faculty, and get courses on board...[the Dean] must have approval from the respective academic dean and...the chairs, and obviously the faculty.” Said an academic administrator:

We always consult one another. [The Dean of Distance Education] has the ultimate authority over online but...would not...go ahead and develop

a course online or a program online without talking to the appropriate dean. We do collaborate. It is a constant ongoing conversation...

Department chairs are also key players in promoting online distance education. Said one, “My role has been to kind of move the department ahead in the implementation of the distance education courses that we have here now.” An adjunct instructor agreed, “It’s sort of an informal process. I keep in contact with not only the chair, but the dean too.” The faculty interviewed agreed that the Dean of Distance Education is skilled in communicating with professors. The Dean, “...listens to what faculty need and then tries to address those needs...and...always asks for input,” said one instructor. An administrator argued that this sense of collaboration is even wider: “One of the things about online distance education at [Wilder] Community College is, it’s very democratic, in that we listen to an awful lot of people.”

Decision Making and Data at Wilder Community College

There was consensus among the interview participants that data play a significant role in decision making at Wilder. Much decision making is driven by an inclusive strategic planning process, according to the college’s accreditation self-study and the interviews. A full-time professor explained, “...we set our college goals every three years...we have a huge meeting where we pare them down...and make sure that we are meeting the needs of the community...” An administrator elaborated:

We involve outside constituents in the internal community...We get panelists to talk about some of the recommendations of what we might be doing; we break out into groups and talk about objectives...Then we almost take a vote on these areas that we want to concentrate on for the next three years. The way our college is organized if that is part of the

strategic goal of college, then you all have to fall into place. You support it; you can't fight it.

New initiatives that are in alignment with the strategic plan can then apply for "action plan" funding, which the President sets aside each year. An administrator described the process:

Action plan money was up to a million dollars when times were good... You can write requests for action plan money based on your stated objectives; they have to be measurable and they have to fit in to what we have decided would be important in the strategic plan...data drives that because you have to provide the proof. The action plan is for one year and that has to demonstrate that you were successful and it is all data-driven; then it will be institutionalized in your budget.

This same administrator provided an example of this process in action:

...[we] put in a proposal for \$250,000 to open all the areas in the college on Saturday and Sunday...So we open up now: we open the library, the tutoring center, enrollment, advising, the computer labs, and so forth. We had to document that people were coming in and using it...based on that data...provided at the end of the action plan year, it was institutionalized. This is an example that was based on the strategic planning, action plan money, and data-driven result.

Other factors also encourage the use of data in decision making at Wilder:

"...when the President came on board, one of [the] first initiatives was to establish an institutional effectiveness office...hired, I think one of the first institutional effectiveness positions in the community college system ...that was about 14 years ago. Ever since that time we have been more and more involved in using data to make decisions," said an administrator.

Two recent grant initiatives at Wilder have further emphasized the importance of data.

The college is part of the Achieving the Dream initiative aimed at helping more students complete courses and programs and eliminating achievement gaps in the performance of different student groups through the gathering and analysis of data. A federal "Engaged Campus" grant has similar goals and aims to use outcomes assessment results to drive

student success. A professor described the impact of the grants on processes and the thinking of people at Wilder:

...the college is looking at things very differently than the approach that we had taken before...and that is how things are driven by the individual stories that were told, which still are very compelling and still do have an impact, but instead of being the driving force, I think they are being used to support the data...so often times we have been able to put the horror story into perspective.

The result is that new initiatives at Wilder Community College need to have data to be approved, according to the interview participants, and the college has sought to beef up its institutional research capacity. An administrator described the process to change an academic program:

Now, any time I submit any kind of proposal, I am asked for data. Where are the jobs? What is the training? How can the training be delivered? I had to go to [institutional research] to get information about completion rates in the program. How many students had enrolled? How many who persisted and how many completed and that kind of thing.

The college recently purchased a data warehousing system that will allow employees to investigate data and run their own reports more rapidly than the institutional research staff could. An administrator described its impact:

I can extract information; I can get all the enrollment data myself very simply. Before I had to go to the institutional research area and have someone do queries and so forth and you know everyone is asking for services like that, so it is not a matter of difficulty; it's just a matter of the volume of requests.

The interviews revealed that this commitment to data has begun to filter down to the faculty. According to a department chair:

...at the department level...we have just started to do this a little bit more...as a result of our academic program review...we have looked at the data that has come out of the Office of Institutional Effectiveness. We

are looking at right now where our majors are...it is a little study of how we have increased in enrollment.

A review of this “study” shows a spreadsheet with both data on the enrollments in the department’s various academic programs over time, and easy to interpret pie and bar charts providing analysis.

Despite the strong and growing role of data in decision making at Wilder, the interviews also revealed challenges. The capacity of the institutional research office to provide and analyze data—even with the data warehousing system—was a concern for some. A dean noted that, “...if we made a decision to really look at data each time we made any academic changes, I do not think they would cope. I know they would not.” The push to provide data, moreover, produced frustration at times. An administrator complained about external demands for data, in particular:

...it only matters to the guys who sit on Beacon Hill...who don’t get very close to these people we call students at all and they are driving decisions based upon nonsense and how do you accommodate that in your decision making process?...screw the graduation rates...Students are not coming to us for graduation rates; students are coming to us to take three courses so they can get their ass in Tufts. Measure that for God’s sake.

Both an administrator and a faculty member also pointed out that while the need to align new initiatives with the college’s strategic plan could encourage the influence of data on decisions, it could also lead to attempts to game the system. According to the former:

...the administrative environment that exists as the backdrop for any decision has to be considered because you want to make it feel as though you are contributing or adding or you are in sync with all of the ideas and movements and directions that the college itself is going in...you could almost call it political. You want to be seen as a team player...I think that’s important for everybody at the college to recognize and use as a

tool. It is a form of anecdotal data collection, but it is data collection, nonetheless. So what you are going to do is, you are going to couch your ideas within that context as best you can without being glaringly solicitous, or too much of a suck-up.

These challenges and the general approach to decision making at Wilder Community College are mirrored in its online distance education effort. The college's mission statement proclaims its commitment to increasing access for students and specifically lists distance learning as one strategy for providing such access. This effort has been part of the college's strategic plan for a decade, according to several administrators. One explained:

...we understand that brick and mortar is not going to be the way that higher education in Massachusetts is going to move forward at least in the next 10 or 15 years...increases in our enrollment will be...based on our ability to access and capitalize upon our ability to grow in the online environment.

Online distance education has participated in the action plan money allocation process at Wilder too. The college realized early on that advising, tutoring, and other services that students need had to be available online. A dean recalled, "...some of the support services online; [we] put in for action plan money and you know, they were successful and they are part of the budget now. That is all data-driven." Interview participants agreed that the online distance education effort's goal of expansion, particularly getting all courses in particular programs online, aligns closely with the college's objective in its strategic plan to increase access and degree completion. "We are constantly expanding the courses that are available so that people will be able to take an entire degree program online," explained a dean. Student demand can also lead particular courses, such as a Nutrition class, to be put online, according to a faculty member. There was consensus

among the study participants that the decision to develop an online course is collective, involving the Dean of Distance Education, the relevant academic division dean and department chair, and the instructor.

A concern for quality is one of several factors that encourage the use of data in decision making in online distance education at Wilder. An administrator commented:

...because distance learning is under the gun, probably more scrutiny than all other programs. We have to make sure that...we are up to speed with what NEASC recommends...we have a good program...but there is always room for improvement and we always have to improve student success, student support services and so forth...So data drives a lot of things that [the college] will invest in but [the President] won't institutionalize unless we prove that what we are doing is successful.

Faculty and administrators agreed that those involved in online distance education engage in research by attending conferences, participating in consortiums like MCO, and studying what other colleges are doing. There is also an emphasis on gathering feedback from online students. An administrator, for example, recalled:

...we had one stroke of genius when we began all of this. We needed a place where we could grab the pulse of the people...we did one thing, and talk about unintended consequences: it worked marvelously. We put a little link on our web site that said if you are having any problems, email [us]. Now that link...has brought us every conceivable complaint, aggravation, idea, suggestion that you could possibly ever imagine and it has been a very useful way to drive information in terms of what we are doing right and what we are doing wrong.

This feedback then informs change. "I think we have learned rather to adapt as we moved forward...it is an emergent design...we are always looking to improve it. Student feedback is taken very seriously," confirmed an adjunct instructor.

The desire to improve student performance in online classes has driven data gathering and changes in practice. For example, the college tapped into students who had

succeeded in online classes to serve as virtual teaching assistants, providing advice on course and assignment design to instructors and time management and study tips to students. According to an administrator:

We had problems with completion rates...and we scratched our heads a lot about that. We came up with the idea of mentors...in areas where we were having particular difficulty; math for instance...Those were the most abysmal completion rates...We hired mentors. That probably did more than...anything else in terms of pumping up our completion rates in those courses. [In a course with] some rather abysmal completion rates...this mentor jumps in and they restructure the course, they put in some deadlines, they put in some clearer directions and off it went. To this day, [that course's] completion rate is always in the 90% and above.

An online professor confirmed that these embedded online tutors have helped students.

Wilder Community College's culture of innovation, however, presents some challenges to the use of data in decision making about online distance education. There was wide agreement that as a pioneer in the early days of online courses, there was often little data to consult. Said a professor who was there at the start, "...in the beginning there was not a whole lot of data around." Another veteran online faculty member agreed, "Unfortunately, we were one of the first ones to go at it in a real big way. We were actually almost the model for some places. That's the data problem we had. There wasn't any [data]." An administrator concurred, "We had no data to support it...We knew that other colleges were doing it; that was the data."

While those early days are over, Wilder's effort to stay on the cutting edge still means that it is often one of the first to try new things in online distance education. "It is really hard to find people who are using E-Book around...there is not a lot of data out there. I wish there were; that would help us make the right kind of decision..."

complained a professor about a current innovation. Similarly, now that many of its introductory classes are online, Wilder is facing a new decision that few other community colleges in the state have grappled with yet: whether to put more upper level courses online. An instructor explained, "...the rigor of those courses [is higher]...we are not sure if we are setting the students up for failure just because the degree of difficulty...We still do not know...We are sort of struggling with that decision..." Once a course goes online, the novelty of this form of education presents other data problems. According to an administrator:

...for online, not every student bothers to complete a course evaluation and I think that is a real problem in terms of determining what went right or what went wrong...In many cases, we do not have enough history when we offer a new course online, maybe one, two, or three semesters, and that is still not that much to compare it to a traditional teaching method...it being new...we are very limited...in the data. It makes your job more difficult.

The college's accreditation self-study notes the low rate of student participation in online course evaluations as well, and Wilder has pledged to develop a plan to improve this.

Wilder Community College has chosen not to let such uncertainty limit its online distance education effort, however. Arguing that other types of higher education institutions could better afford to wait for data, an administrator said, "...that is not the bailiwick of what we do. Our thing is agility and often times the data is a disservice." This administrator felt that gathering and analyzing data could take too long and hamper the rapid response to problems and requests that make community colleges successful. Wilder has tended to plunge ahead even when data are lacking, embracing experimentation and the learning it can provide. "One of the things about working [here]

is we have never been afraid to fail. We are not always right and we don't always have the best answer right out of the gate but we are willing to try...,” explained an administrator. A veteran faculty member agreed that the approach involved an open, questioning mindset, “...who has got an idea that we can sort of pilot to implement this? Try it out. Failure is a lesson in and of itself.” In this situation, decision making about online distance education is a mix of guesswork and informal data gathering and analysis, according to an administrator:

Very often, it is that innate sense of what would work. Conversations with students and conversations with faculty. The faculty is so close to their students so they have a good sense of what the students would like, what might work. I think a few years from now we will be in a better position to be more objective about these decisions. Right now, I think a lot of it is just a gut feeling.

The prominent role played by department chairs and faculty in online classes and programs also shapes the use of data in decision making. The college has allowed academic departments a great deal of freedom to chart their own course in online distance education. Said a faculty member:

I would say there is a wide range of variability from department to department and how they handle their online courses. There is really no standardization...I know that our...department is pretty stringent...we hold a high standard...we are very conservative in our approach whereas you may find a more liberal approach in another department. So they may or may not use the same type of data, or explore the data or research the data [in the same way] that our particular department does.

This freedom even applies to choice of technology for delivery of online courses. For example, a department chair explained:

Since the inception of this here at the college, we have gone through several learning management systems and individual departments like the computer department have not used the standard learning management

system as the rest of the college uses, so academic departments have that flexibility.

Although there is administrative oversight of such decisions, this professor argued that there was significant faith in the faculty's wisdom; "...the horse is out of the barn, so to speak, so if success is there; if it is not broke, they do not want to fix it."

This freedom for departments successfully coexists with a coherent distance education effort because faculty to a great degree understand and support the goals of online distance education and their linkages to the overall strategic plan of the college. Two instructors expressed similar support for student access and success via online classes:

I think one of the things that is happening at Wilder is that online education is becoming an integral part of the whole education experience ...It is very important and it is offering students an alternative that they wouldn't have if the online course structure were not available to them...it is a very nice alternative for students who cannot make the class all the time...The faculty is very flexible.

In our particular case [we have a] a philosophy of distance education which basically says that we want to offer courses to our students every semester, including the summer...we have not abandoned our student service philosophy...and I think that is an important aspect of all of this...We are looking out to what this next step in distance education is really going to look like, so the online advising which has begun, the online tutoring, online office hours...and again hoping to cut the overall costs, out of pocket costs for the students.

"I have many parents, mothers and fathers, who take the [online] courses because they cannot find childcare. Many people have difficult hours and the job market is not conducive to taking time off to get to classes," added another professor. This broad acceptance of online distance education goals, and in turn the college's strategic goals

and mission around serving students, has helped hold together a multifaceted effort engaged in by many different parties.

Nonetheless, some interview participants felt that the strong roles of the Dean of Distance Education, department chairs, and faculty in online distance education could lead to disagreement, particularly about which courses to offer in an online format. Said one professor,

You know, obviously the Dean [of Distance Education] is trying to promote as much in the way of online offerings as possible. Whereas the Chair probably reins in something that may not be [appropriate]...there is that...dichotomy that exists...it is just kind of a system of checks and balances.

In that atmosphere, factors besides data can become important. An online instructor commented,

I would say there is an element of politics that exists but I do not think many people are willing to talk about it...I think there are politics that exist that say we need this course to go forward, and if it is coming from someone higher, it is going to be online and you do not have a choice. If the data is actually contraindicating, then you should not be offering that course online. But if someone above you wants a course to be put online, then it is going to get there. I think the politics aspect is something that...I do not mean it is rampant, not rampant at all; [but] it does occur...

A Close Examination of Two Wilder Online Distance Education Decisions

Study participants at Wilder Community College described many different online distance education decisions concerning a myriad of issues during the interviews. Two decisions that were discussed more frequently, and in more depth, than others included finding a hosting solution for Wilder's technology infrastructure and putting most of a

popular Associate Degree program in health online. This section examines these decisions, which were made in the early 2000s and 2007, respectively.

Choosing a hosting solution for Wilder online distance education. Wilder Community College hosted the necessary technology infrastructure (computer servers, etc.) for the first few years of its online distance education effort. As the number of courses, faculty, and students involved rose, however, this began to tax the college's capabilities, according to several administrators. "Eventually, as we continued to grow, we found that the technological infrastructure and support at the college was not robust enough to maintain our growth in students services," remembered one. Another administrator explained that, "...we had hosted the software on a server here...We had ample amounts of downtime, causing all sorts of frustration." The ability of the information technology (IT) staff to keep up with demand was a particular issue, according to these administrators:

We didn't really have a lot of technical people, so the IT staff had to support the network and the server, but they really had not a lot of expertise in the needs for supporting [the existing learning management system]. They also had other servers to maintain in the entire college.

...because of political or territorial issues with the IT department, their responsibility for email, for student information system; with all of these priorities they had over on their side, unfortunately the hosting of our LMS...or anything else, sort of took a back seat.

The impact on online students soon became apparent. One of the administrators said:

...one significant event that happened was that the server went down on Thanksgiving break. That is the time when students do a lot of ramping-up and catching-up, and that caused a lot of problems. It actually went down for more than a day; it could have been more than that...

The other commented:

...that Thanksgiving weekend just stands out as a frozen moment in time
...when you are talking about instructional delivery, you can't risk
frustrating people, especially when they are at a distance and they don't
have a face to yell at.

The Dean of Distance Education had asked college officials to consider moving the hosting function to an organization external to Wilder before this, but they had decided against it. The online distance education staff did not have a way to keep precise statistics on the amount of time online students were without service, but gathered what data it could. "We didn't actually have a monitoring system for that," remembered an administrator, "but...it was easy to track because we were losing days." In the context of these simple data, the Thanksgiving outage proved to be a galvanizing event. An administrator explained:

...it ruined the weekend but it taught us a very valuable lesson and that was that for whatever reason the arrangement that was in place administratively here at the college was not conducive to supporting this sort of endeavor.

A dean recalled:

So based on this incident, we said we really can't continue to live like this...when the server went down, there was no real way for us to know except find out it went down...We also didn't have sufficient processes for backing-up...We were losing some significant time. We were really at the mercy of getting people to come in, you know, during the weekend, to get the server up and running again.

The result was a decision to consider other hosting options.

The Dean of Distance Education led the effort to consider the alternatives. The first was to continue to host at Wilder but with increased resources. This was favored by

the Wilder IT staff. “I think they still wanted to handle it,” recalled a dean. The past difficulties were a concern, however. An administrator explained:

As a result of that we began exploring the outsourcing of the hosting of the LMS...We talked to other vendors about it. We spoke to companies who did nothing but host server space and software for various and sundry companies and they were as expensive as hell.

Some options from other higher education organizations were more promising. An administrator explained, “Well, actually there were a couple of other alternatives. At that time we were involved with Mass Colleges Online. So there was a solution with Framingham State [College] willing to host another platform.” Or, Wilder could partner with a large state university system that was, “...one of the biggest providers of distance education in the country,” remembered the same administrator.

The online distance education staff at Wilder began to eliminate some of the alternatives based on available data, according to the interview participants who discussed this decision. The private vendors that specialized in hosting were too expensive for the college. Continuing to host locally was deemed impractical. An administrator explained that, “...at that time we had more robust staffing, but still not similar to...” the two higher education organizations and, “...we didn’t have the network redundancy and infrastructure...we definitely didn’t have the ability to maintain it 24/7...” that these other options had. The choice between the MCO/Framingham State and state university alternatives was a bit more challenging. According to an administrator, the former offered:

...more flexibility...there could have been a solution hosting with Blackboard...except for maintenance—scheduled maintenance—they are usually up 99% of the time. Joining Mass Colleges Online, there were

funds to set up for that consortium and Framingham was part of that. They have pretty robust technology infrastructure.

The university's system was also a "...robust and rather successful operation..."

said another administrator. A dean elaborated that,

They have a T1; if the T1s go down, it is easy for them to switch to something else. So they are supporting the whole state, basically. They are part of the statewide network...We also do video-conferencing; we did more of it back then. So we are able to get into the video-conferencing network through the state and it is basically free.

Other factors eventually convinced the Dean of Distance Education and the online staff that the university system was the best option. Besides its substantial technology infrastructure and staffing, an administrator pointed out that:

It looked like a good move for us to host with them because they were supporting the same LMS that we were using. Because we had a perpetual license—that from a cost effectiveness point of view...was also a good decision because it didn't cost us any more money on the LMS side... They had the most money, the most support...it seemed like a no-brainer.

Even more comforting, Wilder Community College had worked with the state university system on online distance education before. Another administrator explained:

...we had a history...[They] gave us all kinds of information...came down and did seminars for our faculty to get them up to speed in the online environment....offered us all sorts of help...at the time, [it] was sort of our insurance policy that getting into this, we were at least going to get into it successfully. We were not going to make all the mistakes they made; they made sure of that and they mentored us...[they] had a track record with us; we had one with them. We trusted them; they gave us a better price. Data was collected; the decision was easy.

While the choice thus seemed clear to the online distance education staff, they still needed to convince the senior decision makers at the college, including the President,

who had turned down the idea once before. The staff needed an agreement with the state university system that they could take to Wilder's leadership. A dean recalled:

[We] had a proposal to talk to [the university] about what it would cost to host with them...we started preliminary discussions and they gave us a pretty good deal...we negotiated the contract and so forth and then had to go to make a presentation to the Executive Staff...it was all approved and we have been going with it ever since.

Wilder has had few regrets about this decision. "Our downtime has been absolutely, positively minimal. There have been a few occasions, but nothing we cannot handle," said an administrator. This assessment is echoed in the college's accreditation self study, which notes that Wilder, "...moved from hosting its own LMS to utilizing [the state university's] hosting service, which is housed in a secure, well-staffed facility. [It] provides 24/7 coverage for online courses and has allowed [Wilder] to function with minimal downtime." This arrangement has meant changing the Wilder LMS whenever the university does, however, which has had costs. An administrator explained, "We went from paying nothing for the LMS to paying [almost \$40,000] a year now."

Those who participated in this decision believed that data—even if of a rather rudimentary nature—played a substantial role in it. In their presentation to the President and Executive Staff of Wilder Community College, the online distance education leaders emphasized the amount and impact of downtime on online students, citing the Thanksgiving weekend outage in particular. Discussing this last point, an administrator remembered:

That was critical and there may have been a few other times that we were down. Like we were talking about: we were down a day, or for six, seven, eight, or nine hours and so we had that documented.

The administrator contrasted these concrete examples with the earlier attempt to convince college leaders to move to external hosting with a more hypothetical argument based on warnings of potential problems. The difficulties caused by real outages combined with data on existing enrollment growth and projections for the future in online distance education were convincing. “Based on the growth [we were] showing back then...[we were] able to show that we were growing at a certain pace, you know, and we needed to support all these students,” said a dean.

Still, an administrator argued that this should be considered a rather early and unsophisticated example of a decision influenced by data:

I think it is now the norm that everything is based on data, for the most part now. Assessing what we are doing and basing it on the data. Back then we were just starting to do this. It was something that [the President] wanted to do, but maybe not ingrained in the whole culture of the college; it was starting to happen.

The online hosting decision occurred before the winning of the Achieving the Dream or Engaged Campus grants and the purchase of the data warehousing system. These, and other elements, helped to build both incentive and capacity for using data in decision making in the years afterward. Even without these elements, however, the success of the online hosting decision served as an example of the value of data collection and objective analysis in making decisions.

Putting a health program online. Wilder Community College decided in 2007 to put 80 percent of a health-related Associate degree program online, according to an administrator and a faculty member. All lecture components for this program will be online by early 2011, while clinical and lab credits will still be earned in the traditional

way on campus or at clinical sites. Multiple reasons for this decision emerged in the interviews, but there was not consensus about all of them. One faculty member, for instance, suggested that health care reform laws were expanding coverage and thus the need for more health workers led to the decision to put more of this program online, but another remarked, “It is a real quagmire out there. There are no jobs. It is not about jobs...” Whatever the employment situation, there was no disagreement about student demand for the program. “I have felt some frustration...for a long time because [this] program is busting at the seams. We are the least expensive college in the area and we have more hospitals in the area than any other in the country,” complained one administrator. A faculty member agreed:

It is sort of like “if you build it, they will come”...every community college in the state has a problem with way more qualified applicants than available spaces [for this type of health program]. This is one way to stretch the faculty a little wider...It is a civic response so it is a community desire to have more spaces...”

Wilder’s desire to be on the cutting edge was a third reason mentioned for this decision. Both an administrator and a faculty member expressed excitement about being the first college in the state to have such a health program mostly online. Finally, a professor suggested that this was simply one of multiple examples of Wilder’s strategic goal to place as many courses and programs online as possible.

The initial decision seemed to be the easiest step in the process. The academic dean who oversees the health programs at Wilder and the Dean of Distance Education mutually agreed that it would be a good idea to get as much of this particular program online as possible. These two deans and another administrator who worked on online

distance education then approached a faculty member who had already developed a few of the involved classes for online delivery. This professor, "...jumped at the opportunity...It got started by three administrators and one faculty, then [they] drummed up more faculty..." to participate, according to an instructor. Despite this early agreement, some tensions developed between these players. These tensions included the online distance education staff's frustration that the online health courses could not be developed more quickly. The demands of the outside agencies that regulate this health program, however, led the faculty to proceed deliberately to assure the courses would be approved, according to a faculty member. Nevertheless, these issues were worked out over time. "That is how the decisions have been made. It has been somewhat collaborative, a little bit conflicting, but we are all heading towards the same goal," was how a professor described the process.

Even more challenging was the issue of exactly how to put most of this program online given that it had not been done before in Massachusetts. There was recognition that research was needed, and a professor was given a sabbatical to explore existing or similar programs. An administrator explained:

No one else is doing it...we Googled the daylights out of [this health program] online but found a bunch of graduate programs, a bunch of four-year programs, but we did not find a single; wait a minute, we did find one...in Arizona...the woman was here; we paid her to come in.

A faculty member confirmed this account:

[The Professor] took a sabbatical for the research...was doing research, reading, going online...had an online instructor come in from [the Arizona community college]. They have a completely online classroom component out there...She came and gave us some pointers...

During the sabbatical, the professor tried to answer two research questions about students in the online program: "...how will [we] know they are learning? How do [we] assess their learning?" according to an instructor. The primary lesson that came out of studying other programs was the value of students' demonstration of their comprehension of the course learning outcomes through online discussion boards. This approach was incorporated into the courses being developed for the Wilder health program. An instructor explained:

I can actually measure their learning better through discussion board... how do they relate their clinical work in the hospital to the concepts we are discussing in the blog or the discussion questions?...When we are in the classroom, I do not have any way to measure their learning along the way; I only have a way to evaluate it afterwards... So, as far as data online, learning in my discussion boards, I am going to have way more data about learning than I have right now.

As a result, the faculty were trying to figure out how to incorporate similar opportunities for formative assessment in their traditional classroom sections.

Being able to demonstrate that students are learning required content is crucial to meeting outside accreditation and regulation standards in health programs. An instructor commented:

We have beautiful looking syllabi because if we do not, we are not staying open. We are so heavily regulated; we are a dean's dream come true: measureable learning outcomes in every course...in my online course, I have exactly the same measureable outcomes as we have in the classroom course and we take the exact same exams.

The need to meet these standards actually delayed the progress of the online program.

Scores on the licensure exams for this field dipped for Wilder students taking the traditional, classroom-based program just as the development of the online classes began,

according to a faculty member. Scrutiny by the external regulating boards typically intensifies in this situation and it was decided not to seek approval for an online version of the program until the scores improved. Although that has now happened and the approval process can be pursued, the delay caused frustration. An administrator complained, “It is a great deal of scrutiny and people saying you cannot do this and you cannot do that, and it is just another toothache.” Wilder faculty were pleased, therefore, to find evidence in the professor’s sabbatical research that the students in the online program at the Arizona community college were passing at high rates on the licensure exams. This suggested that the Wilder program could achieve similar results. A professor noted that, “...decisions about [curriculum] design are based on other peoples’ data; what they did to accumulate, to assess their students’ learning...”

Overall, however, the professor’s sabbatical research found very few similar programs to study. “I wish I had more examples. I couldn’t go anywhere and say, ‘I wonder how this works here?’ There were so few available,” remembered an instructor. Although Wilder was able to consult with the program at the Arizona community college, some other institutions were not willing to share data. “People are so stingy. People are secretive. People are not like, ‘Oh, here, let me show you what we are doing,’” complained a faculty member. This professor speculated that fear of drawing attention from external regulators and accreditors might explain some of the other colleges’ reticence to discuss their programs. Not every online program studied was of high quality, according to the professor that took the sabbatical:

I wish I had had more examples that I could have based it on. The examples that I saw were awful. Nobody was using any interactive stuff;

nobody was using any multimedia stuff. I feel like I learned a lot. I learned a lot about how *not* to do it. I was thinking, ‘I will be sure not to do that.’

With few similar health programs to examine, Wilder instructors turned to the expertise of non-health faculty teaching online at other Massachusetts community colleges as they designed their courses. The professor with the sabbatical said:

For example, when you go to MCO [the annual conference], you get to go onto all of the courses that are considered courses of distinction, see what they are doing. You get to hear them talk about technology they are using, the way they are using the discussion board, so in that respect that data that I get from my peers online is really influential.

The fragmentary nature of the available data highlighted the sense of being on the cutting edge for Wilder as it worked to put this health program online. “I wish I had more data. This is a new frontier...what I am working on is brand new stuff,” explained an instructor that was involved in the work. In this context, Wilder seemed to draw on its history of innovation, its willingness to take chances, but also its knack for reducing risk as much as possible. A faculty member explained:

I think we are taking a big risk. I don’t think we have a lot of data to go on...they put somebody with knowledge and technology knowledge behind it to try and ensure its success and they [supported a] sabbatical researching it...but the data isn’t hard data and it is a risk...an educated risk—a well-supported risk—not like they are throwing us out to the wolves, but it is a big risk and it is one we are willing to take. I am glad that Administration is willing to take that risk as well.

Wilder Community College’s development of this online health program is an example of a decision making process where the decision itself preceded data gathering and analysis, which focused on implementation issues. Unlike the online hosting decision, data were not a strong influence on the health decision itself. Instead, the desire

to meet student demand and pioneer a mostly online health program were stronger factors.

Conclusion: Three Colleges and Five Decisions

This chapter has described three different Massachusetts community colleges, their differing decision making and online distance education contexts, and five decisions they made about online distance education. In particular, it has explored the role that data played in decision making at the three institutions in general and in the five decisions in particular. This section briefly draws some conclusions about these colleges and their decisions and raises some additional questions.

Yankee, Zorn Valley, and Wilder Community Colleges exhibited differing contexts related to the role of data in decision making and to online distance education. Wilder showed both a strong commitment and substantial capacity to collect and analyze data to use in decision making. Zorn Valley, on the other hand, struggled with developing a culture of evidence, and its small size limited the resources available for research and analysis. Yankee fell somewhere in between the other two colleges in terms of its ability and willingness to use data in making decisions. It exhibited more internal disagreement about whether such an approach was possible or wise than Wilder or Zorn Valley. Yankee also occupied a middle ground compared to the other institutions in terms of the development of its online distance education effort. Wilder had the oldest, largest, and most ambitious online initiative, and seemed to welcome new challenges and risks. Zorn Valley had the newest and smallest online distance education effort, and was

just finding its footing in this arena. Yankee experienced substantial internal tension about online courses and programs, but its initiative gained more support as it developed.

Given these differing contexts, some of the five decision making processes described earlier in this chapter seem unsurprising. Wilder—with its inclination and capacity for research and analysis—gathered data about four alternative online hosting solutions and weighed them carefully before choosing the state university system. Amidst significant disagreement over the value of online distance education and who should control the online curriculum development process, Yankee’s decision about the online biology labs was contentious. Strongly held beliefs, perhaps predictably, trumped the role of data in that decision.

The other three decisions appear less obvious given the institutional context. After enduring a difficult, bruising battle over the online biology labs, Yankee then developed a highly data based process for deciding what new courses to put online. Somehow, it overcame the internal disagreements that characterized its early online distance education effort to find greater consensus. Wilder chose to pursue the online health program with little research or analysis despite its commitment to linear strategic planning and data based decision making. Finally, Zorn Valley collected an extraordinary amount of data and analyzed it objectively in picking a new learning management system even though it appeared to have little capacity or expertise to do so.

Further analysis of these decisions is necessary to better understand both the predictable and surprising decision making behavior presented in this chapter. Chapter 5 provides this analysis as it addresses this study’s four research questions.

CHAPTER 5

ANALYSIS OF DATA

This chapter provides an analysis of the data presented in Chapter 4 about the five online distance education decisions made at the three case study institutions. The sections in this chapter address each of the research questions explored in this study. The opening section responds to the study's first two research questions, which focus on how and to what extent community college academic leaders use data in making decisions regarding online distance education, the types of data they cite as influential, and the strength of that influence on their decision making. The next section explores data regarding the third research question, which concentrates on the emergent nature of online distance education and the influence that has on data availability and usage. Finally, this chapter presents an analysis related to the fourth research question, which focuses on how different conditions of data availability and quality are related to the decision making processes that community college academic leaders use. In this final section, the five decisions are explored through the lens of the four decision making theories that were described in Chapter 2: rational choice, incremental, political, and constructivist. In addition, the context of the three institutions and their influence on the five decision making processes are examined using Daft and Weick's (1984) model of

organizations as interpretation systems. This model suggests an organization's context strongly affects how it gathers information, interprets it, learns from it, and ultimately makes decisions.

The Role of Data in Decisions Regarding Online Distance Education

This section examines the role that data played in the five online distance education decisions at three community colleges. In doing so, this section addresses the first two research questions in this study:

- How and to what extent do community college academic leaders use data when making decisions about online distance education?
- What data about online distance education do community college academic leaders cite as influences on their decision making and how strong are those influences?

This section first explores the types of data gathered in the five decisions, then examines the extent of data collection, before turning to a discussion of how the data were used in the decision making process, and ultimately how influential they were.

Types of Data Collected

Data used in these five online distance education decisions can be categorized in two ways. First, we can note the subject about which the data were collected. Then we can identify whether the data were quantitative or qualitative.

Table 3
Types of Data Collected for the Five Decisions
(qualitative data shown in *italics*)

<u>Types of Data:</u> Decision:	Academic	Financial	Personnel	Student	Technical/ Facilities
Yankee Biology Lab	<i>-Review of online course materials</i> <i>-Online lab webinar</i>			<i>-Course completion</i> <i>-Follow-on course grades</i> <i>-Anecdotal concerns about online student performance</i>	
Yankee Online Course Development	<i>-Program impact</i> <i>-Program size</i> <i>-Course wish list</i> <i>-Required/ Elective course</i> <i>-Prerequisite course</i> <i>-Developmental course</i> <i>-Competing courses</i>	<i>-Cost of stipends</i>	<i>-Training/ support capacity for new online courses</i> <i>-Faculty skill level</i>	<i>-Enrollment estimates</i> <i>-Course completion</i>	<i>-College space needs</i> <i>-Technical needs of proposed new courses</i>
Zorn Valley LMS		<i>-Cost of LMS options</i>	<i>-Faculty feedback from pilot</i> <i>-Administrative support needs for LMS options</i> <i>-Training needs</i>	<i>-Student pilot feedback</i>	<i>-Old LMS complaints</i> <i>-Capabilities of LMS options</i> <i>-Migration elements</i> <i>-LMS functionalities</i> <i>-Vendor references</i>
Wilder Hosting		<i>-Cost of hosting options</i>	<i>-Support needs for hosting</i>	<i>-Enrollment growth</i>	<i>-System downtime</i> <i>-System capabilities</i>
Wilder Online Health Program	<i>-Use of discussion boards</i>			<i>-Enrollment demand</i> <i>-Board scores</i> <i>-Outcomes assessment</i> <i>-Student feedback on courses</i> <i>-Career placement</i>	

The subjects about which data were gathered can be divided into five broad categories: academic, financial, personnel, student, and technical/facilities. Table 3 shows these categories as columns, with the five decisions constituting the rows. The data collected for a decision in each category are listed in the individual cells. Data about students were collected in all five decisions. Within this category, existing statistics or projections of student enrollment in online classes or programs were gathered in Yankee's online course development and Wilder's online health program and hosting decisions. Data on course completion rates were collected in both of the Yankee Community College decisions. Zorn Valley and Wilder also gathered feedback from students about their online courses in both the learning management system and the online health program decisions. Other types of data about students were collected in just one decision. For instance, faculty perceptions of student learning played a role in Yankee's online biology lab decision and employment prospects for graduates were considered in Wilder's online health decision.

Each of the other four categories of data was present in three of the five decisions. For instance, financial data were gathered for three decisions: the cost of stipends for faculty was a factor in Yankee's online course development process, Zorn Valley examined the price of learning management system (LMS) options, and Wilder considered the costs of various online hosting solutions. Financial data were not collected for the Yankee biology lab or the Wilder online health program decisions, however.

Data about college personnel were also gathered in three of the decisions. For example, Zorn Valley and Wilder both looked at the administrative support needs for new technology (LMS and hosting, respectively). Faculty training requirements were examined by Yankee when deciding which online courses to develop and by Zorn Valley for its LMS decision.

Similarly, data from the technical/facilities category were collected in three decisions. Problems with the existing LMS at Zorn Valley and the hosting system at Wilder were documented by decision makers at these institutions. Both colleges also gathered technical data about the capabilities of potential replacements for these systems.

Although the academic category also played a role in three decisions, it contained a wider variety of data. In fact, data on no single academic issue were collected in more than one of these decisions. Yankee's decision on the online biology labs, for example, involved a review of course materials and of online resources generally available for a laboratory curriculum. For the later decision regarding new online class development, Yankee gathered extensive data on the proposed course—its status as a required/elective, developmental, or prerequisite course—and programs it might influence. Wilder's research on putting a health program online focused on specific pedagogical approaches, such as the use of discussion boards.

In summary, the three colleges collected an array of data across the five decisions, but only student data were always present. The other categories were more likely to play a role in specific types of decisions. For instance, financial, personnel, and technical/

facilities data were present in decisions related to the selection and adoption of technology systems (Zorn Valley's LMS and Wilder's hosting solution), where academic data were not a factor. The latter category, not surprisingly, played a role in decisions about the development of specific academic programs and courses, such as Yankee's biology labs and new online course development, as well as Wilder's online health program. Although it is possible that each kind of data might be available and relevant to any online distance education decision, the pattern of collection in this study suggests that often some types of data are likely to be more important than others. For example, there were almost certainly financial implications to Yankee's online biology lab decision, but they apparently paled in significance for decision makers compared to the consequences for academic issues and students.

A second way to categorize the data collected in these decisions is quantitative versus qualitative. Table 3 shows the former in regular type and the latter in italics; roughly half of the entries in the table are quantitative and half qualitative. Among the different categories of data, however, this distribution did not tend to be equal. Some categories consisted mostly of quantitative data. All of the financial data were quantitative, for instance, with Yankee, Zorn Valley, and Wilder all considering the costs of these decisions in terms of dollars. The technical/facilities category was also more quantitative than qualitative. Zorn Valley and Wilder both measured problems with their existing technology with numbers, including tallies of complaints about the Zorn Valley LMS and number of downtime hours at Wilder. Decision makers at Zorn Valley and Wilder also examined quantitative data about the technical capabilities of replacement

systems, including survey feedback about satisfaction with particular learning management systems and hosting system uptime statistics. Some qualitative data, however, were also gathered in the technical/facilities category. For instance, Zorn Valley gathered impressions from other colleges about their experiences with different LMS options.

Some of the other categories tended to feature more qualitative data. All three colleges gathered qualitative data about personnel needs, for example. Faculty experience and skills were a component of Yankee's decision making process about new online course development, while Zorn Valley and Wilder examined the qualifications and experience of administrative personnel needed to support a new LMS and online hosting solution, respectively. Yankee's data on its capacity to train faculty and provide support for new online courses, however, did contain quantitative estimates of available personnel resources.

Similarly, the academic category of data was mainly qualitative. For example, Yankee reviewed curricular components of its online biology labs and potential new online courses to be developed—such as whether a proposed course was required or an elective and whether it was a prerequisite course or not—while Wilder examined the pedagogies used in other colleges' online health programs to decide how to implement its own. On the other hand, Yankee also included some quantitative academic data in deciding which online courses to develop, such as the impact a new class would have on the percentage of courses available online in particular academic programs.

The student category was the most evenly balanced between quantitative and qualitative data. Quantitative student data gathered for multiple decisions included course completion rates and enrollment records/estimates. Qualitative student feedback played a role in Zorn Valley's LMS and Wilder's online health program decisions, and instructor perceptions of student performance in online classes were considered in both Yankee's biology lab decision and Wilder's health program implementation.

All five of the online distance education decisions involved collection of both quantitative and qualitative data. Wilder's choice of a hosting solution relied the most on quantitative data, including costs, system uptime percentages, and enrollment growth estimates. Wilder's online health program and Yankee's biology lab decisions involved more qualitative data. Student and faculty reactions to particular online courses and information about the courses themselves—pedagogies and materials used, for instance—are examples of such data. Yankee's online course development process and Zorn Valley's LMS decision involved a more even balance of quantitative and qualitative data. Decision makers in both cases examined financial data, but also qualitative information about the experience and skill levels of college employees, when making decisions. The results of this study suggest that both quantitative and qualitative data are likely to be useful in most online distance education decisions, but whether one is more helpful than another or roughly equal in importance appears to depend on the decision itself.

Extent of Data Collection

This subsection considers the extent of data gathered in the five online distance education decisions and then explores factors that may have influenced the scope of data

collection. Table 3 shows that the number of categories in which data were collected in the five decisions varied widely. Yankee Community College's online course development process gathered data in all five categories. The Zorn Valley LMS and Wilder online hosting decisions each involved data collection in four categories—every one but academic data. The Yankee biology lab and Wilder online health program decisions, on the other hand, only used data in two of the five categories: academic and student issues.

A tally of each of the individual issues about which data were collected in the cells of Table 3 also shows a substantial disparity among the five decisions. The Yankee online course development process gathered data on fourteen distinct issues. The Zorn Valley LMS decision collected data about ten distinct issues. One faculty member called it a, “really, really thorough investigation,” while another recalled, “we had literally reams of data on all these LMS’s.” The 70-page final report produced by this decision process and reviewed for this study contained an immense amount of data. In contrast, each of the other three decisions involved data collection for only five or six distinct issues. Curriculum components of, and measures of student performance in, the online biology labs were the only data gathered by Yankee in that decision making process. Wilder examined its own system downtime and enrollment growth, and the cost, capabilities, and support needs of several alternatives for its online hosting decision. Wilder's research for the online health program decision focused on implementation issues, but found only a few similar programs to study.

One potential explanation for the disparity in the extent of data collected across the five decisions is the varying institutional attitudes toward data collection and decision making described in Chapter 4. For instance, Wilder’s approach to strategic planning and participation in initiatives such as the Lumina Foundation’s Achieving the Dream project strongly encouraged the use of data to make decisions. A Wilder administrator explained, “the whole philosophy [in Achieving the Dream] is...your decisions are based on data.” A faculty member agreed and stated that, “I think it would be impossible to propose anything without having some form of data.” Zorn Valley, on the other hand, was cited by its accrediting agency for not using data enough in decision making. A Zorn Valley administrator remarked, “the degree to which data is used in terms of making decisions, whether it is budgetary or programmatic: we are not very systematic about it.” Yankee Community College’s decision making culture—administrators argued that data played a big role, while faculty tended to disagree—fell somewhere between that of Wilder and Zorn Valley (see Table 2).

The capacity to use data in decision making varied in a similar way across the three institutions. Wilder, with its large institutional research staff and data warehousing system, again appeared best-positioned to gather and analyze data. “Whenever we are proposing to develop a new course or new program...we will go to IR,” explained a Wilder dean. Zorn Valley’s small size, in contrast, may have limited its ability to collect and interpret data. As a Zorn Valley dean explained, “we do not have the IR office and the staff to really do a lot of thoughtful data analysis.” Yankee’s capacity to support data collection and analysis appeared smaller than Wilder’s but larger than Zorn Valley’s.

While one Yankee administrator said that, “we pay careful attention to data,” another worried about support from the institutional research staff: “It’s not that they don’t want to do it; it is not a priority to do it.”

The differences in attitudes toward data and in institutional research capacity at the three colleges, however, do not necessarily explain the varying extent of data collection in the five online distance education decisions. All three institutions, for instance, made a decision that drew on at least four of the five data categories. Zorn Valley gathered data on twice as many distinct issues in its LMS decision as Wilder did in its hosting decision making process, despite having less institutional commitment to and fewer resources for data collection. Although these five decisions represent a small subset of all the decisions made at these institutions, they suggest that an organizational inclination and capacity for data based decision making do not guarantee all decisions will involve large amounts of data gathering and that less institutional commitment and capacity do not prevent extensive data collection in certain decisions. Other factors must be involved.

An analysis of these five decisions suggests that decisions with a larger and wider potential impact on the campus are more likely to involve extensive data collection. Decisions about how many and which new online courses to develop at Yankee Community College, for example, have implications for finances (the cost of faculty stipends), technology (the hardware and software the courses require), space (the number of classrooms to be freed up), personnel (the training and system support required), students (the new courses available), and academic issues (the percentage of particular

programs now available online). This wide potential impact encouraged extensive collection of data to avoid a decision that might hurt or anger multiple constituencies. As an administrator at Yankee put it, “I think that we are going to gather a little bit more information when it affects more people.” Similarly both the LMS decision at Zorn Valley and the hosting decision at Wilder had major implications for the college budget, technology and personnel needs, and the student experience. The Yankee biology lab and Wilder online health program decisions, on the other hand, affected a narrower set of constituencies. Decisions about a single course or program will influence the faculty and students involved, but will not necessarily have a wider impact on costs, technical needs, space, or personnel requirements. Viewed from this perspective, the sparser data collection for these two decisions is not surprising.

The number of potential alternatives that decision makers consider also appeared to influence the extent of data collection. At Yankee, the committee making decisions about new online course development considered between eight and 22 proposals in each of three recent semesters. Multiplying the number of proposals by the extensive number of questions asked on the online course development application form yielded a great deal of data for the committee to consider. Similarly, Zorn Valley cast a wide net in considering options for a new LMS. “Everything was looked at. Six learning management systems were identified...” at the start of the process, according to a dean. Again, gathering data on cost, functionality, technical capabilities, vendor reliability, training requirements, support needs, and faculty and student feedback on six different systems led to an immense data collection effort. In contrast, the Yankee biology lab

decision involved only two alternatives: keeping the classes online or not. Therefore, data collection was limited to the characteristics of just two courses.

The novelty of a particular activity may also have influenced the extent of data available for collection. An administrator at Yankee, for example, believed that the full-time biology faculty might have become more open to online lab courses if more examples of such classes at other colleges could have been provided to them. But supporters of this course were not able to locate very many models, because online lab courses in biology were relatively new at the time the decision was made. The Wilder research sabbatical ran into the same problem in trying to find similar online health programs to study. Only one comparable program was located in the entire country after an extensive search. Although study participants noted that consultation with that institution's program was valuable, it produced only limited data.

A single event, if significant enough, could also reduce the perceived need for extensive data collection. The Thanksgiving online server shutdown at Wilder convinced officials there that they needed a new hosting solution, for instance. Referring to the importance of this event, one administrator explained, "That was critical...It actually went down for more than a day...based on this incident, we said we really can't continue to live like this." Unhappiness with the downtime had reached a point where precise, detailed data were no longer considered necessary. In this situation, limited, crude data about a big problem were enough to affect decisions.

How the Data Were Used

This subsection explores three main purposes for which data were used in the five decision making processes: to detect a problem or issue that was serious enough to require examination, to compare alternatives to address the problem or issue, or to explore how to implement the decision.

In four of the five decisions, data were used to detect a problem. For instance, the well-documented difficulties with Zorn Valley's old learning management system and the large volume of faculty and student complaints about it indicated that a decision regarding a new system might be needed. Similarly, the number of downtime hours caused by the Thanksgiving server failure signaled that Wilder's technical capabilities and support capacity for hosting its own online courses were suspect. Moreover, data about online enrollment growth suggested that this capacity at Wilder would come under increasing strain in the future and that a more robust alternative was needed. Data on unmet demand for spaces in the health program at Wilder sparked interest in an online version that could accommodate more students. Finally, anecdotal concerns about students' performance in science classes after they had taken the online biology labs at Yankee spurred full-time faculty opposition to the online labs.

These data were not only useful in helping front-line practitioners detect problems, but also sometimes helped convince senior administrators that a decision was required to address the issue. A staff member directly involved with the LMS at Zorn Valley described the importance of this function of data:

...you have to educate your clients and the people you are working with before you actually do something...I learned when I first started you can

not give the administration information now and expect a decision now. You have to do it kind of like an onion: roll it out, say, 'this is a problem'... You need to get the faculty to say, 'this is a problem,'...not just me; they need to get it from other people besides me.

Both administrators and instructors interviewed at Zorn Valley indicated that the extent of faculty concern helped convince senior decision makers that a new LMS was needed. Similarly, after rejecting a proposal to explore alternative hosting solutions the year before, senior officials at Wilder changed their minds when presented with the consequences of the Thanksgiving server failure coupled with the likely further strain that rapidly increasing online enrollment would put on the system, according to a Wilder administrator.

Although Yankee's online course development decision making process did not result from detection of a problem, the college did use data to determine constraints to and set parameters on the number of new courses that could be developed at a time.

According to a senior administrator:

...we have a couple of very broad measures we use as general guidelines...enrollments, which have steadily increased, and course completion rates, which this past semester have actually hit parity with on-site courses. So as long as we are hitting parity, and students are signing up for them, I feel like it's a very low risk move to keep recruiting faculty to add more.

Two instructors argued that data about the declining availability of classroom space amidst recent overall enrollment growth also encouraged more online course development at Yankee. A director, on the other hand, pointed out that finite financial resources for faculty stipends to develop the new courses and the capacity of the technical

staff to support them (to deal with student log-in problems and other issues) tended to limit the number of online classes that could be added at any one time.

Four of the five decision making processes featured the second purpose for data: to compare alternatives. Yankee gathered data on course completion rates and grades in science courses taken after both online and traditional biology labs to see if one approach led to better student performance than the other. To decide which new online courses to develop, Yankee compared their technical requirements, the skills of the proposing instructors, and projected student enrollment. Zorn Valley compared data on costs, functionalities, technical capabilities, migration issues, support and training requirements, and faculty and student attitudes toward multiple learning management systems to see which would service its needs best. Similarly, Wilder compared one internal and several external alternatives for its hosting needs and examined their costs, technical capabilities, and the support services each required.

Wilder's online health program decision making process did not use data to choose among alternatives. Instead the college gathered and analyzed data for a third purpose: exploring how to implement the decision. The faculty sabbatical focused not on whether to put this health program online, but how to do so. This research sought similar online programs around the country and examined their student learning outcomes for insights regarding how to design the Wilder curriculum. For instance, the instructor performing the research found that online discussion boards were a key tool for measuring student learning and Wilder built them into the new online health courses.

In contrast, implementation was not the focus of data collection and analysis in the other four decision making processes. In each of those situations, the decision itself—the choice among new technologies to deploy (for hosting at Wilder and as an LMS at Zorn Valley), new courses to develop (at Yankee), or whether to discontinue online labs (at Yankee)—was apparently significant or controversial enough to become the focus of the data. The decision to put the health program online at Wilder, on the other hand, was not controversial and so the main data collection effort could address implementation questions rather than the question of whether or what to implement.

In summary, the three community colleges used data to detect problems, compare alternatives, and explore how to implement decisions. The first two of these purposes were far more common than the third in the five online decisions in this study. Although a decision does not have to spring from the detection of a problem and does not have to revolve around competing alternatives, these results suggest more often than not they will in online distance education. Implementation issues, which can help determine whether a decision is effective, may well deserve more research and analysis than they received in most of the decisions in this study. Significant problems or controversy over alternatives, however, tended to overshadow implementation concerns. This focus on problems and the decisions that they may spur raises the question of how much influence the data had on the decisions themselves.

The Influence of Data on the Five Decisions

The influence of data on the five decisions varied widely. This subsection considers each decision in turn, and then addresses some of the factors that may have promoted or limited the role of data in these decision making processes.

Data seemed to play the strongest role in Yankee Community College's process for new online course development. The interviews and document review provided extensive and consistent evidence that data gathered for this process had a major influence on decisions. A member of the Distance Education Committee noted that the use of data, "is almost the only way we can make the decision appropriately and feel comfortable." Some of the faculty interviewed argued that data about certain factors weighed more heavily than others in the decisions. "It is really all about space. If we can eliminate one section a week and then do online work instead. You know those decisions are being made regardless of what students may want," said one. Yet, the proposal summary spreadsheet from a recent semester indicated that more courses were rejected than accepted, demonstrating that other factors such as costs, instructor readiness, and the strength of the proposal itself also influenced decisions, not just the need to save space. Most important, whether faculty were correct that data about space were the driving factor or not, there was broad agreement among those interviewed that it was data—about one issue or another—that played the dominant role in influencing the decision.

Data also had a major influence on Zorn Valley's LMS decision, although some other factors also played a role. Faculty, administrators, and staff agreed that data about issues such as cost were important factors in choosing an open source LMS over other

available options. According to a dean, the decision was, “certainly accomplished with a lot of data...the administration here...are pretty methodical about important things and if this had been some sort of intuitive process that would have hurt it quite a bit.” Another administrator agreed: “I think in this particular case there was extraordinary use of data and analysis.” A staff member argued that the carefully gathered faculty and student feedback data from the piloting of the various systems helped to sway the Academic and Administration and Finance Vice Presidents. Nevertheless, multiple interview participants cited political factors that also influenced the decision. One administrator remarked that the open source LMS choice was, “sold to administration,” and argued that the unanimity of the recommendation from the subcommittee that investigated the options was important to senior decision makers. Another mentioned the “strategic” use of the IT Director’s support for the subcommittee’s choice to calm the concerns the President had about relying on an open source solution. Thus it was not just data, but who was presenting the data, that were important in shaping the decision.

Similarly, Wilder’s decision to move to a new hosting solution for its online distance education effort appeared to be strongly but not completely influenced by data. A dean involved in the decision argued that data about cost, system capabilities, and the required support pointed to the state university system instead of the alternatives:

It looked like a good move for us to host with them because they were supporting the same LMS that we were using. Because we had a perpetual license—that from a cost-effectiveness point of view...was also a good decision because it didn’t cost us any more money on the LMS side...at that time we had more robust staffing, but still not similar to the [university system], as far as staffing and the infrastructure, redundancy,

and all the services that go with it. That's how we came to the decision to go with [the state university system].

Another administrator confirmed that cost was important and that the other responsibilities of Wilder's IT Department discouraged decision-makers from staying with internal hosting: "their responsibility for email, for student information system...with all of these priorities over on their side, unfortunately the hosting of our LMS...sort of took a back seat." This same administrator, however, indicated that the past collaboration between Wilder's online distance education effort and the university system also played a role in the decision. The comfort level provided by this partnership was a factor in choosing the university system, not just data about costs and technical capabilities.

Wilder's decision to put the health program mostly online used some data, but other factors were at least as influential. Administrators and faculty agreed that data about student demand for the program encouraged the decision. "If you are looking at the decision that was made to offer an online [health program], then obviously, that was in response to the great demand from students," said a dean. On the other hand, a professor argued that the decision ignored data that suggested there were few jobs waiting for graduates of such a program. Moreover, the desire to be first in the state with this program delivered online was described as a major factor in the decision. "I don't think your President wants to be seen as the head of an institution that is pulling up the rear," remarked an administrator. A faculty member's research sabbatical was used to gather data on other programs, and these data influenced the design of the courses at Wilder. "My decisions about design are based on other peoples' data: what they did to

accumulate, to assess their students' learning," explained the instructor who took the sabbatical. This professor admitted that such data were sparse, however, and that much guesswork was involved in implementation at Wilder. She summed up the college's approach to this decision as, "taking a big risk. I don't think we have a lot of data to go on."

Data appeared to have the least influence over Yankee Community College's decision to end its online biology labs. An administrator argued that the college generally tried to use data, but not in this decision. The minutes from the Senate meeting where the decision was made mention no discussion of the online student performance data that were gathered to rebut claims that the labs did not work well. "I feel it was not appropriately represented," complained an administrator. Instead, the adamant opposition of the full-time biology faculty to students taking anything but a "hands-on" lab appeared to be the dominant factor. "Data didn't necessarily play a part nor would have data assisted in this case...I think the feeling is that everybody has to go through a lab course on-site...you know, they feel people should touch a microscope," explained an administrator. Multiple interview participants described the decision making as based on personal beliefs and political maneuvering. Said one senior administrator, "the Biology Department has nullified [the online labs] for reasons of its own...I don't think it is right that one department can veto an entire degree program." The Senate meeting minutes make it clear that an attempt to study the issue more closely was rejected and that ultimately the labs were taken offline by a majority vote.

In summary, data appeared to have the strongest influence on Yankee's new online course development decision making process, significant but not exclusive influence on Zorn Valley's LMS and Wilder's hosting decisions, and the least influence on Wilder's online health program and Yankee's biology lab decisions. Moreover, in considering the first two research questions in this study, it is clear that all of the elements of the decision making process discussed in this section—types of data collected, the extent of data gathering, how the data were used, and how much data influenced decisions—are not discrete dimensions but instead overlap with each other. Yankee, Zorn Valley, and Wilder gathered large volumes and similar types of data across a broad set of categories, used them to detect problems and compare alternatives, and made them influential in their decisions about new courses to put online, a new LMS, and a new hosting solution respectively, for instance. Yankee and Wilder, on the other hand, gathered less data in a narrower set of categories, compared fewer alternatives, and used the data much less in their respective decisions on the online biology labs and online health program. Data were less important at every stage of the process in these decisions.

The analysis presented so far in this section suggests some possible reasons for this disparity in approaches. Data appeared to be most influential when the decisions would have deep and wide impact. As noted above, the Yankee new online course development process, the Zorn Valley LMS, and Wilder hosting decisions all had substantial financial, technical/facilities, personnel, and student enrollment and services implications that would affect many constituencies around campus. In contrast, Yankee's online biology lab and Wilder's online health program decisions had a narrower impact

(on academic and student learning and enrollment issues) and affected fewer people. It could be argued that the removal of the online biology labs actually influenced many people, because this decision made it impossible for students to complete entire programs online at Yankee. However, neither the interview participants nor the documents reviewed indicate that this implication was discussed during the decision making process. This finding suggests that those who were involved in the process were either unaware of this factor or thought it less important than others. Whatever the case, it did not lead to data gathering about the impact of the decision on student program completion.

The influence of data also appeared stronger when there was a need to decide among many alternatives. Yankee was considering at least eight new online course proposals per semester, Zorn Valley examined six learning management systems, and Wilder looked at four different hosting options. Collecting and considering extensive data were helpful in making these complex decisions. In contrast, there were just two alternatives for the Yankee biology labs and Wilder health program: offer them online or not. Such “yes/no” decisions—as opposed to processes that are selecting among many options—may be more likely to polarize those involved in the decision making process and introduce other, non-data, elements into it. Although this did not happen with Wilder’s online health program, it certainly describes Yankee’s online biology lab decision process. Fundamental beliefs about how students should learn science appeared to trump data that suggested that outcomes for students in online labs were comparable to those for hands-on labs.

A final factor that may have played a role was the degree of emergence of the situations involved in the decision making process. This was most clear at Wilder as it contemplated launching one of the first online versions of its health program in the country. On this cutting edge, there simply were not many other examples to study and thus little data to gather. In such a situation, decisions may be more likely to be based on instinct or other factors such as prestige and a desire for recognition. This chapter now turns to the issue of the emergent nature of online distance education and its impact on community college decision making.

The Impact of the Emergent Nature of Online Distance Education

The literature review in Chapter 2 suggested that online distance education's emergent nature could limit the availability of relevant data to use in decision making (Conole et al., 2006; Owen & Demb, 2004; Sachs, 2004). A relatively new phenomenon characterized by rapid growth and change is less likely to provide historical data or experience to draw upon than other sectors of higher education in making decisions. This section addresses the study's third research question: How does the emergent nature of online distance education influence the availability of data and the ways in which community college academic leaders use data to make decisions? This analysis will begin by considering the role that emergent factors played in the five decisions described in Chapter 4. This section will then explore other observations made by the interview participants about the emergent nature of online distance education—including the availability of data from student evaluations of online courses and the scrutiny applied to

online distance education—before drawing conclusions about its impact on decision making.

Online distance education's emergent nature influenced three of the decisions in which the case study institutions were dealing with new or fast changing situations. Wilder's decision to offer a health program mostly online, for example, featured little debate or research about the decision itself, although the high student demand for seats in the program was well established. The fact that this online program would put Wilder on the cutting edge seemed itself to encourage the decision. In speaking of the desire to be a pioneer in this area, a faculty member said, "we will be the first program in Massachusetts to go online and we are very excited about that...the Dean wants to be the first, of course...they all want to be the first." As noted earlier, data collection focused on how to implement this decision (not whether to implement it), and the emergent nature of this online program limited the available data. Few other programs were found in the research and only one other program was developed enough to have student outcomes statistics. "That data was good but the other ones...were all so new, they did not have the data...There were so few available...I wish I had had more examples that I could have based it on," said the faculty member who researched other programs during a sabbatical. Moreover, some of the instructors at these programs were not willing to share data. "People are so stingy. People are secretive...I don't think we have a lot of data to go on," complained this professor.

Emergent features of online distance education also played an important, if less dominant, role in the Zorn Valley LMS decision. As discussed earlier, large amounts of

data were collected in this decision making process and they had a strong influence on the final decision. Interviews and documents indicated that the data pointed toward the open source LMS as the best choice for Zorn Valley. Nevertheless, the President was concerned about this choice because of unpredictable facets of online distance education. For instance, even if this was the best LMS at that moment, what if the technology changed? An administrator commented:

...one of the things we had to get the President past is that once we made this decision, it was not a long term commitment to a single learning management system; that three years from now we could be looking at it again and migrating to something else. This is just the nature of this technology at the stage of its evolution.

Moreover, rapid changes in the LMS vendor marketplace also concerned the President.

“That was a big decision to go with open source as opposed to something mainstream and have someone we could turn to if we had problems...the President knew enough to know that he wanted the biggest player [in the market],” recalled an administrator. Another administrator expressed surprise that the college might be, “willing to go out on a limb and go with an open source system.”

The emergent nature of online distance education appeared to limit the influence of data on Yankee Community College’s decision to take biology lab courses offline.

“Unfortunately, there aren’t that many online lab courses...so I didn’t have anything to point to and say, ‘look at this college’...if there had been more online biology courses that I could have shown at colleges similar to this college,” it might have helped to advocate for the effectiveness of Yankee’s classes, argued an administrator. On the other hand, this same administrator felt that ultimately the full-time biology faculty at Yankee

were not going to change their minds. Certainly, the course completion data showing that students in the online lab were succeeding in follow-on classes did not sway their views. In fact, it is possible that the very novelty of the online lab itself spurred the opposition of the full-time biology faculty. They felt that this approach to teaching lab skills was unproven. In this case, the emergent nature of online distance education may have limited both the availability of data and faculty willingness to consider the data that could be found.

Although Yankee shied away from the novelty of online distance education in the biology lab decision, Wilder and Zorn Valley chose to embrace it. The paucity of available data did not stop Wilder from pursuing the online health program. Innovation was described as a key part of the Wilder culture, which values intuition, risk taking, and an acceptance of the possibility of failure. One administrator remarked, “we have embraced innovation at every turn. Some innovations meeting with success, others have not.” A faculty member agreed: “I think we have all sort of seen this new frontier of education...Will mistakes be made? Definitely.” Yet decision makers at Wilder considered risks carefully and specifically tried to mitigate those involved in the health program decision. Institution leaders chose a professor with experience teaching online health courses to lead the development of the program, and provided her a sabbatical to learn as much as possible.

Zorn Valley addressed the uncertainty involved in using an open source learning management system in a similar way. First, decision makers acknowledged the risk. An administrator commented that, “we’ve sort of walked in, I hope with our eyes open, that

it is an evolving process and it is an evolving technology, and we may find ourselves back with [our previous vendor] in three to four years.” Second, decision makers worked to reduce the risk by gathering as much data as possible about the different learning management systems and about other colleges’ experiences with them. They also looked to the expertise of the college’s IT Department to make a judgment on the support issues surrounding an open source LMS. A dean explained: “our IT Department felt comfortable with the adoption...You know that risk-taking piece, especially schools with more established programs wouldn’t necessarily do.” This administrator saw the risk as more acceptable for a relatively small and new online distance education effort like Zorn Valley’s because fewer courses and faculty would be affected than at a large program if the open source LMS did not work well.

In the other two decisions, emergent characteristics of online distance education did not limit the role of data in decision making. Data gathering was extensive in Yankee’s new online course development process. It is true that these proposed courses would be new, but the newness appeared to spur data collection about them. A member of the committee explained, “I think we look more carefully at data in the online courses just because we are wondering, ‘does this work?’ We are more intense about the way we look at it.” In other words, Yankee leaders subjected the proposed online courses to more scrutiny than traditional classes because they wanted to ensure this new approach to teaching and learning was effective.

Wilder’s hosting decision seemed to be the least affected by emergent themes. Online distance education leaders did not have trouble finding the cost, technical, and

personnel support data that they needed to choose among the hosting alternatives. These leaders did not have precise downtime figures for the existing hosting system and their projections for future enrollment growth were speculative, but even incomplete and speculative data were sufficient to convince decision makers that the status quo would not work and that a change was needed.

In summary, while emergent factors did limit the availability of data in some of the decisions, in no case were data completely absent and in no case did a lack of data prevent a decision from being made. In at least one case, the novelty of online distance education actually encouraged more data collection. These findings suggest that the emergent nature of online distance education can influence decision making—especially when an institution faces truly new or fast changing circumstances—but does not prevent community colleges from doing at least some research or using risk mitigation strategies when faced with uncertainty regarding a decision.

This inference aligns with other comments that the interview participants made when discussing the emergence of online distance education. Two-thirds of these community college practitioners said that they believed data were just as available in this sector as in other aspects of higher education. Several faculty members with long experience in online distance education said that a dearth of data was more of an issue ten years ago when their efforts were just starting than it is now. “It is still a frontier, but is more a tamer frontier,” commented one of them. Some of the interview participants pointed out that other sectors of higher education were also emergent, and that online

distance education was not unique with respect to a lack of useful, long-term historical data to draw upon. Said a Yankee administrator:

...onsite demand changes pretty rapidly. This semester we were up 14% on enrollments last fall. One of the ways we handled that was that we ran a bunch of four o'clock classes. In the past, I have been told that Yankee had tried to run four o'clock classes, and it had never worked and when we did it this time, it worked spectacularly well. History was not a guide...One of the frustrations of Administration: statistical evidence is post hoc and almost always partial. You can use it as input, but unless you get something pretty extreme, it tends not to guide you...

Student evaluation of online classes and data on student performance was a significant concern raised by about half of the interview participants. "With student evaluations, we are lucky if we get five or ten percent back," commented one administrator about online courses. Another lamented, "the evaluation system for online education sucks. It is useless." Yet in the three decisions where student opinions about or performance in online distance education played a role, each of the case study institutions found a way around this problem. Yankee examined completion rates and grades in science courses students took after they had the online biology labs to consider the effectiveness of these labs. Zorn Valley piloted live courses in three different learning management systems so that it could get current student feedback about their actual experience of taking an online class using the LMS. The faculty sabbatical at Wilder specifically researched student outcomes in similar online health programs at other colleges to gain ideas about how to design the Wilder courses. In situations involving student evaluation and performance data, therefore, a general lack of data did not prevent some useful research nor represent an insurmountable barrier to decision making.

About a third of those interviewed argued that the relative novelty of online distance education put it under more scrutiny than other course delivery methods, and that additional scrutiny encouraged data collection. “Because online education or distance education is still relatively new, it is under the microscope a lot more,” commented a Wilder administrator. A dean leading the online effort at Yankee agreed: “it is distance...you are kind of looked at a little bit sometimes because you are the odd child out.” Several of the faculty interviewed pointed out how much easier it was to gather certain data because the online learning management systems automatically track student work in the course. Finally, multiple administrators remarked that data collection and analysis are more important in online distance education because of its emergent nature. “With onsite courses, we have a pretty good intuition at this point on what is going to make it...With online, that intuition is still developing,” said a vice president at Yankee. A Zorn Valley administrator made the same point: “when you are collecting data...you have to have the right questions that you are asking, that the data is going to help you answer. We are still at the stage where questions are being formulated...,” about distance education.

The impact of the emergent nature of online distance education was not consistent in the five decisions or in the broader experience of those interviewed. In some cases, it did limit the availability of data, while in others it seemed to spur greater data collection. In instances where data were limited, the case study institutions tended to gather what information they could, create new data (through pilots, for instance), and rely on the experience and expertise of their personnel to make judgments in the face of uncertainty.

Such judgments sometimes favored an innovation in online distance education and sometimes a step backwards. For instance, while the Zorn Valley IT Department's assessment helped pave the way for the adoption of new open source LMS, the perspective of the full-time biology faculty at Yankee led to the end of the online lab courses there. Various decision making models may explain some of these different responses to the emergent nature of online distance education. This chapter turns now to an analysis of the five decisions using these theoretical models.

Decision Making Under Different Conditions: Analyzing the Five Decisions with Four Decision Making Models

This section addresses the study's fourth research question: What decision making processes do community college academic leaders use under different conditions of data availability and different levels of data quality? This analysis compares behaviors in the five community college online distance education decisions with the behavior predicted by four models of decision making: rational choice, incremental, political, and constructivist. This section begins with a brief review of the four models and a description of the components from these models that were most evident in the five decisions. The analysis then considers each decision in turn, examining which of the models are best able to explain the exhibited behavior, before drawing some general conclusions about the usefulness of these models in examining community college online distance education decision making. Finally, this section ends by comparing the context and behavior exhibited at each of the three case study colleges with the predictions made

by Daft and Weick's (1984) model. This model posits that an institution's context influences its decision making behavior.

Elements of the Four Decision Making Models Most Common in the Case Studies

The rational choice model assumes that organizations have clear goals, which guide decisions (Tarter & Hoy, 1998). This model posits that decision makers seek to minimize uncertainty by gathering and analyzing as much data as they can before making a decision (Howard, 2001). Another assumption is that organizations have the capabilities to collect and analyze these data and that useful data can be found. Thus, the rational choice model predicts that data gathering will be extensive, and that it will focus on hard—precisely measurable—data. The purpose of such collection can be to detect problems facing the organization or to choose among alternative courses of action. Finally, the model assumes that decision makers will analyze the available data objectively, with the goal of optimizing the organization's effectiveness as the basis for the decision (Lyles & Thomas, 1988; Tarter & Hoy, 1998). In short, decision making in the rational choice model is a goal-driven, data-rich, and precise process. The model forms the basis of the argument for a data-driven approach to decision making in community colleges currently being made by policy makers, scholars, and some community college practitioners themselves.

The incremental model assumes that an organization's goals are not clear or are in dispute, and thus goals may not serve as a guide to decision making (Bulger 2003; Tarter & Hoy, 1998). The model posits that decision makers will accept the uncertainty inherent in such a situation, and try to address it by making the decision making process

as simple as possible. A further assumption is that organizations may lack the resources and skills to support data collection and analysis. The incremental model holds that decision makers will consider just a few alternatives that differ little from the status quo in order to simplify the decision making process and minimize the need for data gathering and analysis. Under these conditions, trial and error becomes the basis for decision making, with the organization attempting small, incremental changes from the status quo to help it “muddle through” until goals become clearer or more resources for data collection and analysis become available (Lindblom, 1979; Lyles & Thomas, 1988; Tarter & Hoy, 1998). If a decision is successful, then an organization might continue or expand it. If not, it could try a different decision. Decision making in the incremental model, therefore, tends to be hesitant, data-poor, and short-term in nature.

The political model of decision making assumes that an organization’s goals result from negotiation or conflict among its many constituencies, which often have varying preferences, interests, and values. Organizational goals, therefore may be clear and widely supported or in dispute (Allison, 1971; Eisenhardt & Zbaracki, 1992; Lyles & Thomas, 1988; Mignot-Gerard, 2003). An institution’s approach to uncertainty is also likely to vary depending on whether its political climate is cooperative or combative, which affects whether information is shared or hidden (Narayanan & Fahey, 1982; Taylor, 1990). Although the political model does not make particular assumptions about data availability, it posits that political factors influence the capability to collect and analyze data. For instance, if those in power value data, resources for collection and analysis are more likely to be available; if interests and values clash, there may be

competition to control those resources. The scope of data collection and the types of data gathered are likely to focus on those options that have political support (Dean & Sharfman, 1993; Eisenhardt & Zbaracki, 1992; Hinsz & Vollrath, 1997; Howard, 2001; Lyles & Thomas, 1988; Narayanan & Fahey, 1982). The political model assumes that data analysis will be subjective with competing constituencies interpreting the data in ways favorable to their own position, although it is also possible that shared data analysis could point to compromise decisions that promote organizational unity (Mumby & Putnam, 1992; Oliver & Conole, 2003). Generally, the individuals or coalition with the most power make the decision in their own interest. This could be a narrow interest or one that encompasses the entire organization, depending on the level of cooperation or conflict involved (Dean & Sharfman, 1993; Narayanan & Fahey, 1982; Tarter & Hoy, 1998; Taylor, 1990). In short, the political model holds that data are more likely to be a tool in the competition for power than a driver of decisions.

The constructivist model assumes that organizations embrace uncertainty as an opportunity to learn. Institutions are likely to make decisions in uncertain conditions and goals themselves may be emergent, meaning that they grow out of actions taken by an organization instead of guiding those actions (Daft & Weick, 1984; Eddy, 2003; Mumby & Putnam, 1992). Hard data thus may be unavailable, but the constructivist model assumes that soft data—practitioner experience, intuition—are also valuable (Dutton, 1993; Oliver & Conole, 2003). This model posits that organizations have the capacity to collect both hard and soft data, but the model is skeptical of decision makers' ability to analyze those data objectively. This is because individual and institutional biases may

color interpretations of the data. A college with a traditional culture may view growing national online enrollments as a threat, for instance, while an entrepreneurial college may see such data as an opportunity to attract more students (Daft & Weick, 1984; Simons, 2003). The constructivist model holds that a rich subjective analysis is possible, however, particularly if a group dialogue is involved bringing together different perspectives and experiences (Dowd, 2003; Dutton, 1993; Mumby & Putnam, 1992; Taylor, 1990). The basis of a decision can be the socially constructed reality that emerges from such a dialogue or from experimentation aimed at both shaping reality and generating data about it (Sanderson, 2003). In short, the constructivist model sees both data and organizational goals as elements that are as likely to emerge from decisions, as they are to shape decisions (Daft & Weick, 1984).

Yankee's Biology Lab Decision: The Political Model

Yankee Community College's decision making process for the online biology labs most closely aligns with the political model of decision making, although the other theories—particularly the constructivist—also explain certain aspects (see Table 4). This subsection will explore the usefulness of the political model in comprehending the components of the decision making process related to institutional goals, the scope of data collection, the methods of data analysis, and the basis for the decision. This analysis will also consider the constructivist model's value in understanding assumptions made about the availability of data, the types of data collected, and data analysis methods. Where appropriate, this analysis will note the few aspects of the process where rational

choice and incremental models had explanatory value. The analysis concludes with a brief discussion of why the behavior described by the political model was most prevalent in this situation.

Table 4
Alignment of Decision Making Models and Aspects of the Yankee Online Biology Lab Decision

Decision Aspects:	College Goals	Ability to Collect and Analyze Data	Assumptions about Data Availability	Approach to Uncertainty	Scope of Data Collection	Types of Data Gathered	Methods of Data Analysis	Basis for Making Decision
Decision Making Models that Explain Behavior:	Incremental/ Political	Rational Choice/ Incremental/ Political/ Constructivist	Rational Choice/ Constructivist	No evidence for any model	Political	Political	Political/ Constructivist	Political

The political and incremental models were useful in considering Yankee's online distance education goals at the time of the online biology lab decision. As noted in Chapter 4, many of the full-time faculty at the college were skeptical of the administration's early purposes in promoting online classes, and adjunct faculty played a dominant role as online instructors at first. Even as more full-time professors became involved in online teaching over time, those in the Biology Department believed that online courses were not a suitable way to teach laboratory skills. There was an underlying disagreement, therefore, between those faculty and the administration about how to teach laboratories and the value of placing entire programs—almost all of which

required laboratory science classes—online. Such a clash of opinions is a feature of the political model (Eisenhardt & Zbaracki, 1992).

Beyond this dispute, the interviews revealed a sense that the college's goals for online distance education were unclear, particularly to faculty. Although some administrators argued that the goal was to provide full programs online, instructors did not share that understanding. One instructor summed up the general impression, "I haven't seen any clear direction or indication yet." When asked about goals for online distance education, most of those interviewed mentioned something more vague: expansion. A lack of clarity in goals can contribute to the use of incremental decision making (Tarter & Hoy, 1998).

All four decision making models explained the differing views about data gathering and analysis capacities at Yankee. Administrators tended to argue that the college had data collection and analysis capacities and pointed to examples of the use of data in making online decisions, essentially following the rational choice model. For example, Yankee abandoned an attempt to maximize room availability by scheduling certain combinations of hybrid traditional/online classes when an analysis of course taking patterns indicated that students were unlikely to enroll in these combinations. One administrator remarked, "We pay careful attention to data." The faculty, however, were less certain that this was so, and pointed out that some instructors opposed the very idea of data driven decision making. Thus, the value of using data was in some dispute. Such a clash of perspectives is consistent with the political model of decision making, which

assumes that individuals and groups within an organization will have differing interests and values (Eisenhardt & Zbaracki, 1992).

Administrators did admit, however, that except for major decisions, the lack of institutional research staff limited the college's ability to gather and analyze data. "There are only two people in IR. There are not enough people and time to get this data," lamented a dean. "It has been impossible to get anything non-routine out of IR...We just don't have the staff," agreed another administrator. These problems with data capacity are predicted by the incremental model of decision making (Lindblom, 1979). When data were lacking, some administrators believed that it was appropriate to use "robust intuition," particularly for routine or low-risk decisions. "We only go digging deeper when there is a reason to," explained one. Such reliance on intuition is consistent with the constructivist model of decision making, which assumes hard data is often not available and that soft data, such as practitioners' experience, is valuable (Oliver & Conole, 2003).

Rational choice and constructivist models were most consistent with Yankee's assumptions about data availability for the online biology labs. Supporters argued that data relevant to the online labs' effectiveness could be gathered, including completion rates and grades of students who took science classes after they had the online labs. In addition, an instructor argued, "the data exists out there as to the efficacy of using online simulation, virtual dissections for example." The availability of objective data could foster rational choice decision making (Tarter & Hoy, 1998). Supporters of the labs tried to build a rational argument for offering the labs online using this evidence. On the other

hand, these supporters admitted that the lack of online lab examples from other community colleges probably hurt their cause. Thus, the emergent nature of online distance education—consistent with the constructivist model—limited the availability of potentially helpful evidence for the efficacy of teaching biology labs online (Daft & Weick, 1984).

Moreover, the constructivist model argues that individual and group perspectives and anecdotal experience can influence decision making. The full-time science faculty did not point to data to back up their argument—other than some general concerns that students were not performing well in classes after taking the online lab—and instead asserted that based on their expertise students could not effectively learn lab skills online: “Students are not touching a microscope. It is important for students to look through a microscope.” A supporter of the online labs argued that this was a biased perspective that trumped a rational examination of data: “Data wasn’t going to help...they [the faculty] didn’t want any part of it.”

The scope of data collection and the types of data gathered in the Yankee online biology lab decision were mainly driven by political considerations. As noted earlier in this chapter, the scope of data collection in this case was relatively narrow compared to the other decisions examined in this study. Opponents of the lab gathered little data beyond anecdote in making their case, and relied instead on the assertion of their expertise about how to teach science labs. Supporters focused on the opponents’ argument—that students were not learning well in the online labs—and gathered data on completion rates and grades in follow-on science courses in order to rebut the opponents’

claims. Supporters also offered to show the types of simulation technology that were available on the web, as another way to refute opponents' assertions. Opponents, for their part, generally ignored the data presented by supporters. Each side seemed focused on winning the argument instead of broadly addressing organizational goals and the relevant context, as called for by the rational choice model (Lyles & Thomas, 1988).

Elements of the constructivist and political models can explain the analytical approach to this decision. Differing perspectives, which are emphasized in the constructivist model, underlay the subjective interpretations of available data (Simons, 2003). Lab supporters believed that data on completion rates and grades answered the question of whether students learned effectively in online labs. Opponents argued that there was more to it than that. "Coming from the science department, you do have a lot of people who think you can't learn it online," explained one instructor, while another added, "there is that tactile aspect to science where students should be handling the equipment." From this perspective, no analysis was necessary: if students were not physically in a lab, the experience was not good enough.

The forms that data analysis took in this decision making process were largely political, starting with direct arguments between full-time biology instructors and the Dean of Distance Education and then moving to the college Senate. Although one participant in the Senate debate recalled that it involved a discussion of, "...sort of the logistics of the class. Could you achieve the outcomes?" another remembered it as a less than objective affair, saying a full-time faculty opponent of the course, "...got up and gave an impassioned plea and they bought it." A motion to move the debate to the

Academic Standards Committee, where perhaps a more detailed analysis of the available data was more likely to occur than in a general Senate meeting, failed, according to the minutes. So did a motion to further discuss the issue at the next Senate meeting. The minutes also show that the Senate meeting did not include the open dialogue that the constructivist model would suggest as a way to blend differing perspectives (Dutton, 1993). One participant simply called it a “battle.”

The basis of the Yankee online biology lab decision is most consistent with the political decision making model. The decision was based on power: an overwhelming majority vote (20 for, 6 against, 2 abstaining) in favor of giving the full-time biology faculty control over the fate of the online labs. Furthermore, the decision was accomplished in a political forum: the college Senate. The decision did not feature the optimization called for by rational choice, trial and error as predicted by the incremental model, nor the experimentation or socially constructed dialogue of the constructivist model (Sanderson, 2003, Tarter & Hoy, 1998). The full-time biology faculty may have judged that the Senate—where administrators could not vote and full-time faculty, with their tendencies to be skeptical of online distance education, held an advantage—would be a favorable forum for their perspective. Indeed the lopsided vote may have reflected a faculty reaction to the power of the Dean of Distance Education to put courses online without their approval. Speaking of this issue, one professor complained:

...the decisions are made in a way that is much less formal than at the Division Level. You can have a bright idea in our Division and 13 other people vote nay and that is the end of it...it really only takes the Distance Education Dean...to run full tilt with something in DL. There is that level of policy that is just not there; the level of governance that is lacking...

The usefulness of all four decision making models to explain certain aspects of the Yankee online biology lab suggests the value of blending models to understand decisions fully. As noted in Chapter 2, contingency theories are useful for this purpose (Tarter & Hoy, 1998). The prevalence of political factors in this decision cannot be denied, however. The evidence from the interviews and documents suggests that a context of political disagreement at Yankee made this result likely. Administrators and substantial numbers of full-time faculty had differing views about both online distance education and the value of data in making decisions. Faculty appeared to resent the power of the Distance Education Dean and they expressed concerns regarding the lack of traditional governance over online distance education decisions. The full-time biology faculty were certainly unhappy that two of their laboratory courses were put online without consultation. The question at stake (can students learn effectively in online laboratories?) perhaps could have been answered through a rationalist, objective analysis of data or through a constructivist dialogue of differing perspectives. The fact that it was determined politically instead suggests that underlying differences in values and interests were the most influential factors in this decision. At the end, the debate became not about student learning in online labs, but who has the power to decide whether students are learning.

Yankee's New Online Course Development Decision Making Process: Rational Choice

The rational choice model aligned most closely with the behavior exhibited in Yankee Community College's new online course development process. This subsection

examines how elements of the rational choice model were consistent with all eight aspects of Yankee's decision making process: its online distance education goals, its capabilities for data collection and analysis, its assumptions about the availability of data, its approach to uncertainty, the scope of its data collection, the types of data it collected, its methods of data analysis, and its basis for making decisions (see Table 5). The incremental model was also useful in understanding some of Yankee's goals. Elements of the constructivist model were consistent with the scope and types of data Yankee collected, the way leaders analyzed them, and their basis for making decisions. Unlike the earlier online biology lab decision, the political model was not helpful in explaining the new online course development decision making process.

Table 5
Alignment of Decision Making Models and Aspects of the Yankee New Online Course Development Process Decision

Decision Aspects:	College Goals	Ability to Collect and Analyze Data	Assumptions about Data Availability	Approach to Uncertainty	Scope of Data Collection	Types of Data Gathered	Methods of Data Analysis	Basis for Making Decision
Decision Making Models that Explain Behavior:	Rational Choice/ Incremental	Rational Choice	Rational Choice	Rational Choice	Rational Choice/ Constructivist	Rational Choice/ Constructivist	Rational Choice/ Constructivist	Rational Choice/ Constructivist

By the time Yankee Community College implemented its new online course development process—in the wake of the online biology labs' demise—the rational choice model described its online distance education goals better than the political model, while incremental factors still played a role. To some extent, the lack of clarity in goals

that the incremental model predicts lingered from the earlier time, especially among faculty (Tarter & Hoy, 1998). Even instructors, however, could point to a rational reason for the expansion of online courses in this more recent decision: the pressure of overall enrollment growth on available classroom space. As more full-time faculty became involved in teaching online, the political disagreements around the goal of expansion eased. The creation of a different process for deciding which new online courses to develop may have also reduced this tension. A large committee with representatives from around the college had replaced the old system in which the Dean of Distance Education and a single faculty member could put a course online. An administrator commented, “they have broadened the input, the stakeholders.” A faculty member agreed: “you sort of move away from that sort of one point person making all the decisions to now the shared governance and the shared responsibility.”

Rational choice assumptions were reflected in the capacity for data collection and analysis in Yankee’s new online course development process. Concerns about the capacity of the college’s institutional research office remained from the time of the online biology lab decision; however, this office was not responsible for gathering and analyzing data about new online course proposals. Instead, faculty applying to create a new course had to fill out a form that provided data about the programs that the course would support. The Dean of Distance Education took responsibility for other research, such as enrollment statistics for the course, and then collected and organized all the data on each proposal. The large, new Distance Education Committee then analyzed these data. Describing this process, one committee member said, “So far, it has been relatively

easy,” suggesting that enough resources for data collection and analysis were available—a key assumption of the rational choice model. Capacity outside the institutional research office was thus created to consider eight or more course proposals each semester.

The rational choice model is also consistent with Yankee’s approach to uncertainty and its assumptions about the availability of data with respect to new online course development. As a member of the Distance Education Committee commented, “there are lots of data available.” The entire process—with the application form, the Dean of Distance Education gathering more information about each course proposed, and a large committee weighing this evidence—suggests not just an assumption that data were available, but also indicates that carefully considering these data was viewed as important for making the best decisions possible. “I think making decisions about which courses should be [developed] is very crucial,” said a Distance Education Committee member. This desire to minimize uncertainty through the collection of data is a hallmark of the rational choice model (Howard, 2001). Contrast this perspective with the online biology lab decision, in which one side in the debate—the full-time biology faculty—cited no data in making its argument, and the other felt handicapped because there were so few online labs available at other colleges to cite as evidence for the effectiveness of the labs.

The large volume of data provided by proposing faculty on the application form and by the Dean of Distance Education can support both rational choice and constructivist models of decision making because each assumes organizations will collect data extensively (Lyles & Thomas, 1988; Simons, 2003). Moreover, these models also

describe the types of data gathered by Yankee in its new online course development process. Many of these data were the objective data that supports rational choice (Tarter & Hoy, 1998). According to a member of the Distance Education Committee, examples of objective data for proposed courses included, “what the enrollment was for the last two semesters, what the enrollment in the program is...would it be a general elective? Is it a program requirement? What program it might fit in?” However, the committee also considered the non-quantifiable soft data that the constructivist model suggests are important in decision making processes (Dutton, 1993). For instance, the application form asked proposing faculty what problems or special challenges they anticipated in developing the course. Distance Education Committee members also relied on their experiential knowledge of the quality of instructors who were applying to create an online course. “So it depends partly on who is teaching it; what the level of expertise is,” explained one committee member. The committee valued the expertise of other colleges as well when deciding whether to offer a new course: “right now, we make very sure; call other colleges, make sure if they offer; ask what problems they have,” said an administrator.

The ways in which the Distance Education Committee analyzed data about new online course proposals was most consistent with rational choice, but the constructivist model also explained some dimensions of the process. The committee’s analytical approach was largely objective. Committee members determined the number of courses that could be approved for online development by considering the amount of financial resources available for faculty stipends and the capacity of the Online Services staff to

provide technical support. “Finance enters into it because there is a certain amount of money that is given to people to develop courses,” explained one committee member. Said another, “how many courses can we really develop at one time and feel comfortable supporting those courses? That is another determining factor.” Three different administrators, a faculty member, and a review of Yankee’s new course application form and summary spreadsheet all indicated that proposals were weighed against each other using common criteria, such as the enrollment outlook and how the course would help programs. “It is a pretty carefully constructed decision making process,” concluded one administrator. Another said, “All that paperwork condensed down to the process...and you follow it...to say this wasn’t just a decision we made, you know, having a beer after work.”

While the committee primarily utilized rational processes, the members also engaged in group dialogue to analyze these data, particularly regarding perceptions about the readiness of the proposing instructor to deliver a quality online course. These forms of group dialogue align with the constructivist model of decision making. Conversations that bring differing individual perspectives and experiences together can help to deepen an organization’s interpretation of soft data, such as opinions about instructor effectiveness (Dutton, 2003). As one committee member stated, “issues will be presented to the committee and the committee will try to work through any issues with the course proposal.”

Yankee Community College’s basis for making decisions about which new online courses to develop was explained best by the rational choice model, although again

constructivist factors were relevant to some degree. Courses with the greatest likelihood to meet multiple criteria—to enroll large numbers of students, to be technically feasible, to allow 100 percent of certificates or programs to be offered online—were chosen for development. One administrator who served on the committee remarked, “on the list at this time, there must be 20 proposed courses. Seven were approved for development. None of them were an absolute no, but there are reasons for the ones we didn’t endorse.” Speaking of the influence of data in these decisions, this same committee member said, “It plays a huge role.”

While data served as an important basis for these decisions, other factors, including intuition and judgment, also shaped decision making outcomes. One committee member admitted that more than objective factors influenced the decisions: “Also, the fact that I see that when I look down the list of the instructors who are teaching the online courses—these are people who I trust. I think it is the way decisions are made.” Such judgments about the reliability of individuals, based on personal experiences with them, are consistent with the constructivist model of decision making (Oliver & Conole, 2003).

To summarize, decisions at Yankee about which courses to teach online shifted from a predominantly political approach in the biology lab decision to a mainly rational one in the new online course development process. Although interview participants did not explicitly address reasons for this change, it was clear that some felt bruised by the biology decision. “I didn’t want to pick that topic,” said one. “That was a difficult one for me,” remembered another. Moreover, study participants noted that decision makers

had not fully taken into account the negative implications of moving the biology labs offline for the ability of the college to offer full degrees online. Although no one interviewed said that the new decision making process was designed to avoid such a combative situation in the future, the actions taken in the wake of the biology labs' return to hybrid status may indicate that decision makers had learned some lessons. The Dean of Distance Education, for instance, was a leader in developing the new process, suggesting that she recognized the need for a change. The presence of more stakeholders in the new process was remarked upon favorably by both faculty and administrators, and promoted the group dialogue featured in the constructivist model of decision making. There was also hope that a more objective process, based mainly on data, would cool the political tensions over online distance education. Said an administrator about recent practice, "We try to really use the data... [and] include the faculty [so] no one can come back and say you made that decision on your own."

The easing of the faculty-administration tensions over online distance education also may have flowed from employee turnover, with younger full-time instructors showing more enthusiasm for teaching online. One of these professors remarked that, "it is good to see more people, more faculty, and more programs are supporting our distance education." Whether it was active decisions aimed at developing a more inclusive, rational, data-based process or longer-term independent factors like faculty turnover that changed the political environment of online distance education, the experience of Yankee Community College suggests that the presence or absence of clashing values and interests

can determine whether political behaviors characterize decision making processes and outcomes.

Zorn Valley's Learning Management System Decision: Rational Choice

All four of the decision making models explained elements of Zorn Valley Community College's LMS decision, but rational choice aligned most closely with decision makers' behavior in this case. This subsection examines the rational choice model's consistency with Zorn Valley's capabilities for data collection and analysis, its approach to uncertainty and beliefs about the availability of data, the scope and types of data that decision makers collected, the methods they used to analyze those data, and finally the basis for their decision (see Table 6). In addition to rational choice, the constructivist model was useful in understanding the scope and types of data that Zorn Valley decision makers gathered. Furthermore, the incremental model aligned with Zorn Valley's goals for online distance education as well as some aspects of its capacity to collect and analyze data. Finally, the political model explained some of the behavior related to the basis for the LMS decision.

The incremental model of decision making was most consistent with Zorn Valley Community College's goals for online distance education. The model predicts that incrementalism will prevail when goals are not clear or agreed upon (Tarter & Hoy, 1998). The interviews revealed little agreement about goals for online distance education. One administrator and a staff member argued that the federal grant that allowed Zorn Valley and a partnering higher education institution to launch their online efforts aimed to increase student access by putting a liberal arts degree online. However,

an accreditation self-study indicated that online courses did not attract many new students to the college. In addition, a liberal arts degree was not fully online, and several of those interviewed expressed concern that Zorn Valley did not have enough faculty involved to provide all the necessary courses on a consistent basis. A different administrator argued that the goal of online distance education was really to shake up the status quo and get instructors to think about new ways to teach and use technology. Meanwhile, a faculty member saw the online effort as basically adrift: “I am not seeing a lot of thoughtful decision making...we haven’t had as much planning in this area.” In fact, most interview participants agreed that planning was a weakness at the college, and this seemed to extend to online distance education. For example, there was disagreement regarding whether Zorn Valley needed an academic technology plan, which would include online distance education. “There needs to be an academic technology plan,” asserted a member of the Academic Technology staff. An administrator, however, disagreed: “attempts to have a long-term plan for distance education at this college do not seem real.”

Table 6
Alignment of Decision Making Models and Aspects of the Zorn Valley Learning
Management System Decision

Decision Aspects:	College Goals	Ability to Collect and Analyze Data	Assumptions about Data Availability	Approach to Uncertainty	Scope of Data Collection	Types of Data Gathered	Methods of Data Analysis	Basis for Making Decision
Decision Making Models that Explain Behavior:	Incremental	Rational Choice/ Incremental	Rational Choice	Rational Choice	Rational Choice/ Constructivist	Rational Choice/ Constructivist	Rational Choice	Rational Choice

Although incrementalism characterized the college's overall capacity to collect and analyze data, rational choice better explained those capacities with respect to the LMS decision. Faculty, administrators, and staff agreed that Zorn Valley's limited budget, personnel, and institutional research resources; its busy Academic Technology staff; and its lack of experience and training in planning all contributed to a weak capacity for data gathering and analysis—a feature that typically leads to incremental decision making (Lindblom, 1979). Nevertheless, the Academic Technology Coordinator had been producing detailed data reports about online distance education for several years by the time of the LMS decision. Moreover, substantial resources were assembled for data gathering and analysis for this decision. The Academic Technology Committee put together a team of faculty, administrators, and staff who dedicated more than a year of their time to the LMS decision making process. These resources enabled decision makers at Zorn Valley to use rational methods for collecting and analyzing data. The use of these methods was a departure from how the college typically made decisions.

Rational choice decision making can explain Zorn Valley's assumptions about the availability of data and its approach to uncertainty. Those involved in the process knew from the start that they had data regarding problems with their old LMS, Blackboard, and that data were also available on alternative systems. "We have done at least three if not four surveys of students and faculty on the Learning Management System...there is a lot of information on the Internet out there about [LMS's]," commented an Academic Technology staff member. Although this belief in the availability of data was consistent with rational choice theory (Tarter & Hoy, 1998), there were also concerns about

potential information gaps because of the inherent uncertainty involved in choosing an open source LMS. “Open source...can be scary, because it does not come with a corporate logo...We do not like that kind of chaos,” explained a faculty member. Similarly, an administrator noted that “an open source system...It is seen as something that no one does because there is this perceived sense of lack of support.” The lack of data in this emergent situation led decision makers to search for yet more data to engage a more rational process. Zorn Valley leaders sought consistently to minimize uncertainty through extensive data collection—a hallmark of rational choice (Howard, 2001). Interview participants agreed the decision was too important not to do the homework. “There was a huge amount of data. I think it was in the name of caution and all the bases were covered...,” recalled an administrator.

Rational choice and constructive models can explain the scope of data collection and types of data gathered for the LMS decision. These models assume that organizations will engage in extensive data collection, with rational choice expecting hard data to be the focus while constructivist theory predicts soft data will be gathered too (Dutton, 1993; Lyles & Thomas, 1998). By any measure, the scope of data collection for the LMS decision was broad. Zorn Valley researched six different alternative learning management systems on numerous criteria, met with vendors, piloted three of the options for a semester in two courses each, and produced a 70-page background document full of data on the finalists. Much of this data was hard—measurable, quantifiable. For instance, Zorn Valley gathered data on the number of complaints about Blackboard, technical capabilities for each LMS, cost, and the time involved for

migration. However, decision makers also paid attention to and discussed soft data. For instance, the responsiveness and behavior of vendors was noted. Speaking of one vendor, a staff member complained, “I did not like the fact that they said to us, ‘no, they are not going to get back to us within a week and a half or two weeks.’” Zorn Valley also sought qualitative information regarding the experiences of other colleges with each LMS. The perspectives of the faculty who piloted the different LMS finalists were important as well. One of the instructors explained:

...we did these information sessions where we presented what we had done and kind of described the system and the learning environment: the pros and cons from our experience. I think that combined with the documentation of the rubric that we completed informed their decision.

Thus a combination of hard and soft data informed this decision.

The approach Zorn Valley Community College used to analyze the data for the LMS decision aligned closely with the rational choice model, which predicts that large numbers of possible alternatives will be examined objectively (Lyles & Thomas, 1988). Interview participants uniformly described such a process. An Academic Technology staff member on the LMS subcommittee recalled that, “fourteen different categories we looked at...they came up with a rating scale...everybody used the same scale...You can look at a table that had each one of these things.” A faculty member agreed: “At the end, we had a rather lengthy document for each Learning Management System that talked about what it could do, compared to what we had, and compared to each other with the same answers to the same questions.” An administrator who was involved in the final decision described an analytical process of thinking through multiple criteria and comparing the data about each LMS against each other:

For example, pricing; they would be specific about what it would cost to transfer the courses that we now have into the new system. How much does each piece cost? What are the add-ons? What is next year going to cost compared to this year? Making comparisons by calling up other people and asking questions. How different is this thing going to look for someone who is not technically savvy and how much work is it going to be to adjust to the change? The fact that our IT Director, who lives and talks the stuff, came to the same conclusion as faculty—including those who are not tech savvy—is relevant.

Zorn Valley used an optimization strategy that is consistent with the rational choice model, but political factors were important in the decision as well. The careful data collection and analysis of the LMS subcommittee impressed the CAO and CFO when it was presented to them. “That process was very, very, very thorough,” said one. “I was blown away with how thorough it was; it was just impressive,” said the other. The open source LMS prevailed in multiple categories, including cost and ease of use for faculty and students. “When we were convinced that they’d done this rationally—it was worth the risk—we went with it,” agreed a key decision maker. Besides being the optimal solution from an objective viewpoint, political factors also favored the choice of the open source system. Explained an administrator, “You know, there was a unanimous recommendation...I do think the unanimity of the recommendation and cost helped a lot.” In addition, the political support of the Information Technology Director helped to convince the President to go along with the proposal. A vice president described the strategic approach that convinced the college’s president to support the LMS decision: “I actually strategically used him [the IT Director]...The IT Director was able to assuage the President’s concern...to go in and sort of use his credibility and credentials to say, ‘I support this.’”

Despite the incremental, political, and constructivist dimensions of the Zorn Valley LMS decision making process, the predominance of rational choice behavior was striking considering that the college generally seemed to lack the capacity, experience, and inclination to make decisions that way. When asked about this apparent contradiction, interview participants tended to provide two explanations. The first was the importance of the decision itself. “This decision required a lot of thoughtfulness, especially with our faculty, because the people were pissed...and if we messed this one up, we were going to lose a good portion of our online teaching,” explained an instructor. Mixed scanning theory predicts that organizations will use rational choice for major decisions and rely on an incremental approach for more routine matters (Etzioni, 1967). This approach allows an institution to husband its scarce data collection and analysis resources for decisions with the greatest significance by using other methods—trial and error, intuition—to make less important decisions. Multiple Zorn Valley personnel described the situation in these terms. “I think it [the LMS decision] was exceptional...because of the impact and the magnitude of the decision...if you were to try to do something like that for every decision, you would be paralyzed with analysis,” commented an administrator. “It was definitely a special case,” agreed a professor.

A second factor that multiple study participants mentioned was the value that the Academic Technology Coordinator placed on data. One administrator said, “it could have been who was driving the process, as in [the AT Coordinator].” Another agreed, “one thing [the AT Coordinator] is good at is major data collection, and she is smart, and she is good about getting the data and finding ways to organize it.” The Academic

Technology Coordinator organized and led the research and analysis of the LMS options, and in speaking of her approach, she mentioned both personal and political reasons to follow a thorough, data-rich process:

I think it was because the way I think...I needed to go through this and I needed to make sure that people knew we went through this process: every nickel, dime, every penny was touched as best as we could...I am the one in the middle [between faculty and administrators]...I didn't want IT to have any questions, or administration, or faculty or there to be any questions about the decision, that this is the best choice for us.

Thus it was not just her own inclinations but also her political position—as a link between faculty and administration and between academic affairs and information technology personnel—that encouraged the Academic Technology Coordinator's rational approach because it was most likely to be accepted as legitimate by all the key stakeholders.

Although no one at Zorn Valley claimed that it was planned in this way, the success of the LMS decision making process—in terms of incorporating extensive data collection and analysis along with widespread participation by college personnel—encouraged administrators to try to move the college toward a more data driven culture.

In summarizing the process, a vice president remarked:

I do not think we could have done any decision making process of this quality three years ago...It was much more intentional, complex, involved more people, and more open. It was really a good model...It was exemplary.

Study participants indicated that they had offered to share their research and approach with other community colleges that were contemplating the same decision. This enthusiasm suggests that one method for building a culture of evidence may be to pick a

significant decision and just start using data. Rather than first trying to change attitudes towards the value of data across the institution and establishing a rational approach through an overarching strategic plan, Zorn Valley simply used rational choice for this one decision. Perhaps ironically, such constructivist behavior—experimenting to create a new reality—may contribute to the development of a more rationalist approach. The positive results of the LMS decision making process could change skeptical attitudes towards the value of data in decision making more quickly and completely than a gradual approach using professional development. In this situation, action leads to understanding rather than understanding being a prerequisite for action. Finally, the experience of Zorn Valley suggests that political factors such as the presence of key decision makers who favor extensive data collection and objective analysis may also promote a culture of evidence.

Wilder's Online Hosting Decision: Rational Choice

Wilder Community College's decision to outsource the hosting of its online distance education information technology infrastructure can be explained by the rational choice model. This subsection will explore how rational choice can explain each of the eight aspects of the decision making process examined in this section of the study: Wilder's goals for online distance education, its capacity to collect and analyze data, its assumptions about the availability of data, its approach to uncertainty, the scope of its data collection and the types of data gathered, the methods it used to analyze the data, and the basis for its decision (see Table 7). Two other decision making models aligned with some elements of Wilder's online hosting decision. The constructivist model can explain

certain aspects of Wilder's approach to uncertainty, assumptions about the availability of data, and its basis for the online hosting decision. Incremental factors also shaped the college's capacity for data gathering and analysis.

Table 7
Alignment of Decision Making Models and Aspects of the Wilder Online Hosting Decision

Decision Aspects:	College Goals	Ability to Collect and Analyze Data	Assumptions about Data Availability	Approach to Uncertainty	Scope of Data Collection	Types of Data Gathered	Methods of Data Analysis	Basis for Making Decision
Decision Making Models that Explain Behavior:	Rational Choice	Rational Choice/ Incremental	Rational Choice/ Constructivist	Rational Choice/ Constructivist	Rational Choice	Rational Choice	Rational Choice	Rational Choice/ Constructivist

Wilder Community College's goals for online distance education were aligned with the rational choice model. This model assumes that institutional goals are clear, broadly-supported, and tend to be pursued as part of a strategic plan (Tarter & Hoy, 1998; Taylor, 1990). Wilder had a strategic planning process that focused on serving the needs of urban community college students. In discussing the president's priorities, an administrator commented,

Part of her strategic plan was to develop flexible programs for students and distance learning was one of the flexible programs. I think it was in 2000 or 2001...she stated that part of the goal and plan...was to develop a comprehensive distance learning program. So that got everyone on board...if that is part of the strategic goal of the college...you support it; you can't fight it.

College employees were encouraged to advance these strategic goals through an internal grant program in which people applied for action plan money to implement new initiatives. According to the strategic plan, these initiatives had to meet measurable outcomes in order to be institutionalized in the college budget. Wilder was one of the first community colleges in Massachusetts to create an institutional effectiveness office to provide the capacity for conducting this type of outcomes measurement.

The convenience and flexibility of online courses fit with the culture of the college, which emphasized access for students and innovation, according to another administrator. As a dean explained, “if we needed more money for online faculty training, I think that money would be forthcoming...because we have the president of the college and the executive staff determined we would not turn anybody [meaning students] away.”

Elements of both rational choice and incrementalism can explain Wilder’s capacity to gather and analyze data at the time of the online hosting decision. Rational choice assumes that institutions have an extensive capacity for data gathering and analysis, while incrementalism notes that personnel may not have the time or training for data collection and analysis (Lindblom, 1979; Lyles & Thomas, 1988). On the one hand, the institutional effectiveness office was available to gather data regarding online distance education. On the other hand, the information technology staff in charge of supporting online courses had many other responsibilities, and no systematic way to track system downtime was available. “We didn’t actually have a monitoring system for that...we didn’t really have a lot of technical people, so the IT Staff had to support the

network and the server...we were losing some significant time,” recalled an administrator. Thus, while capacity for gathering and analyzing data existed at Wilder, scarce resources limited these activities regarding the online hosting decision.

Both rational choice and constructivist models were useful in explaining Wilder’s assumptions about the availability of data on the online hosting issue and its approach to uncertainty. Although precise data were not available, system downtime was substantial enough that at least crude measurements were possible. “It was easy to track because we were losing days...or for six, seven, eight, or nine hours and so we had that documented,” said a dean. Another administrator involved at the time agreed: “We had ample amounts of downtime, causing all sorts of frustration... As a result of that we began exploring outsourcing the hosting of the LMS.” Following a rationalist approach, Wilder tried to minimize uncertainty by gathering data about the costs and capabilities of other hosting options. Outsourcing this function would be a new experience for the college, however, and thus involved some risk. Nevertheless, Wilder’s culture encouraged experimentation. According to an administrator:

One of the things about working at [Wilder] is we have never been afraid to fail. We are not always right and we don’t always have the best answer right out of the gate but we are willing to try...to invest the effort in due diligence and do our damndest to see if it will work.

Speaking of the pioneering nature of online distance education, a faculty member commented, “Lots of time, that does require us to make some decisions...without a lot of data. So you go along, go through the growing pains, and see what works and doesn’t work, and adapt.” This willingness to make decisions through a process of

experimentation is consistent with the constructivist model of decision making (Daft & Weick, 1984).

The scope of data collection and types of data gathered for the online hosting decision were consistent with the rational choice model, which predicts extensive collection of hard data on large numbers of available alternatives (Lyles & Thomas, 1988). Wilder identified four different options: continuing to host internally but with increased resources, private sector hosting firms, and partnerships with two different higher education based consortia. Decision makers then sought data on each alternative. Expenses and the technical capabilities of each option, particularly the robustness of the system and its uptime performance, were a primary focus for data collection. An administrator explained that, “the technical side of it was very important...as far as maintaining network services, having redundancy, backing up the system and so forth.” Projections of growth in student demand for online courses, based on past enrollment data, were also developed. As a dean explained:

it is all based on enrollment...that has been instrumental in driving support for the distance learning. Based on the growth I was showing back then...I was able to show that we were growing at a certain pace, you know, and we needed to support all these students.

Wilder’s analysis of data for the online hosting decision also aligned with the rational choice model. Rational choice predicts that the options will be compared objectively based on data that have been gathered (Tarter & Hoy, 1998). The private hosting firms were ruled out because they were far too costly. “We spoke to companies who did nothing but host server space and software for various and sundry companies and they were as expensive as hell,” remembered an administrator. Although it was

possible to enhance the college's own internal technical capabilities, they could not match those of the external higher education options. A dean recalled that Wilder, "didn't have enough trained staff...we definitely didn't have the ability to maintain it 24/7...the [state university] system is much more robust." Wilder then compared the advantages and disadvantages of the two external higher education consortia. One consortium had more flexibility and access to external funding. The other consortium had stronger infrastructure, with a larger number of staff and services, as well as a lower price.

The basis for Wilder's online hosting decision flowed from this rational analysis of the data, but also from factors accounted for by the constructivist model. From the rational perspective, decision makers at Wilder rated the university system highest for the greater number of criteria. The cost was less, especially because Wilder was using the same LMS, for which it had a perpetual license. The university's technology was extremely robust. An administrator summarized the basis for the decision:

...all the services [the university] would be providing for us, the cost, the whole thing, and the cost of the LMS...There were other things to consider, but again, as I said before, it was decided to go with [the university]. They had the most money, the most support, and they were one of the biggest providers of distance education in the country.

A second administrator, however, explained that it was also the long term relationship the university already had with Wilder, including serving as a mentor in the development of Wilder's online distance education effort, which resulted in the selection of the university system consortium. Personal and institutional relationships and the role that they may play in decision making are accounted for by the constructivist model (Oliver & Conole,

2003). Such relationships can promote group dialogue about common problems, while individual and group feelings about these ties represent a type of soft data valued by constructivism. For example, according to the second administrator, the university “had a track record with us; we had one with them. We trusted them. They gave us a better price. Data was collected; the decision was easy.” Described this way, both optimization and human factors—rational choice and constructivist models—served as the basis for this decision.

In summary, the rational choice model explained the largest number of features of Wilder Community College’s online hosting decision. Considering the context in which this process took place, this finding is not surprising. Evidence suggested that Wilder is a goal driven institution with a strong strategic planning process, and a budgeting system that channels resources to projects that both support the objectives of the plan and meet measurable outcomes. In the case of the online hosting decision, the college also had the capacity and inclination to do this measuring. Online distance education was part of the strategic plan, internal grants were provided for online course development, and accountability measures were in place to guide these efforts. All of this would lead to the expectation that the online hosting decision would be a rational one. An administrator involved in the process did point out that the culture of evidence at Wilder was still in a relatively early stage of development at the time of this decision: “Back then, we were just starting to do this. It was something that [the President] wanted to do but maybe not ingrained in the whole culture of the college; it was starting to happen.”

The incremental and constructivist models also had some relevance for explaining this decision. Limited staffing in the information technology area meant that some data on system performance were not precise. More significantly, the pioneering nature of the online distance education effort—and the uncertainty it involved—led decision makers to rely on previous relationships based on trust and familiarity. Facing the novel idea of trusting its technology infrastructure to an outside entity, Wilder decision makers demonstrated both a willingness to experiment and a knack for reducing risk. By choosing an institution with which it had built a history of trust, college leaders mitigated some of the fears of the unknown and forged ahead. The mix of constructivist and rational approaches in evidence here would grow stronger in Wilder's online distance education effort as the next section makes clear.

Wilder's Online Health Program Decision: The Constructivist Model

The constructivist model best explained Wilder Community College's decision to offer most of a popular health program online. This subsection explores how constructivism characterized six of the eight aspects of the decision making process: Wilder's assumptions about the availability of data, its approach to uncertainty, its scope of data collection, the types of data it gathered, the methods it used to analyze the data, and the basis for the decision (see Table 8). The rational choice model was also helpful to understand certain aspects of the decision making process. Wilder's goals, capacity for data collection and analysis, approach to uncertainty, and the basis for the online health decision can be explained wholly or partly with rational choice.

Table 8
Alignment of Decision Making Models and Aspects of the Wilder Online Health Program Decision

Decision Aspects:	College Goals	Ability to Collect and Analyze Data	Assumptions about Data Availability	Approach to Uncertainty	Scope of Data Collection	Types of Data Gathered	Methods of Data Analysis	Basis for Making Decision
Decision Making Models that Explain Behavior:	Rational Choice	Rational Choice	Construc- tivist	Rational Choice/ Construc- tivist	Construc- tivist	Construc- tivist	Construc- tivist	Rational Choice/ Construc- tivist

The rational choice model, which explained Wilder's goals for online distance education in the early 2000s when the online hosting decision was made, was also appropriate for understanding the college's approach to the online health program decision in 2007. The broad goals of access and convenience for students remained. New grant initiatives sharpened the focus on degree completion, however, and this directly affected the goals for online distance education. "If you were involved in any of the Achieving the Dream or the Engaged Campus initiatives at [Wilder], then you really have begun to start thinking about it [the use of data to improve graduation rates] in different terms," explained a faculty member. An administrator elaborated:

We have ten degree programs and nine certificate programs that can be completed completely online. That was basically part of our goal to offer flexible programming so that students can complete their degree and certificates in an online environment...we're in this Achieving the Dream. That whole philosophy there is that everything you do, your decisions are based on data.

Thus, these initiatives had not only further clarified the online goal to include degree completion, but had also strengthened Wilder's already well developed commitment to

measurement and data. In addition to the organizational goal of degree completion, physical space constraints amidst rising overall enrollments also encouraged the drive to shift students to the online modality, including in the health programs. An instructor commented:

there is an infrastructure issue where you say, my goodness, you know, we only have so much lab space...do you think this course could be taught online? Do you think this could free up some space? So the infrastructure, I think is driving a lot of the courses.

Rational choice assumptions also shaped Wilder Community College's capacity for collecting and analyzing data. This capacity had grown since the earlier online hosting decision. As noted above, external grants such as Achieving the Dream had provided both resources and an impetus for the use of data. "Think about the grants, like Achieving the Dream...now, any time I submit any kind of proposal, I am asked for data," commented a dean. An online instructor agreed, "now in the past three years, data is driving everything. We are looking at data in a very different way." Although interview participants admitted that the institutional research capacity of the college was not limitless, they pointed to the purchase of a new data warehousing system as an important step toward helping employees outside IR gain access to data. An administrator explained that:

I can extract information; I can get all the enrollment data myself very simply. Before, I had to go to the institutional research area and have someone do queries and so forth, and you know everyone is asking for services like that, so it is not a matter of difficulty; it's just a matter of the volume of requests.

Despite having clear goals and capacity for data collection and analysis, Wilder was dealing with an emergent situation with the online health program. Therefore, the

constructivist model was helpful for understanding Wilder's assumptions about the availability of data and its approach to uncertainty. As the first college to try to put this program online in the state, and one of the first in the nation, decision makers recognized that data might be sparse. An instructor argued that, "this is a new frontier, not brand new, but pretty new stuff. I don't think we have a lot of data to go on." In the face of this uncertainty, Wilder showed a mix of behaviors predicted by the rational choice and constructivist models. Decision makers tried to gather what data they could to reduce uncertainty, but they were also committed to plunging ahead even if it meant taking risks. A professor described this dual approach: "So while we are in the process of really the heavy lifting in terms of the analysis...who has got an idea that we can sort of pilot to implement this?" Such experimentation was necessary in an emergent situation, argued a dean: "I think a few years from now we will be in a better position to be more objective about these decisions. Right now, I think a lot of it is just a gut feeling. Will this work? Let us try it." Such risks were easier to accept in a successful sector of the college, such as online distance education, suggested an administrator: "We have continued growth and pretty solid programs; I think that [the president] is willing maybe to take a little more risk here."

The constructivist model can also explain Wilder's scope of data collection and the types of data gathered. The model predicts that organizations will attempt to collect a wide range of data, particularly soft data such as practitioner experience (Dutton, 1993). Wilder did try a wide scope of data collection. "We Googled the daylights out of [health] programs online," recalled an administrator. A faculty member was given a sabbatical to

explore other existing programs: “I went into all kinds of research modes.” As they had anticipated, however, not much information was available. “I wish I had more examples...I wish I had more data...even the programs that I did get in touch with were all so new, they did not have the data,” lamented the professor with the research sabbatical. What they did find—primarily from a single program in Arizona—was practitioner experience: soft data. A leader from the Arizona program was brought to Wilder. “She came and gave us some pointers,” recalled an instructor. With so little data on online health programs, Wilder also looked to see what it could learn from other types of online curricula. Said one instructor, “we do look at what is being done across the country, what is generally accepted by other institutions of higher learning that lead the way and we consult the publishers.” Another agreed, “I do not know if it’s data as you are using the term, but the more you see what other folks are doing...I guess that is data and I would say that...is influential.”

The constructivist model can also describe the approach to data analysis taken in the online health program decision. The model predicts a subjective analysis given the differing experiences and backgrounds of individuals and varying cultures and norms of organizations. This framework also suggests that group dialogue about available data may occur to develop a collective interpretation of their meaning (Dutton, 2003; Mumby & Putnam, 1992). In this case, the personal experiences and perspectives of the health faculty member who took the research sabbatical strongly shaped the data analysis. “My big impetus...for my sabbatical...was how will I know they are learning...and what I picked up from the other programs is what you do in your discussion board,” this

instructor explained. Based on experiences teaching online health courses in the past and also in discussing with other online instructors—both in health and other disciplines—their own approaches, this professor interpreted the data to mean that, “I can actually measure their learning better through discussion board...what they do in their blogs, how do they relate their clinical work in the hospital to the concepts we are discussing in the blog or the discussion questions?” Thus, the instructor included discussion boards as a central tool for assessing student learning in the courses developed for Wilder’s online health program. Such a mix of individual and group interpretation is part of the culture at Wilder, according to a different online instructor:

I have a great idea about an online course...you sit down with the [Department] Chair...there would be a dialogue between the professor and the Chair...we bounce ideas off each other at department meetings and in the hallway...there is always a great amount of feedback that is produced during those conversations...it does at least have some impact on the direction where that particular course may or may not be going...it is influential.

What is striking about both the data collection and analysis described above is that it focuses on implementation issues: *how* to put this health program online successfully, not *whether* to do so. The basis for this decision had both constructivist and rationalist elements. There was little research or debate about putting the program online, because the program fit with the college’s strategic goals for online distance education, and student demand for seats in the program was not in question. A dean explained that online program development, “was in response to the great demand from students...so that was data-driven.” “You could offer [this program] at 2 am and they would come,” agreed an instructor. From this perspective, a rational analysis of the data led to the

decision (Tarter & Hoy, 1998). However, Wilder actually made the decision to offer the program online *before* it gathered and analyzed data. Given the few similar programs available to study, the college could not gather enough data to prove student learning in the online classes would be effective. To gain such data, Wilder leaders had to actually launch their own program. Action had to precede data collection—as suggested by the constructivist model—because data gathering could not precede action as called for by rational choice. A faculty member explained:

Do we have hard facts that this course is successful online? No, but if we have enough in the way of support...it is not hard factual evidence, but circumstantial or corroborating evidence, then, yes, we will pilot it at least and see how it goes. Our president and our deans will ask us to keep records of how these students are doing, how they perform in learning outcomes.

Decision making practices that incorporate both constructivist and rational approaches are consistent with the development of a culture of inquiry on a college campus. A culture of inquiry values rational data gathering and analysis, but as only one input into a process that starts with practitioners' questions and ends with their interpretation of the meaning of both hard and soft data (*Creating a culture of inquiry*, 2005; Dowd, 2005). This mixing of rational and constructivist approaches was evident in the Wilder online health program decision. The instructor who took the research sabbatical described the interplay of these two approaches:

I think this decision...we are taking a big risk... an educated risk, well-supported risk...one we are willing to take. I am glad that Administration is willing to take that risk as well...they put somebody with technology knowledge behind it to try and ensure its success...I did research, but the data isn't hard data...My decisions about design are based on other peoples' data...I used their experience.

This finding suggests that the community colleges most likely to adopt a culture of inquiry may be institutions that are both committed to the rational use of evidence and to cutting edge programming. Using the tools of hard data collection and objective analysis and being open to experimentation and to base decisions on interpretations of limited data drawn from practitioners' experience may be necessary to grapple with the challenges and complexities such institutions face.

The Five Decisions and the Four Models: Some Conclusions

The ability of the rational choice, incremental, political, and constructivist decision making models to explain the behavior in the five decisions is summarized in Table 9. This table shows the five decisions in columns and the rows contain the eight aspects of the decisions analyzed in the previous five sections of this chapter. Within each cell is listed the decision making models that can explain some part of that aspect of the decision. For instance, both rational choice and political models are helpful for explaining the basis for Zorn Valley's decision about the learning management system.

Several factors are notable about the findings presented in Table 9. First, the frequency with which each model appears differs greatly. In the 40 cells in the table, the rational choice model appears 29 times, the constructivist model 18 times, the political model 7 times, and the incremental model 6 times. Not only does the rational choice model appear more overall, it is also the model that appears most often in three of the five decisions: Yankee's new online course development process, Zorn Valley's learning management system choice, and Wilder's online hosting solution. The constructivist model appears most often in Wilder's online health program decision, and the political

Table 9
Alignment of Decision Making Models and Case Study Decisions

Decision: <hr/> Decision Aspects:	Yankee Online Biology Lab	Yankee New Online Course Development	Zorn Valley Learning Management System	Wilder Online Hosting	Wilder Online Health Program
Institutional Goals	Incremental/ Political	Rational Choice/ Incremental	Incremental	Rational Choice	Rational Choice
Capabilities to Collect and Analyze Data	Rational Choice/ Incremental/ Political/ Constructivist	Rational Choice	Rational Choice/ Incremental	Rational Choice/ Incremental	Rational Choice
Assumptions about Data Availability	Rational Choice/ Constructivist	Rational Choice	Rational Choice	Rational Choice/ Constructivist	Constructivist
Approach to Uncertainty	No evidence for any theory	Rational Choice	Rational Choice	Rational Choice/ Constructivist	Rational Choice/ Constructivist
Scope of Data Collection	Political	Rational Choice/ Constructivist	Rational Choice/ Constructivist	Rational Choice	Constructivist
Types of Data Gathered	Political	Rational Choice/ Constructivist	Rational Choice/ Constructivist	Rational Choice	Constructivist
Methods of Data Analysis	Political/ Constructivist	Rational Choice/ Constructivist	Rational Choice	Rational Choice	Constructivist
Basis for Making Decision	Political	Rational Choice/ Constructivist	Rational Choice/ Political	Rational Choice/ Constructivist	Rational Choice/ Constructivist

model appears most often in Yankee's online biology lab decision. The incremental model appears the least overall and does not appear the most in any of the five decisions. Another important commonality in Table 9 is that more than one model explains each of

the decisions. All four of the models provide explanations in two of the decisions. Three of the models provide explanations in two other decisions, and two of the models provide explanations in the fifth decision. Nineteen of the forty cells in the table contain multiple models as well. This means that even when considering a single aspect of one decision, multiple models were helpful about half of the time.

Three primary conclusions can be drawn from this analysis of five decisions using the lenses provided by the four decision making models. First, none of the decisions can be fully understood by examining it with a single model. Second, although none of the models can explain any of the decisions by themselves, each of the decisions did have one model that more fully explained that decision than the others. In three of the decisions, this was the rational choice model, while the constructivist and political models were each the best fit for one of the other two decisions. Third, some blend of the four models was able to explain the primary aspects of each decision; other theories and models were not necessary. Moreover, significant themes unconnected to the four models did not emerge in the research. This subsection will now briefly explore each of these conclusions in more detail.

Elements of more than one of the four models—rational choice, incremental, political, and constructivist—were useful in understanding decision making behavior in each of the five community college decisions about online distance education. For instance, in both Yankee’s online biology lab decision and Zorn Valley’s learning management system decision, all four models helped explain certain aspects of what happened. All of the models except the political were present in Yankee’s online course

development and Wilder's online hosting decisions. The constructivist and rational choice models were both helpful in understanding Wilder's online health program decision. This decision making process, like the others, was too complex to be explained by a single theory. Wilder was an institution that followed a largely rational, data based approach in its affairs, including online distance education, but at the same time valued innovation. The constructivist model was needed to understand emergent situations, such as putting the health program online. This study confirms, therefore, the usefulness of a contingency approach to explain community college decision making about online distance education. Contingency theories combine multiple models to explain decision making (Daft & Weick, 1984; Tarter & Hoy, 1998), and are helpful because institutions often face contexts that include elements featured in different models. Zorn Valley, for instance, was dealing with both incrementalist confusion about its online distance education goals and rational impulses to choose the most cost effective and user friendly LMS for its faculty and students.

Despite the utility of a blend of the models to understand each of the five decisions, a single model did emerge as the dominant explanation for each. In three of the decisions—Yankee's new online course development, Zorn Valley's LMS, and Wilder's online hosting—this model was rational choice. This mirrors the overall pattern of coding in this study, in which interview participant statements coded as rational choice were almost twice as numerous as those coded constructivist and more than three times as common as those coded as either political or incremental. It is possible that this dominance of the rational choice model reflects a bias on the part of those interviewed,

who may either have remembered the decision making process as more rational than it actually was or who at least wished to make it appear so. There are two reasons to doubt this, however. First, in the case of both the Yankee new online course development process and Zorn Valley LMS decisions, multiple documents confirm the rational approach described by those interviewed at each college. Unfortunately, no such documents could be obtained for Wilder's online hosting decision. Second, as will be noted in further detail below, interview participants at all three institutions showed repeated willingness to discuss problems related to their decision making processes, including ones that revealed self-interested behavior engaged in by a variety of personnel that could be considered embarrassing to their college. Such willingness to reveal the "warts" of their approach is not consistent with a desire to present their institution in the most rational light possible.

A perhaps more convincing reason for the prevalence of the rational choice model is the fact that all five of the decisions represented major choices for the three community colleges. Substantial resources were being invested in both the new Zorn Valley LMS and Wilder online hosting system, for example, while the choice of new online courses to develop at Yankee collectively shaped the distance education effort there. Evidence in each of these cases suggests that decision makers felt pressure to make careful, well-researched decisions because the consequences of mistakes would be substantial. For example, at Zorn Valley the widespread unhappiness with the existing LMS meant it was crucial to pick a new system that would keep faculty committed to teaching online.

As suggested by the mixed scanning model, institutions will tend to follow a rational approach to making major decisions, but an incremental one for more routine decisions in order to save resources and time (Etzioni, 1967, 1986). The mixed scanning model was consistent with the behavior examined in this study, in which the incremental model was not a dominant explanation for any of the decisions despite being helpful at times in explaining certain elements of them. Interview participants at all three of the colleges indicated, however, that much less data gathering and analysis went into less significant, routine decisions at their institutions. Additional research into such routine decisions would be helpful to explore whether the incremental model may be particularly useful in understanding them. In this study, however, the incremental model had little explanatory power regarding major organizational decisions.

The rational choice model was not the dominant explanation for two of the decisions examined in this study: Yankee's decision to take the biology labs offline and Wilder's decision about the online health program. In Yankee's online biology lab decision, the political model explained the largest number of dimensions of the decision. There were clashing interests and values—over the wisdom of pursuing online distance education, full-time faculty workload, and the use of data in decision making—between administration and at least some faculty. Moreover, the Dean of Distance Education and faculty were competing for control of the online curriculum. In other words, substantial political factors were present. Under such circumstances, politics may overwhelm rationalist impulses to gather and analyze data objectively. Although some of the other decisions also involved political behavior, none of them featured the intensity of

disagreement at Yankee over the online biology labs. As noted above, in fact, across all five decisions far fewer interview participant statements were coded as political than either rational choice or constructivist.

It is possible that the desire to avoid revealing political behavior discouraged those interviewed from discussing it. Yet, there is evidence at all three colleges to the contrary. First, other than the Senate meeting minutes related to the Yankee online biology lab decision, none of the documents reviewed for this study described political behavior. Second, interview participants did not seem reticent to discuss political behavior. Many of those interviewed at Yankee spoke willingly about the online lab decision, described it explicitly as a political decision, and believed it to have been unfortunate for the college in its consequences for offering full degrees online. Two of these individuals clearly did not enjoy reliving the experience, but still discussed it at length. Similarly, several senior administrators at Zorn Valley openly discussed the political aspects of the LMS decision, particularly the importance of the unanimous recommendation of the research committee and the key role played by the IT Director in convincing the President to endorse it. Multiple interview participants described political behavior at Wilder, too. Although it did not appear to be a significant factor in the online health decision, one faculty member explicitly pointed out substantial differences that she had with the Dean of Distance Education. Separately, a Wilder administrator described the college's strategic plan in political terms: if one wanted to get an initiative approved, it was essential to make it sound as if it supported the plan. These explicit discussions of

political behaviors in the various decisions suggest that interview participants did not seek to avoid the topic.

The constructivist model was the dominant explanation only in Wilder's online health program decision. Of the five decisions, this one involved emergent factors to the greatest degree. Few other community colleges had tried to put this particular program online before and given the stringent requirements of health care program accreditation, this decision involved significant risk with sparse existing data to draw on for guidance. Although the other decisions also involved some unknowns, significant amounts of relevant data were available: completion rates in classes taken after the online Yankee biology lab, cost and technical capabilities data for LMS options at Zorn Valley, cost and capacity data regarding online hosting alternatives at Wilder, and enrollment and cost estimates and technology requirements for new online courses to be developed at Yankee. None of these other decisions involved anything as novel as Wilder's online health program. Yankee already had taught the biology labs in a hybrid mode and had previously developed new online courses, Zorn Valley already had an LMS, and Wilder was already hosting its online infrastructure. This suggests that the constructivist model may be the dominant explanation for decision making behavior when a community college is facing truly emergent circumstances.

The final conclusion to be drawn from this analysis is that the four models, or some blend of them, largely explained the behavior in the five decisions without the need for other decision making theories. None of the major themes that emerged from the open coding process were unrelated to these four models. One topic that did come up a

great deal in all of the five decisions was risk taking. Although the four models account for this to some degree, they did not always explain the behavior in the three cases examined in this study. Rational choice theory, for instance, implies that risk will tend to be minimized by thorough data collection and objective analysis of all available options. However, although Wilder Community College was the institution most committed to a rational approach in its general operations, it was also the most willing to take risks. Its online health program decision was made largely without rational data collection or analysis, although these tools were used to examine how to implement the decision. It is possible that cultural and contextual factors at the colleges can explain such apparent contradictions. This chapter now turns to these factors in its final subsection.

Cross-Case Analysis of Contextual Factors

The literature regarding online distance education decision making in community colleges indicated that institutions with varying organizational contexts were likely to approach decision making in different ways. The conceptual framework for this study—Daft and Weick's (1984) model of organizations as interpretation systems—assumes explicitly that organizations' approaches to decision making will vary systematically depending on organizational contextual factors. This subsection will briefly review Daft and Weick's model and then explore which of its three relevant modes of organizational behavior align best with the different organizational contexts of Yankee, Zorn Valley, and Wilder Community Colleges. Then the analysis will examine whether these organizational modes can explain the behavior of these institutions in the five online distance education decisions. Finally, the analysis will conclude with a consideration of

organizational contextual factors that are not fully included in Daft and Weick's (1984) model, but which were important in the decisions examined in this study. This will provide ideas about how those factors might help to revise the model.

Daft and Weick's (1984) model of organizations as interpretation systems assumes that institutions must interact with their external environment and thus need data about it. The model further assumes that organizations differ systematically in how they collect, interpret, and use such data for decision making. They posit that these differences are caused by variations along two dimensions: the extent to which an organization's leaders believe that they can analyze the external environment, and the degree to which the organization interacts with that environment. The intersection of these two dimensions, Daft and Weick (1984) assert, creates four modes of organizational behavior related to the use of data in making decisions (see Figure 4).

Three of these modes align with the decision making theories that are relevant to this study. *Discovering* organizations interact vigorously with the external environment and have leaders who believe that they can analyze that environment. They tend to approach decision making rationally, gathering data in large volumes and then objectively analyzing them to find the optimal choice among multiple alternatives (Lyles & Thomas, 1988; Tarter & Hoy, 1998).

Enacting organizations are also actively engaged with their external environment, but their leaders believe they can not analyze it. Faced with this uncertainty, leaders in these organizations engage in trial and error—a characteristic of incremental theory

(Lindblom, 1979)—and experimentation, working to actually create a new reality, which is predicted by the constructivist model (Daft and Weick, 1984).

Undirected viewing organizations do not actively interact with the external environment. Their leaders believe they can not analyze the environment, but assume it is benign and thus do not actively seek data about it. Because each leader's differing experiences and perspectives may lead to contrasting individual perceptions of those random data that do become available about the environment, it is necessary to debate these perceptions and ultimately negotiate a single, organizational interpretation. This mode of behavior, therefore, is similar to what is predicted by the political model (Lyles & Thomas, 1988).

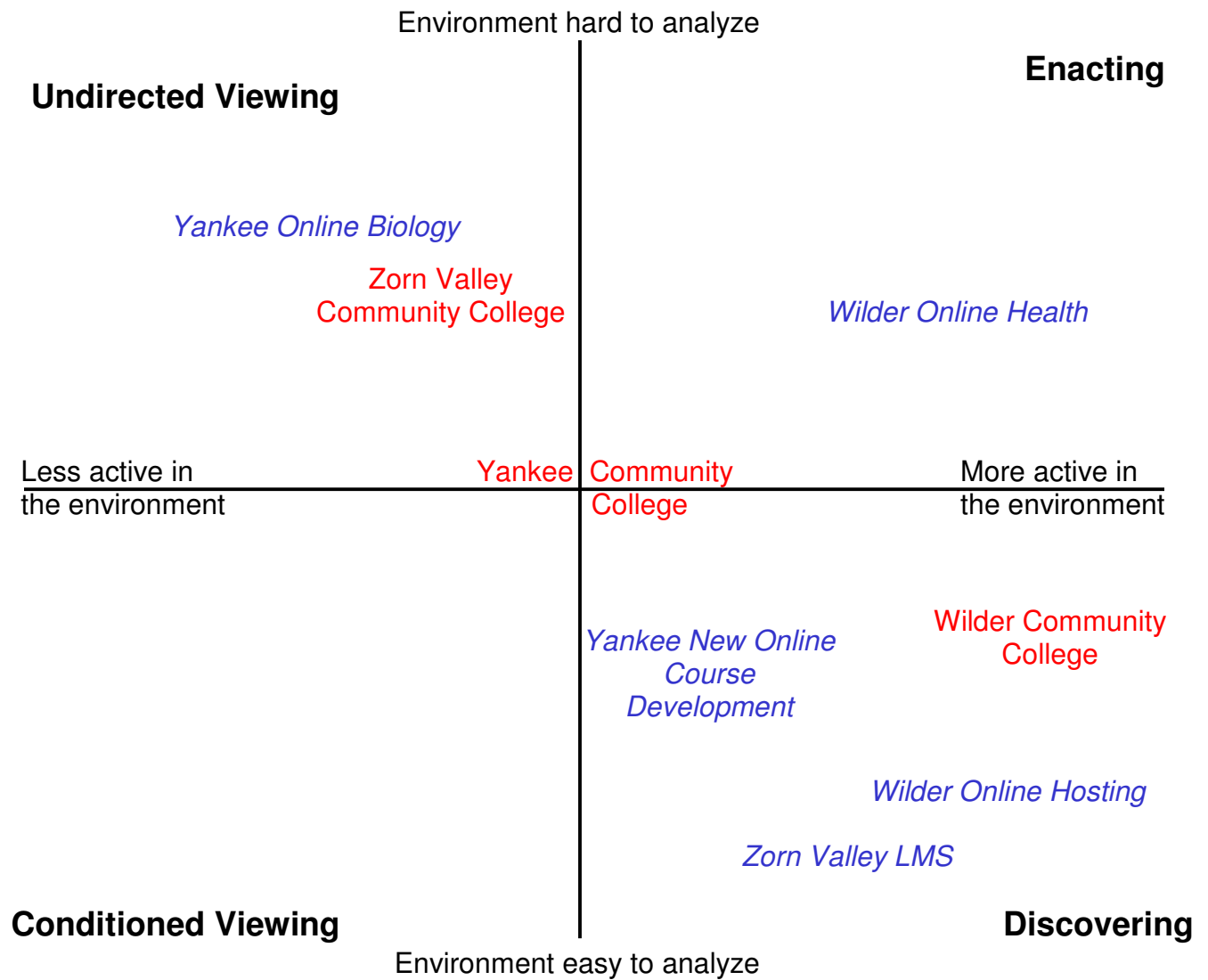
The final mode in Daft and Weick's (1984) model—*conditioned viewing*—is not relevant to this study because it assumes a hierarchical organization with a regimented decision making process and a stable environment. These assumptions do not fit well with community college decision making about online distance education. These institutions do not tend to have hierarchical or regimented systems; instead they feature shared governance in which a shifting collection of actors, with varying levels of responsibility and often differing objectives, are involved in making decisions about online distance education (Adams & Seagren, 2004; Cox, 2005; Kater & Levin, 2005; Sachs, 2004). Moreover, rapidly growing enrollments and advancing technology create a constantly changing environment, not the static one assumed in the conditioned viewing mode (Allen & Seaman, 2010b; Sachs, 2004).

The site selection process for this study, described in Chapter 3, suggested that Wilder Community College had a high level of interaction with its external environment and its leaders had confidence in their ability to analyze that environment. For the most part, the interviews confirmed this. The number of references that interview participants made to the external environment at Wilder was more than one and a half times greater than at Yankee or Zorn Valley. Such references were wide ranging, including partnerships with high schools, four-year universities, other community colleges, private firms, and non-profits. Study participants also referred to the impact of accrediting agencies, state government, Massachusetts Colleges Online—a statewide consortium dedicated to promoting cooperation among public higher education institutions in online distance education—and external grant opportunities. In commenting about Wilder’s analysis of the online distance education environment, a professor said that the college, “...has a better handle on what everybody else is doing and what other things are happening and what is working at other colleges and what is not.” An important exception to this confidence, however, was highlighted in the online health program decision. When confronted with emergent situations, Wilder online distance education leaders were less certain that they could analyze their environment. In those situations, multiple interview participants described a need to use gut instinct to make decisions. Based on these findings, Wilder Community College can be placed in the discovering institutions quadrant of Figure 4. Wilder is active in its external environment and confident in its ability to analyze that environment, but the presence of emergent situations facing this institution means that it should not be placed too far toward the

bottom of the figure (a location that represents the very highest levels of analyzability and confidence).

Figure 4

Daft and Weick's Model: Placement of the Three Colleges and Five Decisions



Yankee Community College had a moderate level of interaction with its environment and decision makers were moderately confident about their ability to analyze that environment. Overall the interviews confirmed the sense of an institution “in the middle” compared to Wilder and Zorn Valley. Fewer interview participants talked about the external environment than at Wilder and their references were collectively less wide ranging. Interaction with private firms and other colleges were mentioned. Several administrators pointed out that while the President was a big supporter of the Massachusetts Colleges Online consortium, the Dean of Distance Education was not. Although Wilder faculty were enthusiastic about attending the MCO Conference to learn what other schools were doing, a Yankee instructor remarked, “you know, I have gone to the MCO Conference...and I haven’t seen many of my colleagues there.” As noted in earlier sections, faculty who were interviewed were less certain than administrators about Yankee’s ability to analyze data to make decisions. Even an administrator involved in the LMS search at Yankee described his frustration with getting useful data from the external environment (i.e., out of vendors or other colleges):

You can call up...you have to get the right person. The right person is going to say, ‘Okay, wait a minute. Who wants this data? This is pretty sensitive.’ You get that from a lot of colleges...You can get some generalizations. I would love to see if it was possible to get all that data...or if the companies would...give you this information...

Based on this moderate level of interaction with and confidence in its ability to analyze the environment, Yankee Community College can be placed right in the middle of Figure 4, straddling the undirected viewing, enacting, and discovering quadrants.

The site selection process for this study suggested that Zorn Valley Community College had limited interaction with its environment and low confidence in its ability to analyze that environment. In one sense, however, the interviews indicated that Zorn Valley was more active with its external environment than the site selection process suggested. Zorn Valley's entire early online distance education effort was built on a grant partnership with another college, for instance, and interview participants mentioned interactions with other actors, including private firms, other colleges, MCO, and accrediting agencies. On the other hand, there were also indications of an inward looking institution. Said one administrator about this outlook, "Not that strong an interest in the rest of the world. So the isolation makes distance education useful but not a priority." As for the partnership with the other college, faculty and administrators admitted that it was largely a marriage of convenience. As a senior administrator commented, "the process with the other community college was a good one, but we did not really collaborate very much. Sometimes these attempts to bring faculty together just do not work out. The relationship was civil but in terms of real collaboration, no." The interviews also largely confirmed Zorn Valley's uncertainty in analyzing its environment. An administrator described the fast changing technology and vendor marketplace during the LMS search as, "very forceful, expensive and complex...very tricky because you are being pushed down a road because of the technology." Based on these findings, Zorn Valley can be placed in the undirected viewing quadrant of Figure 4. Although its level of interaction with the external environment was not that much less than Yankee's, its confidence in its ability to analyze that environment was lower.

Daft and Weick's model explained the behavior in some of the decision making processes examined in this study, but not all. The model explained the Wilder Community College decisions, but was less effective for Yankee and Zorn Valley.

Wilder's placement as a discovering organization within Daft and Weick's (1984) model suggests that it will follow a rational approach and that occurred in the online hosting decision. Wilder collected substantial amounts of data about multiple hosting alternatives, compared them objectively, and made a decision based on measurable criteria—cost, system reliability—that would support its strategic goals.

The online health program decision at Wilder, on the other hand, had more characteristics of a constructivist approach. The decision was made prior to the gathering of data, and data collection focused instead on implementation. Wilder leaders admitted that data were sparse and putting this program online was a risk. This form of decision making is more consistent with Daft and Weick's (1984) enacting mode. Interview participants at Wilder explained that they sometimes faced emergent situations, and they were willing to experiment when they did. At the same time, although much of the behavior in the online health program decision making process was constructivist, some of it was also rational, including the strong linkage of this decision to the strategic goals of the college and the committed search for available data.

Overall, Wilder's experience suggests that a college could operate in two quadrants of Daft and Weick's (1984) model depending on beliefs regarding the analyzability of the environment for different decision making situations. This model

seems consistent then with Wilder's rational and constructivist approaches to decision making.

It could be argued that Yankee's location at the center of Figure 4 and in all three of the relevant Daft and Weick (1984) quadrants indicates that decision making behavior at Yankee could be characterized by rational choice, incremental, political, or constructivist models. Indeed, as noted earlier, Yankee's online biology lab decision did feature aspects consistent with all four models, and its new online course development process had elements consistent with three of the four.

On the other hand, it is not clear whether Daft and Weick's (1984) two dimensions fully explain the predominant approaches used in each of Yankee's decisions. The political model explains the online biology lab decision best, so it belongs in the undirected viewing quadrant. This decision involved little interaction with the external environment—consistent with the Daft and Weick (1984) model—but the confidence of Yankee leaders in their ability to analyze that environment played no part in the process. Instead, factors other than interaction with the external environment and beliefs about its analyzability, such as disagreements over who should have the authority to approve online courses, were dominant drivers of the decision. This suggests factors outside of Daft and Weick's (1984) model could trigger political decision making.

The rational choice model best explains the new online course development process at Yankee, which locates that decision in the discovering quadrant, according to Daft and Weick (1984). Yankee decision makers were confident in their ability to analyze the voluminous data that they collected for these decisions, but most of that data

related to internal factors (impact on programs, costs of training, etc.) not ones in the environment. This suggests that other factors might trigger rational choice behavior besides active intervention in the environment.

Zorn Valley's location in the undirected viewing quadrant of Figure 4 predicts political decision making. While Zorn Valley's learning management decision did feature some political behavior, rational choice was the dominant approach. Large amounts of data were collected, careful objective analysis followed, with a decision based on costs and faculty ratings of LMS technical capabilities. This decision, therefore, belongs in the discovering quadrant. Moreover, Daft and Weick's (1984) two dimensions did align with Zorn Valley's behavior in this particular decision. Decision makers expressed confidence in their ability to analyze the data that they were gathering for the learning management system decision, and important external factors (in particular, what the various external vendors were offering) were a prominent part of those data. The rational choice approach to this specific decision, however, was not what Daft and Weick's (1984) model would have predicted about Zorn Valley given its general organization-wide level of interaction with the environment and limited college-wide confidence in its ability to analyze that environment. Those interviewed at Zorn Valley acknowledged that the LMS decision was an outlier from the college's general approach to decision making, and this can explain the limited predictive value of the model in this situation.

Thus Daft and Weick's model seems useful in explaining some of the five decisions and elements of some of the others. Its two main components—interaction

with environment and beliefs about abilities to analyze that environment—were related to the decision making behaviors observed in this study. However, the model did not explain all aspects of this behavior. The political approach to the Yankee online biology lab decision was not connected to interactions with the environment nor beliefs about the ability of decision makers to analyze the environment. More evidence suggests that the dispute over the lab grew out of longstanding internal tensions between full-time faculty and administration about online distance education and other issues, as well as an organizational structure that gave the Dean of Distance Education a great deal of control over decision making, which could leave full-time professors out of the process. This suggests that an institution's history and organizational structure can also influence decision making behavior. It is interesting to note that Wilder's online distance education organizational structure was similar to Yankee's, but—without the history of faculty-administration tension—Wilder's structure did not produce the same political behavior in its decisions.

Yankee's later online course development process was more rational in its approach than during the biology lab decision, but this did not seem to flow from significantly greater environmental interaction or necessarily increased confidence in the ability to analyze the environment. Although it is not clear what led to this change in approach from the earlier political behavior, interview participants suggested that the institution was unhappy with how the online biology lab decision was made, and they viewed a more rational process as a path to better decisions. Moreover, the new approach promoted more faculty involvement and thus legitimacy and support for those decisions.

Again, internal historical factors appeared more important here than the external factors featured most prominently in Daft and Weick's (1984) model.

In one sense, this model does seem consistent with Zorn Valley's behavior when making the decision about a new learning management system, with important environmental factors present and extra effort being put into providing the capability to gather and analyze data in that situation. On the other hand, Daft and Weick's (1984) model would not have predicted this behavior given the general organization-wide conditions at Zorn Valley. As noted above, several interview participants pointed to the great importance of the LMS decision as the reason why it was pursued in such a rational manner. Daft and Weick do not account for the importance of a decision in their model, but the mixed scanning model does (Etzioni, 1986).

Even when some of the decision making behavior was related to interaction with the environment or beliefs about ability to analyze that environment, it was not clear that it was only or primarily these factors that were most important in the five decisions. Other contextual factors also were significant. For instance, while all three institutions are expected to interact with their environment as part of the community college mission, Wilder's urban location provided many more opportunities and probably external pressures for partnerships. Zorn Valley's setting in a rural area, by contrast, provided fewer potential partners even if the commitment to serving the community was also strong. Thus, location of the institution might be a contributing factor to how much it interacts with the environment. Similarly, size of the institution might influence beliefs about its ability to analyze the environment. Multiple interview participants at Zorn

Valley pointed out how stretched its small staff was and how difficult extensive data gathering and analysis were. Although this problem was overcome in the LMS decision, it took a significant commitment from the college to assemble the resources needed for a rational approach. As the largest institution in this study, Wilder appeared to have the most resources available for data collection and analysis, which may explain why it was confident in its ability to analyze the external environment.

Institutional culture with respect to innovation and change also appeared to be tied to interaction with the environment and decision making behavior. An administrator at Wilder pointed out that innovation was a central feature of the culture and its pioneering role in online distance education certainly provided evidence of this. A culture of tradition, on the other hand, tended to prevail at Zorn Valley, according to several administrators there. This may explain the late and slow start to the development of online courses at this institution. It is not surprising then that Wilder produced the only example of a constructivist decision, with a willingness to open the first online program in a particular health field in the state without clear evidence that success would result. Wilder's behavior in this emergent situation, therefore, seems consistent with both an institutional culture of innovation and Daft and Weick's (1984) main elements: environmental interaction and beliefs about analytical capability. It is not clear, however, which of these factors was more influential or how they might interrelate with each other. For instance, did an institutional culture that valued innovation spur Wilder's active interaction with partners in its environment, or did the comfort with external partnerships spur innovation, or were they mutually supporting? Whatever the case, Daft and Weick

(1984) do not account for institutional culture related to change and risk-taking in their model.

To summarize, while Daft and Weick's (1984) model of organizations as interpretation systems does explain some of the decision making behavior in this study, and its emphasis on interaction with the environment and beliefs about the ability to analyze that environment were linked to other significant contextual factors at the three case study colleges—such as location, size, and institutional culture—the model does leave some gaps in understanding the five decisions. In particular, issues of organizational history and structure are not captured by Daft and Weick (1984) but were relevant to the decision making processes studied here. It appears that Daft and Weick's model would be strengthened if it took account of these issues internal to organizations in addition to its focus on the external environment. The four models explored in Chapter Two—rational choice, incremental, political, and constructivist—do account for these factors and thus collectively represent more complete theoretical frameworks for continuing to study community college decision making about online distance education. A contingency theory that included these four models, as Daft and Weick's (1984) does, but with more of their explanatory features would be particularly helpful. In particular, a theory that could address not just the external environment but also internal factors, such as institutional culture, history, and organizational structure, would better explain the five decisions examined here. This study considers such suggestions for further research in its final chapter.

CHAPTER 6

IMPLICATIONS AND RECOMMENDATIONS

This study explored how and to what extent academic leaders at community colleges use data to make decisions about online distance education. The analysis also examined how the emergent nature of online distance education may influence the availability and use of data in these decisions. These questions are important because community colleges face substantial challenges in addressing rapidly rising enrollments, tight financial resources, and increasing demands for accountability from policy makers and the public (Dougherty & Townsend, 2006; Lassen, 2007; National Center for Education Statistics, 2010). Data driven decision making and online distance education—which could provide more students access without building expensive new physical facilities—are potential strategies for making these institutions both more productive and more accountable (Bailey & Alfonso, 2005; Bramble & Panda, 2008a; Saba, 2005). Community college leaders, therefore, may need to know whether using data to make decisions about online distance education is feasible and if there are alternative approaches to decision making available that could address these challenges.

The findings of this study suggest some answers to these questions. For instance, they indicate that in online distance education, a decision's significance and the number

of alternatives considered in making the decision may influence how much data community college leaders gather and how much influence those data have. Although the emergent nature of online distance education did sometimes limit the availability of data, the institutions in this study were still able to make decisions by using the data they had, by generating new data, or relying on intuition and experience.

Existing rational choice, incremental, political, and constructivist models were able to explain all of the decisions examined in this study, but a blend of these models was always superior to any of them alone in predicting decision making behavior. The rational choice model explained the largest number of elements of Yankee Community College's new online course development decisions, Zorn Valley Community College's learning management system decision, and Wilder Community College's online hosting decision. The political model explained the largest number of elements of Yankee's online biology lab decision, and the constructivist model explained the largest number of elements of Wilder's online health program decision. However, one or more of the four decision making models explained additional aspects of each of these decisions. For example, rational choice, incremental, political, and constructivist models each explained some element of Yankee's new online course development process.

These findings imply that data based decision making about online distance education is feasible in community colleges, at least for major decisions, but that other approaches can also work and that different strategies can actually support each other when used together. Similarly, theoretical understandings of community college decision making—whether about online distance education or other issues—may be advanced by

refining contingency theories that combine the explanatory power of the rational choice, incremental, political, and constructivist models. The mixed scanning and culture of inquiry models, in particular, were helpful in understanding decision making behavior at the three institutions examined in this study. Mixed scanning combines elements of rational choice and incrementalism, while the culture of inquiry blends features of the constructivist and rational choice models.

This chapter begins by highlighting the major findings of this study, examining how they align with the literature on online distance education decision making, and considering their implications for the practice and study of decision making in higher education. Drawing on these conclusions, the chapter then provides recommendations for practice for both leaders at community colleges and education policy makers. The chapter concludes with suggestions for further research, considering both specific online distance education issues raised in the study and wider questions about how best to comprehend decision making in higher education in general.

Summary of Findings and Implications

This section reviews prominent, cross-case findings of this study on the use of data in community college decision making about online distance education (see Table 10). This analysis highlights how specific components of each finding align with the existing literature on decision making about online distance education. This section concludes by considering the implications of these findings for the practice and study of higher education decision making.

Data are Influential in Online Distance Education Decision Making

The first major finding was that in all five of the major online distance education decisions examined in this study, community college decision makers gathered multiple

Table 10
Key Findings of the Study

Major Finding	Details
Data are influential in online distance education decision making	<ul style="list-style-type: none">• More data were gathered and data were more influential when decisions had large impact and when multiple alternatives were considered• Propensity and capacity of an institution to collect and analyze data did not necessarily predict how much data were collected for particular decisions• Data were gathered mainly to detect problems and choose alternative solutions• Data were gathered about academic, facilities/technical, financial, personnel, and especially student issues
Emergent situations limit data but do not prevent decisions	<ul style="list-style-type: none">• Three out of five decisions involved emergent factors• Data were least available when the situation was most emergent• When faced with limited data, decision makers gathered what data they could, generated new data through pilots, and relied on their experience and judgment to make decisions
Existing models explain decision making behavior	<ul style="list-style-type: none">• Rational choice, incremental, political, and constructivist models could explain the behavior in the five decisions• One model emerged as the predominant explanation in each decision: rational choice was this model three times, political and constructivist models once each• The incremental model did not emerge as a predominant explanation for any decisions but did explain some decision making behavior
A blend of the models provides a more complete explanation	<ul style="list-style-type: none">• All five decisions were too complex to be fully explained by one model• Contingency approaches that blend the models—such as mixed scanning and the culture of inquiry—provided fuller explanations of decision making behavior• Daft and Weick’s contingency model could explain some of the decision making behavior in the decisions but not all of it

types of data. The extent of data collection and the influence of data on the decision, however, varied substantially depending on the significance and breadth of the impact of the decision and the number of alternatives being considered. This variation is consistent with the literature, which suggests that different contexts lead to different approaches to decision making (Adams & Seagren, 2004; Cox, 2005; Owen & Demb, 2004; Sachs, 2004).

The three colleges gathered more data and those data were more influential when decisions had a large impact on a broad set of constituents. Zorn Valley collected an immense amount of data, for example, and then used these data to choose a new learning management system. Similarly, Wilder gathered substantial quantities of data on online hosting options, and analyzed them in order to select the university system. In both cases, the decision had major implications for whether faculty and students would continue to involve themselves in online courses, for the technical support needed at each college, and for institutional budgets. Yankee, on the other hand, gathered far less data on the online biology labs, and political factors were more important than data in the decision to shut these courses down. Since this decision involved just two courses, it affected far fewer faculty and students, and had little impact on finances or technical capacity at the college. The finding that more data will be collected for a decision with a large impact on many constituencies aligns with Etzioni's mixed scanning model (1967; 1986), which posits that resources for data gathering and analysis are likely to be focused on major decisions rather than less significant ones.

The three colleges also collected more data and were more likely to use those data in making decisions when they had more alternatives to choose among. Yankee considered eight to 22 new online course proposals in each of three recent semesters, Zorn Valley compared six different learning management systems, and Wilder examined four different options for online hosting. In each case, the institution involved gathered large amounts of data, and those data had a strong influence on the ultimate decision. The Yankee online biology lab and Wilder online health program decisions each involved just two alternatives—offer the curricula online or not—and neither featured substantial data collection. The finding that more alternatives leads to more data gathering is consistent with the rational choice literature, which posits that organizations will consider large numbers of options and gather data about them (Tarter & Hoy, 1998).

It is notable that an institution's propensity and capacity for gathering and analyzing data in general did not necessarily predict its behavior in these five specific decisions. Zorn Valley did not have a strong culture of evidence, for example, but collected a great deal of data that substantially influenced its LMS decision. Wilder, by contrast, had both a tradition of using data to make decisions and substantial institutional research capacity for data gathering and analysis. Nevertheless, Wilder's leaders decided to put the health program online before beginning data collection, and ultimately gathered a rather small amount of data related to the program. This finding is somewhat at odds with previous empirical research, which suggests that institutions with more capacity for data gathering and analysis are more likely to use data in decision making (Morest &

Jenkins, 2007). Study participants indicated, however, that most decisions at Zorn Valley were not influenced by data and that data did affect most decisions at Wilder.

The most common purposes for data collection in the five decisions were to detect problems and to compare potential solutions to those problems. Wilder and Zorn Valley, for example, gathered data about the poor performance of their online hosting technology and learning management systems, respectively. They also collected and analyzed data to choose among alternative hosting and LMS solutions. Brock et al. (2007) found similar uses for data in their study of Achieving the Dream colleges. For instance, about half of the institutions they studied had used data analysis to identify problems on their campuses, and a third of the colleges had employed such analyses to choose strategies to address the problems.

This study breaks new ground in its findings about the types of data collected. The three community colleges gathered data about academic, financial, personnel, student, and technical/financial issues in the five decisions examined in this research. The number of these categories about which the three colleges gathered data varied from just two (in two of the decisions) to five (in one of the decisions). In some cases this reflected differences in the impact of the decision—Wilder's online hosting decision had far bigger financial and technical implications than its online health program decision, for instance—and in others suggested a difference in attitude toward the value of data: Yankee decision makers showed much more interest in analyzing data in their new online course development process than they did in the earlier online biology lab decision. Data about students were gathered in all of the decisions studied, suggesting their centrality to

online distance education decision making. Across the five decisions, about an equal amount of quantitative and qualitative data were gathered, but more of the former were found in the financial and technical categories while more of the latter were common in the academic and personnel categories. This suggests that community college leaders faced with decisions with wide ranging implications for technology, finances, employees, and students—such as Zorn Valley’s LMS decision—are more likely to use both kinds of data than when making decisions with narrower impact. This study adds to the knowledge base because the review of the limited literature on online distance education decision making revealed little information about the types of data gathered by higher education institutions.

Emergent Situations Limit Data but do not Prevent Decisions

The second major finding of this study was that the emergent nature of online distance education affected three of the five decisions, and that the more emergent the situation, the less data were available. In deciding to be the first community college in Massachusetts to offer a particular health program mostly online, for instance, Wilder found few other programs around the nation to study. The argument that emergent circumstances can significantly limit available data because there is little or no history to draw on has been established in several empirical studies about online distance education decision making (Bulger, 2003; Conole, Carusi, de Laat, Wilcox & Darby, 2006; Mariasingam & Hanna, 2006). On the other hand, emergent factors—while present—were not a dominant influence in either Yankee’s online biology lab or Zorn Valley’s LMS decisions, and did not arise in the other two decisions in this study at all. Although

Yankee was trying to decide which new courses to develop for online delivery, it had already developed many such courses and had little problem gathering substantial data on each proposal to make an informed decision. With respect to the online hosting decision, Wilder was already hosting its online distance education infrastructure and other alternatives—such as the two higher education consortia—were available. Wilder decision makers were able to gather data about each option and then use these data to select one.

Interview participants at the three community colleges in this study tended to argue that data were just as available about online distance education as other subjects they dealt with. In fact, a number of these participants asserted that the emergent nature of online distance education actually made them work harder to collect more data to promote its success. This is consistent with Burge's (2008) research, which found that pioneer practitioners often needed to draw from extensive data and analysis to overcome skepticism regarding online distance education.

This study suggests that in emergent situations, community college leaders employ a number of tools to make decisions. First, even in the most emergent circumstances, some data were available. Wilder administrators provided a faculty member with a sabbatical, for example, to research the few existing online health programs in the nation to help design the college's own version.

Second, decision makers actively worked to create new data. At Zorn Valley, pilot testing of three different learning management systems provided vital, internally-generated data regarding faculty and student feedback, which was influential in choosing

a new LMS. This idea of shaping reality through action (data generation) is consistent with constructivist theory (Daft & Weick, 1984; Sanderson, 2003) and some empirical research. For example, in a case study of a community college that implemented various new technologies to support teaching and learning, Owen and Demb (2004) observed, “With few role models to consult among institutional peers, planners, leaders, faculty, and students must simply move forward [with the data generating experiment] and deal with unexpected situations as they arise (p. 659).” Instead of basing their actions on analysis derived from existing data, institutions facing emergent circumstances must first take action to create data. The decision precedes analysis, not the opposite.

Third, decision makers at the three community colleges in this study relied on practitioner experience and judgment to inform decisions when data were limited. Wilder gave a veteran health professor that had already developed online courses the sabbatical, Zorn Valley asked long-time online faculty to implement the pilots, and Yankee sought the experience of other colleges in deciding whether to keep biology labs online. Such reliance on practitioner experience is another strategy consistent with constructivist theory (Sanderson, 2003). The value of such an approach is that it allows community college leaders to make decisions in situations of uncertainty when the objective analysis featured in the rational choice model is not possible because data are not available. Emergent circumstances do not have to prevent thoroughly considered decisions.

Existing Models Explain Decision Making Behavior

A third major finding of this study was that four decision making models, which are prominent in the literature, were able to explain behavior in the five decisions, without the need for other theories. The literature review conducted for this study suggested that the rational choice, incremental, political, and constructivist models may be the most valuable for understanding online distance education decision making. The rational choice model emerged as the dominant explanation in three of the five decisions: Yankee's new online course development process, Zorn Valley's change in learning management systems, and Wilder's outsourcing of its online hosting. To some extent, this finding was not expected given empirical evidence which documents many obstacles to a rational, data based approach to decision making (Adams & Seagren, 2004; Bray et al., 2007; Cox, 2005; Sachs, 2004). Interview participants suggested that these three decisions were so important and their consequences so substantial for each college, that leaders felt compelled to pursue a careful approach to decision making with extensive research and thorough analysis before making a choice. Finding an effective hosting solution, for instance, would determine whether Wilder faculty and students would continue to engage extensively in online distance education, and would have substantial financial, technical, and personnel implications for the college. The fact that all five decisions held major implications for their respective colleges, therefore, may explain why rational choice behavior was so common in this study.

The political model emerged as the dominant explanation in one of the five decisions. Yankee's online biology lab decision featured both clashing values and

disputes over who had the power to put courses online at the college. Selective data gathering and its subjective analysis in this situation were consistent with the political model (Sabatier, 2004) and with related empirical studies. As with Yankee's online biology lab decision, for example, Sachs' (2004) case study of Northern Virginia Community College featured disagreements over who would have the power to approve online courses. Moreover, Conole et al. (2006) found that the corporate and university partners in a national distance education effort in the United Kingdom could not agree about goals (profit versus student learning) nor approaches to decision making (data driven versus consensus seeking). These political differences ultimately served to undermine this British initiative.

The differing views between administrators and faculty at Yankee about the value of both online distance education and the use of data in decision making also mirror the results of some earlier empirical research. For example, in her study of 15 community colleges in six states, Cox (2005) found administrators tended to support online programs more than faculty and used the specter of competition from other institutions as political leverage against instructors that resisted such programs. Jenkins and Kerrigan (2008) surveyed faculty and administrators at 41 Achieving the Dream colleges and found the former generally less enthusiastic than the latter about using data to make decisions, with some professors strongly opposed to the practice.

The constructivist model was also the dominant explanation in one of the five decisions: Wilder's online health program. This decision involved the most emergent situation in the study because Wilder was designing an online version of a health program

that was new to it and almost every other community college in the country. Contrast this with the other four decisions: Yankee already had taught the biology labs in traditional and online modes and it had already developed new online classes, while Zorn Valley had chosen an LMS before, and Wilder was well acquainted with hosting its online architecture. The constructivist model explicitly accounts for emergent situations (Daft & Weick, 1984). With few other similar programs to study, Wilder decision makers faced uncertainty in how to develop the online health program. Its situation mirrors that of the national distance education initiative in the United Kingdom studied by Conole et al. (2006). Unable to foresee how the technology involved in this British initiative would change over time, its leaders planned for only initial needs, which caused significant implementation problems later as courses were actually developed and delivered.

The decision to put this program online preceded data gathering, and thus is an example of enactment theory. Daft and Weick (1984) define enactment as inventing the environment. This concept is relevant when the situation facing an organization is new, as it was for Wilder in offering its health program online, or changing rapidly. Because the environment of online health programs of this type barely existed, it could not provide the college much data on how to proceed. Wilder's decision to launch the initiative anyway was an experiment that would shape the environment because it would add another online program to it. The online program also would help to create new data about that environment, such as enrollment demand for the program, how much it would cost, and how well students would learn in the online courses. While the rational choice

model implies some degree of institutional dependence on the environment—the environment provides data that will help an organization decide what to do—enactment theory suggests that instead the environment depends on organizational action. In other words, Wilder didn't have to wait for a market for online health programs to emerge before it took action; it could actually help create that market.

The incremental model of decision making was not a primary explanation for any of the five decisions in this study. Nevertheless, features of that model (Lindblom, 1979)—unclear goals at Yankee, and lack of planning and resources for data gathering and analysis at Zorn Valley—were present at the case study institutions, according to the interview participants. These practical obstacles to a rational, data based approach align with empirical studies of decision making at community colleges. Noland (2006) found that different goals held by internal and external stakeholders, for instance, undermined Tennessee's higher education institutional effectiveness system. Morest and Jenkins (2007) study of 28 community colleges indicated that limited institutional research resources hampered the collection of student outcomes data for the purpose of program improvement.

All five of the decisions explored in this study, however, were viewed as having major implications for the college. Interview participants at all three colleges admitted that much less data collection and analysis were present in less significant, routine decisions. This implies that the incrementalist barriers to data collection and analysis are more likely to be overcome when decision makers perceive a decision as significant. The consequences of such a decision may justify assembling the scarce resources for research

and analysis while routine matters do not. This study thus provides evidence for Etzioni's (1967, 1986) mixed scanning theory, which posits that institutions will only use precious time and resources for data gathering and analysis when making big decisions and will follow a more incremental approach for day-to-day decisions. An administrator at one of the case study colleges argued that limited institutional research capacity had to concentrate on issues that were poorly understood and had substantial implications, concluding, "We only go digging deeper when there is a reason to."

A Blend of the Models Provides a More Complete Explanation

The fourth major finding of this study was that all five of the decisions were too complex to be explained completely by one model. Instead, a combination of the models was necessary to fully understand each decision, confirming the value of contingency theories as suggested by the literature review (Bulger, 2003; Burge, 2008; Chapman, 2006). For example, Etzioni's (1967, 1986) mixed scanning model brings together rational choice and incremental theory, and provides an explanation for how Zorn Valley—an organization that may have relied on incrementalism due to a lack of time and resources for research and analysis—could produce a decision based on extensive data collection and analysis. According to this model, if decision makers that control data gathering and analysis resources believe they face a decision with significant consequences for a broad constituency, they will follow a rational approach.

The culture of inquiry model blends the rationalist commitment to data gathering with the value constructivism places on practitioner experience, intuition, and group dialogue (Dowd, 2005). A culture of inquiry may explain how a college committed to a

culture of evidence, such as Wilder, could be so willing to put a health program mostly online without first having data to suggest that it would be a success. Decision makers at Wilder realized that the emergent nature of the situation would not allow an analysis that would eliminate uncertainty. These leaders, therefore, acted based on the limited data that they could gather, interpreted by an experienced online health professor and other knowledgeable online instructors. The blend of rational choice and constructivist behavior—data collection, subjective interpretation by a group of experienced practitioners, experimentation—in this case mirrors the progression from a culture of evidence to one of inquiry found by Simons et al. (2003) in a study of a British program involving a university and secondary schools to promote teacher research. As at Wilder, the emphasis in the British initiative shifted from the data itself to the meaning that the instructors involved assigned to the data. Both studies suggest that a culture of inquiry, focused on the questions and answers of the practitioners, may grow out of a culture of evidence.

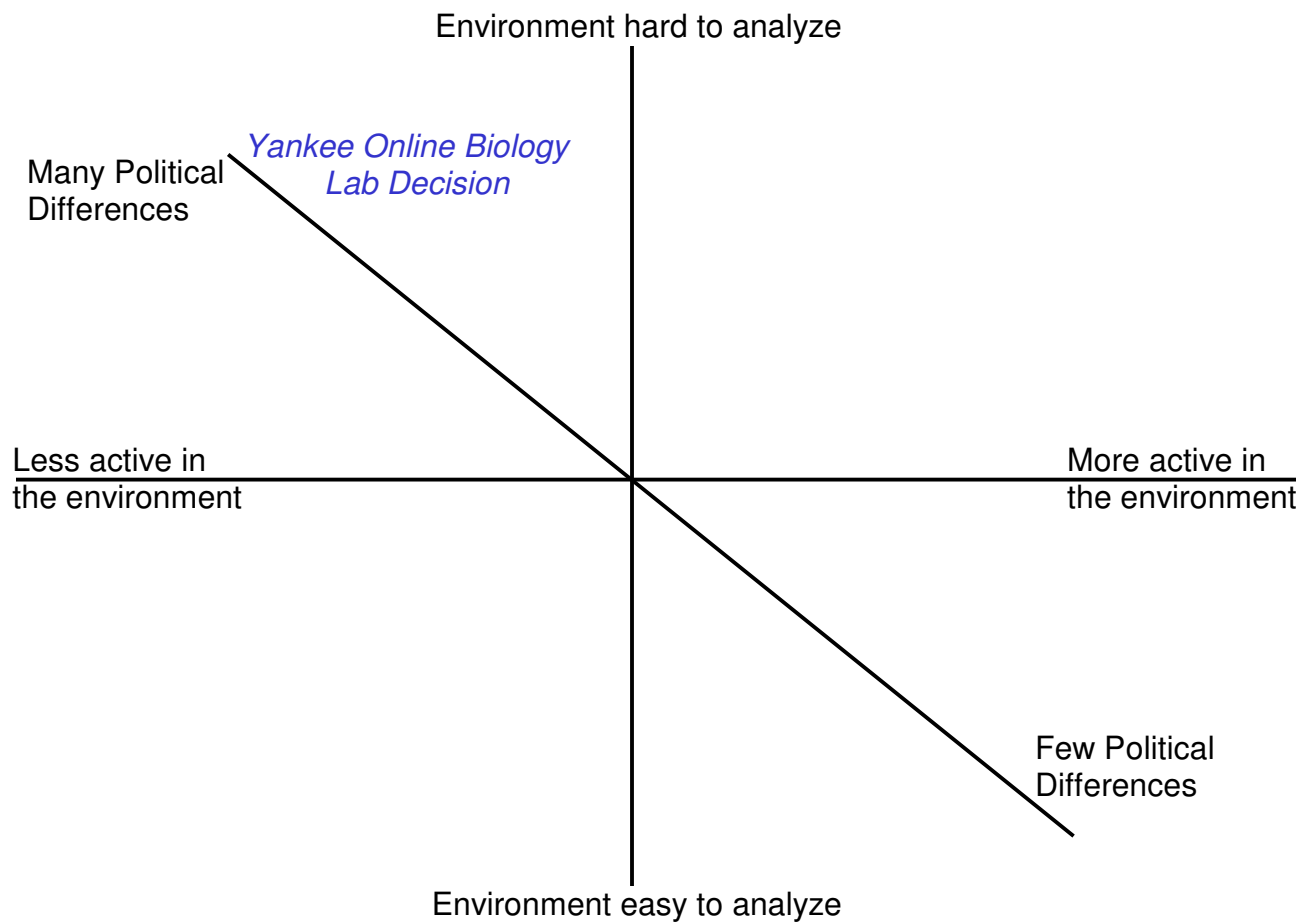
Daft and Weick's model of organizations as interpretation systems, which is based in contingency theory, proved helpful for understanding some aspects of the five decisions, but not all. This model's focus on an organization's interaction with the external environment and perceptions of its ability to analyze that environment accurately predicted Wilder's rationalist approach to its online hosting decision. That may be because the external environment—the vendors offering various hosting alternatives—and Wilder leaders' ability to compare those alternatives objectively were highly relevant to the decision. Daft and Weick's model was less helpful in understanding Zorn Valley's

LMS or Yankee's biology lab decisions, however. Internal factors—like faculty dissatisfaction with the Zorn Valley LMS or political disagreements over online distance education at Yankee—influenced these decisions more than issues related to the external environment. An institution's history, culture, and organizational structure are not part of Daft and Weick's (1984) model. Both the theoretical and empirical literatures stress the importance of these factors to decision making, however (Alison, 1971; Brock et al., 2007; Petrides, 2002a).

Daft and Weick's (1984) model also does not account for the role that location or size of a community college might play in its interaction with the environment or its ability to analyze that environment. For example, as the largest institution in this study, Wilder had the most capacity for data gathering and analysis, which is consistent with Morest and Jenkins (2007) research that found colleges with more resources tended to be more likely to pursue data based decision making. Daft and Weick's (1984) model is valuable in its inclusion of rational choice, incremental, political, and constructivist theories, therefore, but the model does not include enough organizational variables to consistently explain why one or more of these four perspectives would come to shape a particular decision.

Several potential approaches to adding these other organizational variables to Daft and Weick's (1984) model could be pursued. A potentially complex approach would be to supplement the two original dimensions in the model—interaction with the external environment and beliefs about the analyzability of that environment—with an additional dimension for each of the other relevant organizational variables to more precisely

Figure 5
Daft and Weick's Model with Additional Political Differences Dimension



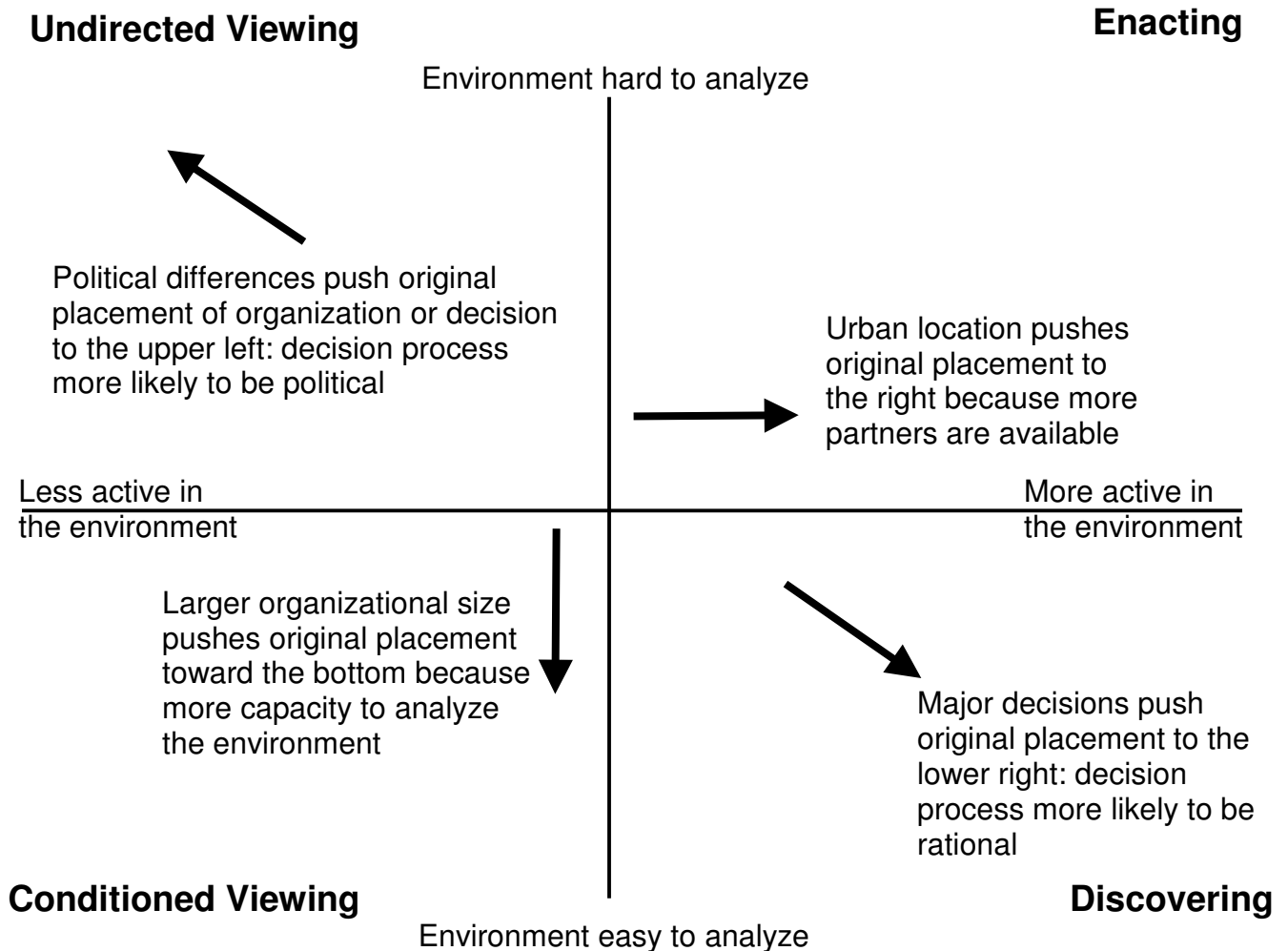
explain decision making behavior. For instance, an organization's political climate could be added as a third dimension, spanning the spectrum from few political differences among decision makers to many differences (see Figure 5). The presence of this extra political dimension might have helped the model explain Yankee's political approach to the online biology lab decision because it would have taken account of the existing differences between some faculty and administrators over who should control the process of approving online courses and over the value of online distance education in general.

Other variables could be added as well. For instance, a dimension that measured the importance of the decision might help to capture some of the explanatory power provided by the mixed scanning model. The fact that Zorn Valley decision makers viewed their LMS decision as very important, for example, might explain why they followed a rational, data based process even though other elements of Daft and Weick's model did not predict this.

Although adding these other organizational variables as new dimensions might provide more explanatory power to Daft and Weick's (1984) model, it would be difficult to visualize more than three dimensions in a single diagram. Adding further variables would make the model increasingly complex, and additional thought would be needed about how these variables interact with each other. Each time a new dimension is added, new combinations of variables would be created. What type of decision making behavior, for instance, might be expected if an organization with low confidence in its ability to analyze the external environment faced a minor decision that strongly involved that environment, and about which substantial internal political differences existed? One way to deal with this complexity might be to include only those variables that seem particularly relevant when studying a situation. If a decision was strictly internal, for example, the interaction with the external environment dimension could perhaps be excluded in analyzing that situation. This might keep the number of dimensions manageable.

A simpler approach would be to maintain Daft and Weick's (1984) original two dimensions—interaction with the external environment and beliefs about the

Figure 6
Daft and Weick's Model with Added Organizational Variables



analyzability of that environment—and original four decision making modes

(discovering, enacting, undirected viewing, and conditioned viewing), and to account for other organizational variables within that framework. For instance, if it was clear that a situation involved political conflict, the original placement of the organization or specific decision, based on the two dimensions, could be shifted toward the upper left, undirected

viewing quadrant of the model because that predicts political decision making (see Figure 6). This study provided some empirical evidence for the mixed scanning model, which posits that major decisions will be made rationally. This could be accounted for on Daft and Weick's two dimensions by shifting the original placement of a major decision toward the lower right, discovering quadrant of the model because it predicts rational behavior. Variables such as institutional location and size also could be accounted for on the two dimensional model. An urban location might shift placement of an organization to the right because it would have more opportunity to find partners and interact with its external environment. This study and past empirical research suggest a larger institution will have more capacity for data gathering and analysis (Morest & Jenkins, 2007). Thus, the original placement of a large organization might be shifted lower on the two dimensional model because it is likely to be more confident in its ability to analyze the environment.

Implications of the Findings

Before considering what these findings imply for higher education practitioners, policy makers, and researchers, it is important to recall the limitations and delimitations of this study. The data collection methods had their own limitations: storytelling and self-presentation effects for interviews, for instance, and the potential for hidden agendas in documents that were reviewed. Moreover, as a multiple case study of online distance education decisions at three colleges in a single state, it is not possible to generalize the results to all community colleges or to other types of decisions. This study did not test nor prove any theoretical propositions. The goal, rather, was to advance understandings

about the use of data in decision making at community colleges and provide practitioners with ideas about how to approach online distance education decisions, as well as point researchers toward new approaches and other contexts within which to explore this phenomenon in the future.

The findings of this study suggest that data based decision making about online distance education is feasible at community colleges, at least under certain circumstances. The context of the situation helps to determine whether a rational approach or a number of alternative methods would most likely be effective. A data based strategy appears most probable for major decisions—in which resources for research and analysis are available—that involve neither significant political disputes nor a highly emergent context. This was the case in three of the five decisions explored in this study, suggesting that a rational approach can work for colleges under these conditions. In such situations, community colleges can gather and use both quantitative and qualitative data about academic, financial, personnel, student, and technical/facilities issues to detect problems and choose among alternative solutions.

A rational, data based approach, however, will be more difficult in highly charged political situations where there may be less willingness to consider data objectively. The experience of Yankee Community College in this study suggests that steps to address the underlying political concerns may be necessary before a data based approach could be effective. Without such measures, the political model may better explain the approach to decision making taken than rational choice.

A third alternative—a constructivist approach to decision making—may be most common in truly emergent situations. Such conditions may limit the availability of data, but the Wilder online health program decision in this study suggests that institutions can still make decisions by relying on practitioner instinct, experience, dialogue, and action to create a new reality. Some tolerance for uncertainty and risk-taking may be required in such circumstances as data may result from rather than precede a decision. This could occur when an organization can find little data on which to base a decision and acts, instead, on some other basis and in doing so generates new data. Because the data only become available after a decision has been made and action taken, the institution has to accept the risk that its experiment could fail.

For routine decisions, challenges such as lack of time and resources may lead to incrementalism and limit a data based approach. However, this study raises the question of whether the “robust intuition” of community college faculty, staff, and administrators may be sufficient for day-to-day decision making. Multiple study participants argued that their institutions did not have the capacity to collect and analyze data for every decision. Moreover, they suggested that minor, routine decisions did not require such data either because decision makers often had an implicit understanding of the context involved and extensive analysis would not substantially enlarge that understanding, or because the negative consequences of a failed decision were minimal. As one administrator at Yankee pointed out, cancelling one section of a course because too few students enrolled carried little consequence for the college. It was not necessary to seek data about such a decision. Investing the time and resources into placing an entire

program online that did not attract students, on the other hand, would be very costly. In the latter situation more data collection and analysis would be justified, according to study participants.

This study also implies that community college leaders tend to use more than one approach to decision making about online distance education. Yankee shifted from a political approach in the online biology lab decision to a more data based method for deciding which courses to offer online. Zorn Valley made its LMS decision based on thorough research and objective analysis, but also muddled through many other incremental decisions. Wilder used both rational data gathering and constructivist interpretation for its online health program decision.

The variations in approach reflect the complexity of the decisions facing community college leaders. Policy makers should keep this complexity in mind as they consider systems and policies to promote or require data based decision making for online distance education. The results of the study suggest that data—even when they are limited—will help community colleges make informed decisions, but that their leaders need flexibility in order to react to incremental, political, and emergent contexts that often accompany them. Without constructing new facilities, each of the institutions in this study has provided students more credit hours through online distance education and each are employing data to help with this expansion of their services. Thus, they appear to be at least to some degree fulfilling the hope for greater productivity and accountability promised by online distance education and data based decision making. Their institutional contexts differ, however, in terms of their experience with and capacity for

data based decision making, their willingness to assume risk and innovate, and their internal political circumstances, including the level of faculty support for online distance education and decision making based on data. A single, data based approach to all decisions, therefore, is not likely to be effective either at the state level—or even within individual colleges given changing circumstances—because institutional contexts both differ and influence the way decisions are made. For example, Wilder’s culture of innovation is likely to challenge a data based approach because its decisions are often likely to be made in emergent circumstances. Zorn Valley may also face obstacles to a data based decision making process, but because of a different contextual factor: a limited institutional research capacity.

Scholars of higher education decision making can also benefit from understanding the varying institutional contexts—in propensity to innovate and take risks, in capacity to make decisions with data, and in political circumstances—and complexities of online distance education decisions. The value of contingency theories that combine the explanatory power of multiple models is an important implication of this study. Its results suggest, for example, that the mixed scanning model may help to predict the decision making approach a college uses based on the importance of the decision.

A blended model may also provide a richer explanation when an institution is using multiple approaches at once. For instance, the culture of inquiry model may effectively capture the behavior of a college using both rational and constructivist decision making strategies. This could occur—as it did in the Wilder online health decision—when an institution with the inclination and capacity for data based decision

making faces an emergent situation that provides only limited data. To compensate, that institution could shift from a purely rational approach to one involving reliance on practitioner experience, generation of new data through experimentation, and group dialogue to interpret the meaning of the limited available data. In other words, the college might follow a hybrid strategy, which a contingency theory reflects better than any single decision making model. Thus, a framework that includes the rational choice, incremental, political, and constructivist models may be ideal given their usefulness in explaining different aspects of community college online distance education decision making. Daft and Weick's (1984) model of organizations as interpretation systems does this, but its focus on the external environment as a driver of decision making behavior fails to capture all of the internal factors behind the decisions in this study. Therefore, a model that featured other elements of the four theories—particularly factors internal to colleges—would be helpful for explaining online distance educations more completely.

Recommendations for Practice

This section provides recommendations for practice for community college leaders and higher education policy makers based on the findings and implications of this study (see Table 11).

Recommendations for Community College Practitioners

This study recommends that staff, faculty, and administrators at community colleges consider the use of data in all decisions about online distance education. To maximize the efficient use of scarce data collection and analysis resources, however,

decision makers should also consider the context of the situation to determine whether and how to include research and analysis in their decisions.

Based on the finding that data are available related to major online distance education decisions and that the colleges in this study found them useful in most cases, practitioners should always at least consider whether to gather, analyze, and use data in their decisions. Data were major influences on Yankee's new online course development, Zorn Valley's learning management system, and Wilder's online hosting decisions. The LMS decision, in particular, shows the value of not only researching existing data but also in generating new data through the use of pilots. Even in the case of Wilder's online health program—where the emergent context limited the availability of data—the faculty research sabbatical yielded useful information for implementation of the decision.

Before launching a data collection and analysis effort, however, online distance education decision makers should assess the decision context. Based on this study's finding that context affects how much influence data can have on a decision, community college leaders should calibrate their approach to data with a clear understanding of the circumstances under which they are working. Unless an institution has substantial resources, it will have to choose when research and analysis are necessary. For example, motivation for and sufficient capacity may exist to study only major decisions—those that have significant consequences (academic, financial, technical) for college constituents, such as students or faculty. In such situations, practitioners should assemble

resources for research, gather data to detect problems and compare alternatives, analyze the data objectively, and then use them to make the decision.

The focus of research and analysis on major decisions may mean that data are not available for routine decisions. This study suggests such lack of data may not be a problem because routine decisions, even if poorly made, do not entail large consequences. Moreover, the intuitive knowledge and experience of community college practitioners—what one study participant called their “robust intuition”—about such day-to-day matters are often sufficient to make routine decisions without the need for data gathering and analysis. Still practitioners should consider carefully the significance of the decision they are facing and the research effort it warrants. Moreover, they could consider occasional studies of even routine processes to identify trends and search for improvements. Many colleges use process tools, such as total quality management, for such purposes.

Decision makers also need to understand their political context. The results of this study suggest that differing interests or values among college constituents may present a hurdle to using data to make decisions. Political differences may manifest themselves in competition for the control of institutional research resources and disagreements over what data are collected, how they are analyzed, and whether they are heeded. Data gathered by supporters of Yankee’s online biology labs went to waste because opponents did not consider them valid. It may be necessary to address the political differences before beginning any research or analysis to inform a decision. Acknowledging the differences and the legitimacy of all constituents’ views, and creating

an inclusive, fair structure for decision making—like Yankee’s Distance Education Committee—are examples of steps that could be taken. Practitioners should seek to include advocates from all sides of an issue in the process of designing data collection and analysis mechanisms so there can be agreement on what questions are important and which data could provide answers that all parties would view as valid.

Community college leaders should also recognize emergent situations, which may limit the available data in some online distance education decisions. Practitioners should try to gather what data are already available and consider generating new data through pilots. They should seek the wisdom of individuals experienced with similar situations at their own and at other colleges. Colleges can create organizational structures—like Yankee’s Distance Education Committee and Zorn Valley’s Academic Technology Committee—that foster group dialogue to interpret available information and make collective judgments. Finally, institutional leaders need to consider the level of risk a decision poses and that they are willing to assume given the level of uncertainty they are facing. This may depend on the college’s strategic plan, its institutional culture, and the significance of the decision itself. For example, Wilder’s culture of innovation, its strategic goal of extending access to its students, and the relatively small group of constituents affected by the health program all argued in favor of taking the risk to put the program online.

These strategies recommended for dealing with the emergent nature of online distance education also may be useful for practitioners at community colleges (and at other higher education institutions) facing other types of emergent situations. For

instance, the growing competition represented by for-profit institutions, the sudden loss of endowment income or public support as a result of economic recession, and the increasing demand for accelerated academic programs by students all present college leaders with change and uncertainty that could limit the availability of data about these important issues. Practitioners can pursue the same recommended strategies in these situations, including running pilots to generate new data. Colleges could also seek to build extended networks of practitioners to pool available experience and knowledge in a group where dialogue can seek collective interpretations about uncertain situations. A variety of models are available for the establishment of such networks. Community colleges in many states, for instance, are already part of established public systems with regular meetings between presidents, provosts, and chief financial officers of the institutions. The Achieving the Dream Initiative brings together community colleges from around the nation to encourage experimentation, research, and the sharing of results. University-based research centers, such as the Community College Research Center at Teachers' College Columbia University or the New England Resource Center for Higher Education at the University of Massachusetts Boston, can also serve as conveners of these kinds of practitioner networks.

Embracing a constructivist or culture of inquiry approach to decision making in emergent situations, however, is a complex undertaking that assumes the presence of particular conditions and skills within an institution. This strategy requires employees to have an open minded outlook and a willingness to consider the perspectives of others and to follow a line of inquiry down the multiple paths it might lead. Constructivist decision

making also demands that these employees eventually converge on an understanding of the situation to make a decision. The group dialogue central to this approach can not be allowed to become a battleground for political disputes nor a think tank where problems are studied and pondered endlessly without some resolution. In other words, a culture of inquiry demands enough freedom for creative thinking and debate but enough structure to avoid chaos or paralysis.

Colleges can take a number of long and short term steps to try to create this balance of conditions and to develop the skills in their employees to support constructivist decision making. An effective way to structure and bound discussions is strong, shared agreement about an institution's mission and goals. When people understand and agree on where the institution ultimately needs to go, it is easier to vigorously and productively debate the question of how to get there. The highly inclusive strategic planning process used by Wilder Community College seemed to have this effect and could be used by other institutions. Faculty, staff, and administrators interviewed at Wilder knew what was in the college's strategic plan and could talk about how their own work supported it. This grounding in and ownership of institutional goals can help prevent a dialogue from straying on to peripheral matters or becoming mired in endless debate. It may also minimize political disputes, which can undermine the trust that is so vital to productive, open group discussions featured in the culture of inquiry. College leaders need to proactively address such political matters and issues of trust by including all involved constituencies and asking them to work together on specific decision making tasks. In constructing its Distance Education Committee to make

decisions about what new courses to offer online after the biology lab decision, for example, Yankee Community College explicitly tried to widen the number of stakeholders (the chief concern of faculty). It also emphasized the importance of discussions about data as the determining factor for decisions, as opposed to the duel of opposing philosophies that had dominated in the lab decision.

This interest in data is another precondition for making constructivist decision making work. College committees sometimes earn the reputation for talking a lot and doing little. Data, even if limited, provide a focus for the group dialogue and most importantly, the fuel for new questions, which propel the discussion further. Faculty, staff, and administrators may need professional development in framing research questions, conducting experiments in teaching or other institutional activities, collecting and analyzing data, and then drawing conclusions, which in turn raise new questions. The Carnegie Academy for the Scholarship of Teaching and Learning is one model for such training. By bringing faculty together in a community of practice, this model, "... seeks to render teaching public, subject to critical evaluation, and usable by others in both the scholarly and the general community" (Carnegie Foundation, 2011). The goal is to create a collective commitment to research to improve student learning as opposed to focusing on the evaluation of individual faculty or staff performance. Making this open process "safe" for employees raises the issue of risk taking—another prerequisite for decision making in emergent situations. Colleges need to create a culture in which failed experiments are treated as successful opportunities to learn. Leaders need to take risks themselves, model discussion of and learning from failures, and reward faculty and staff

for doing the same. Wilder's president followed such steps, for example, in creating an atmosphere in which experimentation was expected and failure not punished, according to the interview participants there.

Finally, based on this study's finding that a blend of decision making approaches can shape online distance education decisions, higher education leaders should consider how a combination of strategies could help their overall approach to making decisions. Every college in the study, for instance, said that resources for data collection and analysis were limited. Practitioners could concentrate such resources on major decisions with wide impact and follow other strategies such the constructivist reliance on instinct and intuition or the incremental tactic of trial and error for routine decisions.

Both constructivist and political models suggest the value of including the relevant stakeholders in decision making. The former underscores the value of group dialogue to bring differing experiences and perspectives together for a more complex interpretation of data. The latter indicates how excluding relevant stakeholders can exacerbate underlying differences over interests or values. Practitioners should seek to build decision making structures that include constituencies—faculty, staff, administration, and actors external to the college—involved in the decision, encourage honest and respectful exploration of different perspectives, and provide fair methods for making the decision. Complete consensus around decisions is unlikely given the array of ideas and views in a college, but leaders can seek a process that all participants believe is legitimate. Data collection and analysis can be embedded in this process. Different institutions and different circumstances mean that many different versions of such a

process could be built. In general, however, decision mechanisms should involve those with expertise in the issue and those affected by the decision. Different constituencies and points of view should be represented. They should agree on procedures for raising issues and studying, debating, and finally deciding them. With respect to research, stakeholders should be able to shape the research questions and the methods used to collect, interpret, and report data. One model is available from the Achieving the Dream Initiative. It requires college participants to create a data team with faculty, staff, and administration members that decide what to study, how to study it, and how to report the results.

Practitioners also should consider taking advantage of different models of decision making at different stages of the same decision making process. This study provided examples of institutions shifting strategies in just this way to deal with the complexities they were facing. Zorn Valley, for instance, did not have data about the experience of its students with some learning management systems. So it piloted the use of several systems to generate student feedback data. The constructivist model suggests that institutions can take action in this way before they have any data. Zorn Valley then switched to a rational approach, however, using the data from the pilots to objectively compare the LMS options. Wilder Community College, on the other hand, used a research sabbatical to try to gather data—as called for by rational choice—but when that effort turned up only sparse results, shifted to a constructivist approach to analysis: personal and group interpretation. Higher education leaders should be alert to such opportunities to shift strategies by understanding the elements of the various decision

making models and also their differing conceptions of the decision making process. By recognizing that reliance upon individual models can stall decision making when the model's assumptions prove incorrect or irrelevant—the rational contention that data should be gathered before a decision is made falters, for instance, in emergent situations—these leaders can increase their repertoire of strategies for dealing with the complexity of higher education decisions.

Recommendations for Education Policy Makers

This study recommends that policy makers at the state, local, and federal level provide resources for data collection and analysis in higher education institutions, make incentives and requirements for data based decision making flexible, and encourage communities of practice to encourage informed decision making.

Based on the finding that community colleges had limited resources for research, policy makers could provide funding, training, and consulting expertise to these institutions for data gathering and analysis. In addition, funding formulas that reward primarily student enrollment are likely to encourage investments only in those elements—classrooms, faculty—that directly support this goal. Requiring or providing incentives for investments in institutional research capacity would make it more likely that community colleges would consider data when making decisions. Massachusetts requires its public colleges to spend five percent of their budgets on capital adaptation and renewal, for instance (Massachusetts Department of Higher Education, 2011). A similar requirement for a percentage of spending on institutional research could build and maintain capacity for data collection and analysis. State higher education authorities

could also improve this capacity by funding professional development opportunities for institutional research officers or consulting services to provide advice on data collection and analysis. The latter would be particularly valuable for smaller colleges with limited staff dedicated to institutional research. Funding a consultant to provide such services at multiple institutions could be more cost effective than having each college add to its research staff.

Based on the finding that differing contexts lead to different decision making behavior, policy makers should build flexibility into regulations or incentives for data based decision making. For example, the Massachusetts Department of Higher Education requires public colleges to provide evidence of student enrollment demand for an academic program before approval (Massachusetts Department of Higher Education, 2011). The emergent situations relatively common in online distance education, however, may provide sparse data about such demand. Policy makers should consider requests for new online programming with that reality in mind, and particularly encourage colleges to run pilot projects that can generate data about student demand for particular courses, academic programs, and online distance education in general. More rigid requirements for the use of data could be more appropriate for decision making about established topics, such as traditional classes. Given this study's finding that external data reporting requirements limit the ability of colleges to use their institutional research offices for data collection and analysis for local decision making, policy makers should consider carefully what they demand from colleges in terms of data reports. Such reporting requirements place a particular burden on smaller institutions, such as Zorn

Valley, where a single individual may be responsible for institutional research, planning, grants, or other matters.

Based on the finding that emergent situations can limit the amount of available data—and thus require other strategies for decision making—policy makers should encourage and assist colleges in creating communities of practice. These communities would consist of networks of individuals from multiple institutions who have experience

Table 11
Recommendations for Practice

Recommendations for Higher Education Practitioners	Recommendations for Education Policy Makers
<ul style="list-style-type: none"> • Assess the decision context to determine the value of using data to make a decision • Focus data collection and analysis capacity on major decisions • Use other strategies for routine decisions • Address political obstacles to the use of data in decision making, such as the absence of key stakeholders from the process • In emergent situations, gather available data, generate new data, consult others with experience, and engage in group dialogue to interpret limited data • Use a blend of decision making strategies, even within a single decision making process 	<ul style="list-style-type: none"> • Provide funding, training, and consulting expertise for institutional research at higher education institutions • Build flexibility into requirements and incentives for data collection and analysis • Foster communities of practice to share experience and promote dialogue among colleges

with or are facing emergent challenges, such as online distance education, and meet regularly to share insights. This study's results suggest that there may be value in learning from others' experiences and in group dialogue when data are limited. The culture of inquiry model, in particular, emphasizes the importance of placing the decision makers and their questions and concerns, rather than the data themselves, at the center of attention. The Massachusetts Colleges Online consortium provides one model for doing

this. Although the consortium has many goals—including course brokering between campuses to increase student access to classes and programs—participants in this study cited its value in allowing them to consult with others involved in online distance education, to see models of exemplary online courses, and to share data and experiences. Even a small amount of state funding, organizational assistance, and encouragement can help to launch such communities of practice.

Recommendations for Further Research

Finally, given the limited literature on decision making about online distance education, particularly at community colleges, this study's results point toward helpful new directions for research. Higher education scholars can consider additional qualitative and quantitative studies of online distance education decision making. Beyond this, research into decision making about other emergent phenomena, routine decisions, the culture of inquiry model, and more robust contingency theories would advance understanding of higher education decision making in general and fill gaps in the existing literature.

This study was limited to the decision making behavior of three institutions in a single state. Similar case studies at community colleges in other states or in other types of higher education institutions would help to confirm whether the rational, incremental, political, and constructivist models are generally useful tools for explaining whether and how data are used in online distance education decisions. Such research could also explore whether this study's findings about the value of the rational choice model for understanding major decisions about online distance education are true elsewhere. These

studies could further examine whether a blend of the rational choice, incremental, political, and constructivist models tends to provide a more complete explanation of decision making about online distance education than any single theory alone. Most available qualitative studies that address the issue of online distance education decision making and data (Adams & Seagren, 2004; Cox, 2005; Owen & Demb, 2004; Sachs, 2004) do so as just one part of an exploration of other issues. Cox's (2005) study of 15 community colleges, for instance, also examines issues of accountability and remediation. Thus, case studies focused directly on the influence of data on decision making about online distance education, as this dissertation was, would expand the available literature.

Large-scale quantitative studies could test the explanatory power of the four models—singly or in combination—for online distance education decision making. In particular, such research could test this study's findings about the value of the rational choice model for explaining major decisions, the incremental model for explaining routine decisions, the constructivist model for explaining decisions in emergent contexts, and the political model for explaining decision situations involving differing interests and values. Such studies could also extend this study's findings about the types of data that colleges tend to collect when making decisions about online distance education. Do such data generally fall into the academic, facilities/technology, finance, personnel, and student categories or do different groupings exist and can useful subcategories of data be developed within each category? Quantitative research could involve surveys of decision makers at community colleges in many states, at different types of community colleges—

varied by size, location, etc.—or in other kinds of higher education institutions. For instance, institutional research capacity at many four-year universities dwarfs that of community colleges. Does such a difference make them more likely to use data in their decisions about online distance education? Such research could fill a significant gap in the literature. Although several large scale quantitative studies touch on decision making in online distance education, among other topics (Allen & Seaman, 2010; Cejda & Leist, 2006; Peterson & Augustine, 2000), none exclusively focus on it or employ the four decision making models to try to understand this phenomenon.

Further research about the use of data in the aftermath of a decision might also be pursued. This study sought evidence of community colleges using data at multiple stages of online distance education decision making processes, including collecting data after the decision was made to inform future decisions. The interviews and documents reviewed provided little information, however, about the use of data in the aftermath of decisions. Using feedback to assess a decision is an important component of a culture of evidence (Brock et al., 2007), and it would be helpful to explore whether the lack of evidence of such behavior in this study was unique or indicative of a more widespread pattern in online distance education. Although the burgeoning research on activities at Achieving the Dream colleges is providing more information on how such institutions use results from their student success interventions to refine those strategies (MDC, Inc., 2009), such research has tended not to address online distance education. A more thorough examination of whether community colleges gather data to provide feedback on

the implementation of online distance education decisions and whether leaders use those data to refine their strategies, therefore, would fill a gap in the literature.

Although this study's findings cannot be generalized to other types of higher education institutions or other types of decisions, it does suggest some directions for more general research into decision making at colleges and universities. For example, researchers can explore whether higher education institutions behave in ways similar to the community colleges in this study when dealing with emergent phenomena other than online distance education. These could include the rapid growth of for-profit institutions, the fluctuations in college income provided by endowment revenue and/or public sources, and the growing student demand for accelerated degree programs. Faced with such situations, do colleges and universities—as they did in this study—find the availability of data limited, create new data through pilots, or promote a culture of inquiry in order to interpret the meaning of the data to help them make decisions? The literature review in this study did not focus on emergent situations outside of online distance education. A recent search, however, revealed no studies examining the influence of for-profit colleges as an emergent phenomenon on other higher education institutions' use of data in decision making. Such studies would break new ground.

Scholars of higher education could investigate cultures of inquiry more thoroughly. In this study, the culture of inquiry model was most helpful in understanding how Wilder Community College—an institution with a commitment to using data in decision making—addressed an emergent situation in which available data were limited. Based on this finding, it would be valuable to research other questions, such as does a

culture of inquiry primarily shape decisions in emergent situations or more commonly? Are particular types of institutions or leaders more likely to develop a culture of inquiry? Does a culture of inquiry tend to grow out of or in tandem with a culture of evidence, as it did at Wilder Community College? The culture of inquiry model values both the hard evidence gathering and objective analysis of rational choice and the constructivist emphasis on the centrality of human questions to drive the data collection and interpretation of those data to construct its meaning. Because constructivist decision making behavior seemed to align with emergent situations in this study, it is logical to conclude that a culture of inquiry could develop from an institution with a rationalist commitment to data facing an emergent context that limits the availability of that data. It would help to know how often such situations occur, whether they generally tend to promote a culture of inquiry, and whether there are other conditions that tend to foster a culture of inquiry in order to understand the prevalence of this phenomenon and the conditions under which it shapes decision making. The literature on cultures of inquiry in educational institutions is growing (Ludlow et al., 2008; Park & Datnow, 2009), but research on its value in understanding higher education decision making in emergent situations is needed.

Researchers could also explore routine decisions in higher education. This study raised but did not answer important questions about routine decisions because it focused on five major decisions. Although the interview participants claimed routine decisions were made with less data gathering and analysis, no such decision was actually examined to check this. A recent search of the literature confirms Etzioni's (1986) contention from

almost 25 years ago that empirical studies of his mixed scanning model—at least in educational organizations—remain to be done. Thus research into routine higher education decisions would fill a gap in the literature. It would be useful to know if colleges and universities in fact are less likely to follow a rational choice model when making routine decisions about online distance education or other topics, and whether incremental approaches—trial and error, for instance, or the “robust intuition” claimed in this study—are used instead. Is it possible to spend fewer resources on data gathering and analysis about routine decisions and still have effective decision making?

Based on the finding that a blend of rational, incremental, political, and constructivist models is useful for understanding community college decision making about online distance education, pursuit of a more complete contingency theory than that offered by Daft and Weick (1984) could be a valuable direction for further research. The usefulness of all four models in explaining the behavior of Yankee Community College’s new online course development decision making process and Zorn Valley Community College’s learning management system decision underscores the need for such a theory. The literature review for this study did not reveal any contingency theories that provided a more complete approach to combining the four decision making models than Daft and Weick (1984), at least for the purposes of examining online distance education decision making (Tarter & Hoy, 1998). Research aimed at building such a theory would break new ground, therefore.

Understanding of decision making would also be advanced if further research built on this study’s finding that Daft and Weick’s (1984) model could be expanded to

include other dimensions besides interaction with the environment and perceptions about the ability to analyze that environment. As suggested in a previous section of this chapter, internal factors (location, size, institutional culture, history, politics, and organizational structure) could be added into this model. Additional studies aimed at exploring whether this could be done in a coherent way offer the hope of providing more complete explanations for decisions influenced by factors other than the external environment. The literature review for this study did not encounter any research focused on expanding the Daft and Weick (1984) model, so further study of this area would fill a gap in existing knowledge.

Research could also examine whether simpler blended models—mixed scanning and the culture of inquiry include only two of the four decision making models—are a more realistic approach to studying decision making than a single grand theory given the complexity packed into each of the rational choice, incremental, political, and constructivist decision making models. Based on this study's finding that the mixed scanning model aligned well with decision making at Zorn Valley Community College, including how the learning management system decision differed from other decisions made there, and this study's finding that the culture of inquiry model explained Wilder's online health program decision, such research into simple contingency approaches is appropriate. More complex models take more effort to construct and also require more sophisticated research methods to test. The work involved may not be worth it, if such a sophisticated model is needed to explain only some decisions. If simpler blended approaches encompassing just a few of the four decision making models can explain

most of the behavior in higher education decision making processes—as they did in this study of community college decisions about online distance education—they may be a more efficient way to explore the topic. Studies comparing the usefulness of simpler and more complex contingency models are absent in the literature.

In summary, the findings of this dissertation can be viewed as signposts for future research and practice. Considering the somewhat limited scope of this study and the current stage of early research into online distance education, the results are suggestive rather than definitive. They raise more questions than answers. Nevertheless, they do suggest that community colleges can find, generate, and use data to make decisions about online distance education—at least in certain situations—and that other approaches can substitute for and/or supplement a data based strategy when conditions are not favorable for rational choice techniques. Community college leaders, therefore, can see the varying decision making strategies as a set of tools available to them, each useful for particular circumstances, and often helpful when employed in combination with each other. Scholars of higher education, meanwhile, could advance research about decision making by examining these combinations in greater detail as well as the organizational contexts that may favor one approach over another or a particular blend of strategies.

APPENDIX 1

ONE PAGE SITE SELECTION SURVEY

1. In what year did your college offer its first online distance education course?
2. Can full-time faculty teach an online course at your college as part of their contractual workload under the Massachusetts Community College Council (MCCC) Day Contract?
3. Roughly what percentage of your online courses are taught by faculty under the MCCC Division of Continuing Education Contract?
4. Where is online distance education located in your college's organizational structure? (e.g., is it part of Academic Affairs, in a Division of Continuing Education or other entity outside of Academic Affairs, or is responsibility for it shared among multiple units?)
5. Is your college's online distance education effort involved in cooperation or partnerships with (e.g., offering online courses or programs to):

A. High Schools?

If yes, roughly how many high schools are you working with?

B. Private Companies?

If yes, roughly how many private companies are you working with?

C. Non-Profit Organizations (e.g. hospitals, social agencies)?

If yes, roughly how many non-profit organizations are you working with?

6. For this question, please choose among the following answers: *confident*, *somewhat confident*, or *not confident* in each column. How confident are you that your college's online distance education decision makers can accurately foresee **trends** in:

1 Year From Now

3 Years From Now

- A. Student enrollments in online courses?
- B. Technology related to online courses?
- C. Finances (costs and revenues) related to online distance education?
- D. Competition from other providers of online distance education?

7. Would you be interested in exploring whether your institution could participate as a case study site in this research?

APPENDIX 2

INTERVIEW PROTOCOL

Role of Data in Community College Decision Making about Online Distance Education

Bill Heineman

University of Massachusetts Boston

linnbill@comcast.net

Interview: 45-60 minutes

Introduction

- Thank you for taking the time to meet with me today and participate in this study.
- This study examines community college decision making about online distance education, particularly the role that data play in decisions.
- The purpose of the study is to better understand decision making and the possible roles that data can play in that process, particularly in the context of a relatively new field like online distance education.
- Review consent form and obtain signature.
- Review audiotape consent form and obtain signature.
- Do you have any questions about the study, this interview, or other topics?
- Over the next 45-60 minutes, I will ask you approximately nine questions about online distance education, decision making and data at your college.

Interview Questions

1. What are the three to five most important things for me to know about your college's online distance education effort?

Probes: a. When did this effort start?

b. What's the level of faculty involvement?

c. Roughly how many courses are offered online? Programs?

d. Are you working with other institutions: MCO, high schools, etc.?

e. What roles have **you** played in online distance education here?

f. Who are the key decision makers about online distance education at this college?

g. Is there anything else you think I should know about online distance education here?

2. Can you identify any major decisions about online distance education that your college has made in the last few years?

- Probe: a. If interviewees name a decision that was imposed from outside the college, redirect them to a decision that was made by the college itself.
- b. Can you think of any other major decisions about online distance education made recently (what decisions might other people at the college identify)?

3. Can you describe how one of these decisions occurred? (*addresses research questions A, B, C, D: see below*)

- Probes: a. What led this decision to get on the college's agenda in the first place?
- b. Describe the process by which this decision was reached (probe for key obstacles and turning points).
- c. What was your role in the process?
- d. Who else was involved?
- e. How did these individuals determine what the decision should be? What did they want to achieve through this decision?
- f. How did the decision makers convey the decision to others?
- g. How was the decision implemented?
- h. Can you remember any other details about this decision making process?

Note: this question will be asked for each decision that is identified in the answer to Question #2 above if there is time.

4. What role did data play in the major decision(s) concerning online distance education that you just described? (*addresses research questions A, B, C, D*)

- Probes: a. If interviewees are unsure about what constitutes "data," examples will be provided, such as quantitative data on finances (e.g. costs of faculty release time or software), enrollment, retention, personnel and qualitative data on course design, pedagogies, or the capabilities of technology.
- b. Were data a factor in putting this decision on the college's agenda? If so, which data were involved?
- c. When decision makers met to address this particular issue, what information or data did they discuss?
- d. Did decision makers use data when determining what the decision should be? If so, which data were used?
- e. Did decision makers cite data when they conveyed the decision to others at the college? If so, which data were cited?
- f. Were data used to assess the decision after it was implemented?
- g. What specific factors promoted or hindered the use of data in this decision?
- h. For this particular decision, how would you characterize the use of data sources?
- i. More emphasis on quantitative, or more emphasis on

qualitative?

- ii. More emphasis on objective, or more emphasis on anecdotal?
- iii. Relied more on specific data points or relied more on a general sense of organizational conditions?
- i. Can you remember any other details about the role of data in this decision?

Note: this question will be asked for each decision that is identified in the answer to Question #2 above if there is time.

5. For the decision(s) you described in answer to questions 3 and 4, how useful or relevant were the available data to the decision making process? (*addresses research question C and D*)

- Probes:
- a. Were the data available reliable? Were they timely? Was there confidence that the data would be applicable to future conditions?
 - b. In your experience, do data about online distance education seem to be more available, less available, or about equally available as data about other issues at your college?
 - c. In your experience, do data about online distance education seem to be more, less, or about equally useful as data about other issues at your college?
 - d. What factors (barriers) influence the availability or usefulness of data in making decisions about online distance education (is online distance education different from other sectors of higher education in ways that would affect data availability or usefulness)?
 - e. Can you think of anything else I should know about the usefulness of the data available for making decisions about online distance education?

6. Can you think of any data that would have been helpful in making the online distance education decisions you described in answer to questions 3 and 4 that decision makers did not have access to? (*addresses research questions C, D*)

7. For the decision(s) you just described, would you say the role that data played in the decision making process is typical of online distance education decisions at your college? (*addresses research questions, A, B, C, D*)

- Probes:
- a. If not, how did the decision(s) you just described (in answer to questions 2, 3, and 4) differ from “typical” decisions about online distance education at your college with respect to the influence of data on the process?
 - b. Do you believe other people at your college would express similar views about the role that data “typically” play in online distance education decisions?
 - c. It has been suggested to me that data influenced decision X in the following way: _____. (this example would be drawn from

information gathered in another interview about a decision that the current interview subject has not mentioned; this probe is for the purpose of triangulation). Do you have knowledge of decision X and if so what is your perspective on the role that data played in that decision?

- d. Can you think of anything else I should know about the role that data tend to play in decisions about online distance education at this college?

8. Considering decisions about issues other than online distance education, do data seem to play more, less or about the same role in the decision making process as they do in decisions about online distance education? (*addresses research questions C, D*)

- Probes:
- a. If you think about recent major decisions made by your college concerning issues other than online distance education, what role did data play in the decision making process? Was there:
 - i. More emphasis on quantitative, or more emphasis on qualitative data?
 - ii. More emphasis on objective, or more emphasis on anecdotal data?
 - iii. More reliance on specific data points or more reliance on a general sense of organizational conditions?
 - b. Can you think of anything else I should know about the role that data tend to play in decisions about issues other than online distance education at this college?

9. Can you describe any decisions about online distance education at your college that were made largely in the absence of data? (*addresses research questions C, D*)

- Probes:
- a. What factors did decision makers rely on to make the decision?
 - b. It has been suggested to me that X data did in fact influence the decision you just mentioned (this example would be drawn from information gathered in other interviews; this probe is for the purpose of triangulation). What is your perspective on that?
 - c. It has been suggested to me that Y decision was made largely in the absence of data (this example would be drawn from information gathered in other interviews about a decision that the current interview subject has not mentioned; this probe is for the purpose of triangulation). What is your perspective on that?
 - d. Can you think of anything else I should know about these decisions that were made largely in the absence of data?

Research Questions:

A. How and to what extent do community college academic leaders use data when making decisions about online distance education?

- B. What data about online distance education do community college academic leaders cite as influences on their decision making and how strong are those influences?
- C. How does the emergent nature of online distance education influence the availability of data and the ways in which community college academic leaders use data to make decisions?
- D. What decision making processes do community college academic leaders use under different conditions of data availability and different levels of data quality?

APPENDIX 3

TENTATIVE CODING CATEGORIES

1. Data Collection (Addresses Research Questions B, C, D: see below)

Models (Daft & Weick Mode)/ Subcategories	Rational Choice (Discovering Mode)	Incremental (Enacting Mode)	Political (Undirected Viewing Mode)	Constructivist (Enacting Mode)	Other
Scope of Data Collection	Extensive (data needed to assess all possible alternatives) Collection may take the form of: -environmental scans -needs assessments -other	Targeted (to only those data relevant to the few alternatives being considered)	Targeted (to those data that help argue for options that are politically supported) “Collection” may take the form of: -ignoring unfavorable data -withholding data helpful to an opponent -spying to obtain data -sharing data to win allies -other	Extensive Collection is driven by the questions and concerns of practitioners	
Types of Data Valued	Hard data, on things like: -costs -enrollment -technical capabilities -outcomes assessment -other		Depends (different individuals or groups) -administrators -faculty -staff (may value particular types of data differently depending on their goals)	Values hard data but also soft data, such as: -practitioner intuition -practitioner experience	
Assumptions about Data Availability	Available			Hard data may not be available because of a: -new environment -fast changing environment Soft data is always available	
Assumptions about Data Collectability	Collectable, because there is: -enough staff	Skeptical, due to: -too few staff -too little time	Depends on power relationships and organizational structure: -centralized structure: key decision	Hard data may not be collectable because staff/decision makers may be	

	-enough time -well trained staff -good IT systems	-competing research priorities -staff not trained -poor IT systems	maker's views about the usefulness of data determines whether they are collected -decentralized structure: data collected depends on competition and bargaining among the involved actors	inexperienced with online distance education Soft data, in the form of practitioner intuition, is collectable	
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2. Data Analysis (Addresses Research Questions A, B, C, D)

Models (Daft & Weick Mode)/ Subcategories	Rational Choice (Discovering Mode)	Incremental (Enacting Mode)	Political (Undirected Viewing Mode)	Constructivist (Enacting Mode)	Other
Approaches/ Methods of Analysis	Objective (all possible alternatives evaluated) Analysis may take the form of: -SWOT -cost-benefit analyses -technical assessments -other		Subjective (because of competing interests, preferences, values of involved actors) “Analysis” may take the form of: -manipulating data -questioning the validity of an opponent's analysis -advocating for a position only using favorable data -suppressing unfavorable data or conclusions -using data as a basis for compromise if they can bridge positions and build coalitions -other	Subjective, because of: -differing experience/ perceptions of individuals -differing experience/ perceptions/norms of organizations -other Analysis may take the form of -group dialogue to interpret the collective meaning of available data -practitioner experience and intuition about available “hard” data combining to create new conceptual schemes	
Assumptions	Capable, because of -adequate staff	Skeptical, because -too few staff	Depends, on whether: -analysis is favorable or	Skeptical of ability for purely objective analysis because it	

about Analytical Capabilities	-adequate time -trained staff -leaders able to understand analysis -other	-staff lacks time -competing analytical priorities -lack of trained staff -leaders not trained to understand analysis -leaders lack time	unfavorable to a position -analyst is an ally or an opponent to an actor	can be tainted by: -individual biases -organizational biases Rich subjective analysis possible	
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3. Decision Criteria and Mechanics (Addresses Research Questions A, B, C, D: see below)

Models (Daft & Weick Mode)/ Subcategories	Rational Choice (Discovering Mode)	Incremental (Enacting Mode)	Political (Undirected Viewing Mode)	Constructivist (Enacting Mode)	Other
Approach to Uncertainty	Minimize it (through data collection and analysis, which should precede any decision)	Accept it (and address it by simplifying the decision making process)	Maximize your opponents' uncertainty and minimize your own	Accept it (and embrace it as a learning opportunity; it should not preclude decision making)	
Assumptions about Organizational Goals	Clear, consistent, broadly supported goals, which may be stated in: -college strategic plan -online distance education strategic plan -other	Goals may not be clear, consistent, or broadly supported, which may be manifested by: -no strategic plans -lack of broad support for strategic plans -other	May or may not be clear, consistent, or broadly supported (because they result from negotiation and conflict among actors with differing preferences)		
Number of Alternatives Considered	All possible alternatives May manifest itself in: -brainstorming activities -other	Few alternatives and only those that differ little from the status quo (makes decision process simpler and quicker)	The number of alternatives that have political support	The number of alternatives that individual and organizational perceptions allow to be recognized or developed	
Basis for Making	Optimization (choose the	Trial and error (choose an	Power (the individual	Socially constructed reality (the	

the Decision	alternative that maximizes the organization's effectiveness)	alternative that helps the organization to muddle through the uncertainty in its environment and goals)	or the coalition with the most political support will make the choice)	choice is the result of group dialogue about the meaning and implications of the available data) Experimentation; the choice is made without significant data to create: -a new reality -new data about reality	
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4. Data in the Aftermath of the Decision (Addresses Research Questions A, B, C, D: see below)

Models (Daft & Weick Mode)/ Subcategories	Rational Choice (Discovering Mode)	Incremental (Enacting Mode)	Political (Undirected Viewing Mode)	Constructivist (Enacting Mode)	Other
Data Collection and Analysis to Assess the Decision's Impact	Gather hard data on decision's impact Analyze it objectively	Minimal data collection and analysis on decision's impact	Depends: -supporters will want to collect data favorable to the decision -opponents will want to collect data unfavorable to the decision	Gather available hard and soft data on decision's impact -decisions about what data to collect driven by practitioners' questions and curiosity Interpret it through group dialogue filtered through the perceptions, intuition, and experience of individuals and organizational norms	
Feedback for Future Decisions	Data collected and analyzed above feeds directly back into future decisions	If result of a trial and error decision is an "error," decision is refined	Depends: -supporters want analysis that can help cement the decision -opponents want analysis that will	Data and analysis can inform future decision making but are not necessarily assumed to be relevant in emergent situations	

			help overturn or minimize the impact of the decision		
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Research Questions:

- A. How and to what extent do community college academic leaders use data when making decisions about online distance education?
- B. What data about online distance education do community college academic leaders cite as influences on their decision making and how strong are those influences?
- C. How does the emergent nature of online distance education influence the availability of data and the ways in which community college academic leaders use data to make decisions?
- D. What decision making processes do community college academic leaders use under different conditions of data availability and different levels of data quality?

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