

Portland State University

PDXScholar

Dissertations and Theses

Dissertations and Theses

1996

Organizational Responses to Educational Telecommunications Policy in Three States: Oregon, Colorado, and Utah

Kathi Arlene Ketcheson
Portland State University

Follow this and additional works at: https://pdxscholar.library.pdx.edu/open_access_etds

Let us know how access to this document benefits you.

Recommended Citation

Ketcheson, Kathi Arlene, "Organizational Responses to Educational Telecommunications Policy in Three States: Oregon, Colorado, and Utah" (1996). *Dissertations and Theses*. Paper 1236.
<https://doi.org/10.15760/etd.1235>

This Dissertation is brought to you for free and open access. It has been accepted for inclusion in Dissertations and Theses by an authorized administrator of PDXScholar. Please contact us if we can make this document more accessible: pdxscholar@pdx.edu.

INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each original is also photographed in one exposure and is included in reduced form at the back of the book.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.



A Bell & Howell Information Company
300 North Zeeb Road, Ann Arbor MI 48106-1346 USA
313/761-4700 800/521-0600

ORGANIZATIONAL RESPONSES TO
EDUCATIONAL TELECOMMUNICATIONS POLICY
IN THREE STATES: OREGON, COLORADO, AND UTAH

by

KATHI ARLENE KETCHESON

A dissertation submitted in partial fulfillment of the
requirements for the degree of

DOCTOR OF PHILOSOPHY
in
URBAN STUDIES

PORTLAND STATE UNIVERSITY
©1996

UMI Number: 9627253

Copyright 1996 by
Ketcheson, Kathi Arlene

All rights reserved.

UMI Microform 9627253
Copyright 1996, by UMI Company. All rights reserved.

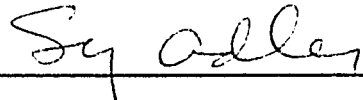
This microform edition is protected against unauthorized
copying under Title 17, United States Code,

UMI
300 North Zeeb Road
Ann Arbor, MI 48103

DISSERTATION APPROVAL

The abstract and dissertation of Kathi Arlene Ketcheson for the Doctor of Philosophy in Urban Studies was presented April 24, 1996, and accepted by the dissertation committee and the doctoral program.

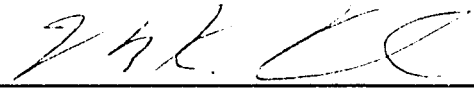
APPROVALS:



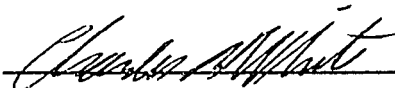
Sy Adler



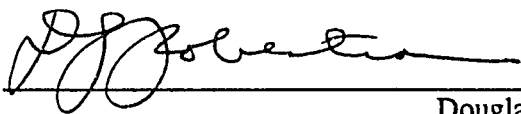
Kenneth J. Dueker



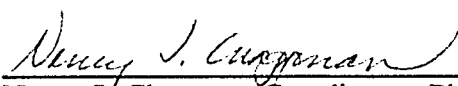
Mary K. Kinnick



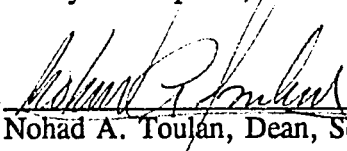
Charles R. White



Douglas L. Robertson
Representative of the Office of Graduate Studies

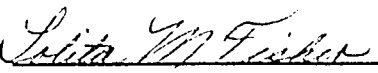
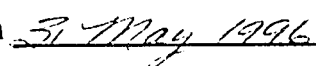


Nancy J. Chapman, Coordinator, Ph.D. Program in Urban Studies



Nohad A. Toulan, Dean, School of Urban and Public Affairs

ACCEPTED FOR PORTLAND STATE UNIVERSITY LIBRARY

by  on 

ABSTRACT

An abstract of the dissertation of Kathi Arlene Ketcheson for the Doctor of Philosophy in Urban Studies presented April 24, 1996.

Title: Organizational Responses to Educational Telecommunications Policy in Three States: Oregon, Colorado, and Utah.

Prior research on statewide educational telecommunications has focused on cataloging initiatives in various states, describing activities in individual states, or in exploring telecommunications policy from a planning-level perspective. In these studies, it is recognized that policies and implementation behaviors vary across individual states; however, a theoretical basis for how and why policy and implementation models differ among states has not been provided. Research also suggests that many states are moving toward the adoption of successful models from other states, and that there is a need for policy research to assist states in developing policies.

This dissertation attempts to apply the systems perspective in organization theory (Thompson 1967; Mintzberg 1983) and concepts from political feasibility analysis (Meltsner 1972; Webber 1986) to qualitative data on educational telecommunications systems in three western states: Oregon, Colorado, and Utah. The research will provide descriptions of activities that

can be referred to by state policy makers in evaluating the feasibility of adopting another state's planning model, and in developing their own policies. The research also will contribute to the growing literature on state policies and implementation models for distance education.

The three states represent models of educational telecommunications systems prevalent in the U.S., and each differs in the level of statewide planning, governance, finance, and delivery of educational telecommunication represented by its model. Interviews with policy makers and practitioners in each state, combined with documentary evidence and prior research, provide descriptions of organizational responses to statewide policy and planning for distance education. Conclusions indicate that state policies are lagging behind technological change, and that variations in policy and planning among states result from constraints and contingencies imposed on institutions by contextual variables peculiar to each state. States that engage in careful planning for statewide telecommunications, taking into account the political culture, organizational behaviors, and historical relationships between higher education and state government, will have the greatest success in developing and implementing policies.

ACKNOWLEDGEMENTS

I am indebted to the many friends and colleagues who extended their kindness and generosity to me during the research and writing of this dissertation. Several individuals deserve recognition for providing direction to my study in its early phases: Katherine Novy; Anne McMahon; Tony Midson; and Dr. Carl Abbott, my program advisor, who suggested the general topic to me several years ago. The Chair of my dissertation committee, Dr. Sy Adler, deserves my special thanks for providing a fine example of scholarship and academic rigor, encouraging me, always, to do my best. The members of my committee, Dr. Charles R. White, Dr. Mary K. Kinnick, Dr. Kenneth Dueker, and Dr. Douglas Robertson, deserve equal thanks for their support and thoughtful comments. Each brought a new perspective that enriched my experience, both in writing and thinking about my topic.

Without one exceptional person, this dissertation would not have been possible. Nancy Carney, my friend, graduate assistant, and fellow doctoral aspirant, assisted me beyond the call of duty in collecting the interview data, and in figuring out what it all meant. I am indebted to her for the enthusiasm and spice she added to my project, and to my life.

I would be remiss if I did not thank those who participated in the interviews that are the substance of this dissertation. Although I cannot

mention them by name, I wish to acknowledge the contribution they have made to this research in devoting their time and expertise to a project from which they will receive little direct benefit. Their enthusiasm and willingness to discuss issues important to their states contributed greatly to my experience.

The Faculty Development Committee of the Portland State University Faculty Senate honored me with the award of a Faculty Development Grant, which helped to cover the costs of long-distance telephone calls, research materials, and duplicating. A condensed version of this dissertation serves as the final report to the Committee. The research and writing of this document was a significant event in my professional development as a faculty member at PSU, and I thank the Committee for their assistance.

A special thanks goes to three of my long-time friends: Sandy Hilton; Janelle Erickson (who gave a new meaning to the term "interlibrary loan"--Mange takk, Janelle!); and Janel Krilich. They are ever in my thoughts, on the telephone, or leaving messages on e-mail. Thanks to them, to all of us, for sticking together for so many years.

My colleagues were particularly helpful and patient during this process. My special thanks goes to Dr. Mary F. Ricks, Director of Institutional Research and Planning, for her encouragement, prodding, and occasional plea for me to finish. I am grateful, also, for her generosity in producing the maps of Oregon, Colorado, and Utah I have included in the dissertation. My long-time colleague, Belen Tapang, deserves another special thanks for her friendship,

support, and encouragement during all the ups and downs of our years as institutional researchers at PSU, and also for helping me create the organizational charts and diagrams I have used to illustrate my conceptual framework. Thanks, too, to Barbara Phillips, Scott Hanson, and the rest of the OIRP staff for their patience and support.

I am fortunate to have many friends at PSU, and cannot name them all. My thanks to all the faculty and staff who have provided their encouragement and support over the years, particularly to my dear friends in the Office of Personnel Services: Pam Merrick, Rose Wayne, Esther O'Grady, Karen Abbott-Yelle, Dawn Hoyt, Gary Martin, and Helen Skaggs. Thanks, especially, to the Dean, faculty, and staff of the School of Urban and Public Affairs for guiding me through the academic and administrative details of my graduate program.

Two very special people are to be recognized for the love, friendship, food, and good humor they have provided to me over the past several years, Dr. Javid Mohtasham and Dr. Arezu Movahed. I will always be grateful that I had the fortune to meet them; my life has been enriched immeasurably by their presence. Merci!

Another exceptional person deserves more than a simple thanks for his love, encouragement, unfailing patience, astonishing grasp of research methodology and statistics, and great cooking over the past eleven years. Don Trapp, my life's partner, has been beside me during all the ups and downs of

my doctoral program. His enduring confidence has helped me, always, to go forward.

Thanks to all the members of my family, for their love and support. Thanks, too, to Phoebe and Aries for sitting on my lap, the keyboard, and all my references; they provided a true sense of perspective to my long hours in front of the computer.

My deepest gratitude goes to my parents, Edith B. Ketcheson and the late Orville S. Ketcheson. When I was six-years old, they walked me to the bank, handed me a five-dollar bill, and told me to begin saving for college. They never doubted me, and I thank them for that. In addition to life, they gave me one gift for which I will be eternally grateful: they taught me to read.

And, finally, thanks to The Rolling Stones, for giving me some satisfaction during the hours I spent writing this dissertation.

TABLE OF CONTENTS

	PAGE
ACKNOWLEDGEMENTS	i
LIST OF FIGURES	x
CHAPTER	
I INTRODUCTION	1
Statement of the Problem	1
Governance Structures	2
Research Design	3
Methodology	4
Conceptual Framework	5
II PRIOR RESEARCH	7
IMPLEMENTATION RESEARCH	7
ORGANIZATION THEORY	8
The Systems Perspective	9
Organizational Levels	12
Domain and Task Environments	13
Power Relationships	16
POLITICAL FEASIBILITY	18

	vi
PLANNING AND GOVERNANCE	19
Statewide Planning	19
Models of Administration and Service Delivery	20
III ISSUES IN EDUCATIONAL TELECOMMUNICATIONS	24
SERVICE DELIVERY ISSUES	24
Technology Trends	26
Inter-Jurisdictional Issues	28
HIGHER EDUCATION GOVERNANCE AND FINANCE	31
Governance and Coordination	31
TELECOMMUNICATIONS INFRASTRUCTURE AND FINANCE	34
Technology	34
TELECOMMUNICATIONS POLICY	37
The State Role	37
RURAL TELECOMMUNICATIONS	39
Population Trends	39
IV RESEARCH DESIGN AND METHODOLOGY	42
MULTIPLE CASE STUDY DESIGN	42
The Problem of Generalizability	44
Pre-Analysis	45
Research Hypotheses	46

		vii
	Research Design	51
	DATA COLLECTION PROCEDURES	52
	Sampling	53
	Interviewing	54
	FRAMEWORK FOR ANALYSIS	57
V	OREGON	60
	MAJOR INITIATIVES	60
	Oregon Ed-Net	60
	ENVIRONMENTAL COMPLEXITY AND UNCERTAINTY	66
	Governance and Competition	66
	Jurisdictional Issues	70
	Funding Constraints and Contingencies	74
	Political Constraints and Contingencies	76
	Changing Technology	80
	CONCLUSIONS: PERSPECTIVES ON OREGON	81
VI	COLORADO	86
	MAJOR INITIATIVES	86
	Formation of the Northeast Alliance	86
	Statewide Extended Studies Program	89
	ENVIRONMENTAL COMPLEXITY AND UNCERTAINTY	91

	viii
Governance and Competition	91
Jurisdictional Issues	95
Funding Constraints and Contingencies	98
Political Constraints and Contingencies	99
Regional Responses to Constraints	102
Technological Complexity	103
CONCLUSIONS: PERSPECTIVES ON COLORADO	105
VII UTAH	108
MAJOR INITIATIVES	108
Utah Educational Network	108
ENVIRONMENTAL COMPLEXITY AND UNCERTAINTY	113
Governance and Competition	113
Funding Constraints and Contingencies	116
Political Constraints and Contingencies	119
Changing Technology	121
CONCLUSIONS: PERSPECTIVES ON UTAH	122
VIII CROSS-CASE ANALYSIS	126
Access and Equity	126
Efficiency	131
Diversity	132

	ix
Quality	134
Economic Development	135
IX CONCLUSIONS AND RECOMMENDATIONS	137
Conclusions	138
Directions for Future Research	144
REFERENCES	147
APPENDICIES	153
A TABLE OF SELECTED STATE CHARACTERISTICS	153
B TABLE OF ENROLLMENT IN PUBLIC HIGHER EDUCATION	155
C TABLE OF COMPARATIVE STATE POLITICAL FEATURES	157
D DATA COLLECTION PROTOCOLS	159
E INFORMED CONSENT FORMS	162
F LETTERS TO SUBJECTS	165
G INTERVIEW QUESTIONS	168
H DATA ANALYSIS PROTOCOL	170

LIST OF FIGURES

FIGURE	PAGE
1. Organizational Levels in Higher Education Institutions	11
2. Domains and Task Environments of Higher Education Institutions	15
3. Statewide Educational Telecommunications Models	23
4. Governance and Coordination Structure for Higher Education	33
5. Task Environment Continua	50
6. Oregon Higher Education Institutions	68
7. Colorado Higher Education Institutions	96
8. Utah Higher Education Institutions	115
9. Continuum of Independent Variables and Statewide Models	139

CHAPTER I

INTRODUCTION

Statement of the Problem

The research questions I pose in this dissertation are those that might be asked by a public policy administrator concerned with issues of implementation, the translation of policy into action. Simply put, how are decisions about appropriate mechanisms for administering policies made, and what are the implications of these decisions for the delivery of services to the public? The policy arena in this study is educational telecommunications, an arena that has been growing in importance across the U.S. in recent years.

Prior research on statewide educational telecommunications has focused on cataloging initiatives in various states, describing activities in individual states, or exploring the relationship between telecommunications and policy from a planning-level perspective. In these studies, it is recognized that policies and implementation activities vary across individual states, although detailed analysis is not provided. However, research suggests that states are moving toward the adoption of models from other states that have had the greatest success with their systems, and that policy research is needed to assist states in formulating their own policies.

In this dissertation, I frame descriptions of educational telecommunications policy and implementation in three western states within the context of organizational theory and political feasibility analysis, providing a method for assessing the feasibility either of adopting another state's model, or of formulating and implementing new policies. Factors such as political culture, organizational structures, the history of higher education governance and relationship to state government are examined within a theoretical framework in order to provide a more detailed explanation for how and why educational telecommunications policies and implementation activities vary across the three states.

Governance Structures

In his research, Richard Hezel (1990) asks, "Is there an ideal structure for governing telecommunications?" Schick et al. (1992), in their narrative study of higher education governance, ask a similar question: "Is there a preferred structure for higher education governance?" Thompson (1967) suggests that the greatest challenge faced by organizations is coping with uncertainty in their environments, and that differences in technological and environmental uncertainties faced by organizations result in differences in organizational action. Structures reflect characteristics of the environment and functions of organizations, so that no one design, structure, or set of behaviors can be applied to all organizations. In this study, I describe how environmental

uncertainties in Oregon, Colorado, and Utah have produced different responses to the problems of governance and provision of educational telecommunications services for higher education.

Research suggests that effective delivery of educational services can be enhanced by the combination of an effective governance structure and activities of key individuals in the higher education arena. Some studies have indicated that the quality of leadership is more important than structure; others illustrate cases in which restructuring has improved the delivery of educational services. Schick et al. (1994) state that "a workable, responsive governance structure. . . is key to higher education's ability to provide access to quality educational services," and Jonsen and Johnstone (1991) draw a link between higher education governance and the governance of educational telecommunications, a link I will follow in this study. In their view, the goals of educational telecommunications and higher education, generally, are the same, so that tools used by state higher education structures to achieve their overall goals can be applied to the provision of educational telecommunications.

Research Design

To facilitate the analysis, the study focuses on three types of governance and implementation structures, as represented in the literature: a) single state agency, created for the purpose of administering statewide telecommunications; b) state-supported consortium or cooperative, a nongovernmental agency

structure; and c) institution-centered system, involving little or no state involvement in either planning or governance. Each of the three states I selected for my study--Oregon, Colorado, and Utah--is an example of one of these types. Oregon Ed-Net, an example of a single state agency structure, serves as the central case in my research; Utah is an example of a consortium or cooperative structure; and Colorado is an example of an institution-centered system. I chose these states because each is an example of a case that "works," each state's structure allows me to examine policy, implementation, and service delivery issues indicated in the literature as relevant to policy makers and practitioners, and each structure represents one of the major forms of educational telecommunications systems in the U.S. In addition, information about activities and relevant actors in these states was readily available to me, which contributed to efficiency and accuracy in the data collection phase of the project.

Methodology

In my study, I follow a "multiple case study" format, articulated by Robert K. Yin in his book Case Study Research Design and Methods (Thousand Oaks: SAGE Publications, Inc., 1994). Yin outlines a scientific and rigorous methodology for conducting case study research that attempts to overcome traditional criticisms of the method--typically, the problem of a small "N," the lack of generalizability, and difficulties in interpreting results. To apply

structure to the research, Yin urges investigators to develop formal data collection and analysis protocols, and to collect data from multiple sources.

After careful consideration, I selected this model because of its appropriateness to exploratory research using qualitative variables, and because of its prevalence in policy research. A multiple case approach allows for the elimination of rival hypotheses, and the reliance on multiple sources of data (including prior research, documents, and interviews) contributes to validity. Formalized case study protocols for each case provide a guide for data collection, analysis, and reporting, and help keep the project in line with its stated goals. In my review of literature, I found precedence for using this model of qualitative research in studies by Abrams (1993), Zeller (1994), Schick et al. (1994), and Schmandt et al. (1989), to which I refer in later chapters.

Conceptual Framework

I analyzed the texts of interviews with key informants and documentary evidence from each state using a conceptual framework derived from three bodies of literature: implementation research, organization behavior, and research on higher education governance and distance education. In this study, I am concerned with how environmental and organizational differences affect policy and policy implementation across three states. The literature on "Third-Generation" policy research (Goggin et al. 1993), which focuses on how

implementation behavior varies according to policy attributes, the actors and organizations involved in implementation, and the environment in which decisions and actions take place, provides a broad framework for my research. Within this framework I apply concepts from the systems perspective in organizational research, as described by Thompson (1967) and Mintzberg (1983), and political feasibility analysis (Meltzner 1972; Webber 1986)--which examines how key actors and events at each stage of the policy process affect the resolution of a policy problem--in analyzing policy and implementation activities in the three states. Finally, the literature on higher education governance and finance and distance education provides a means for examining issues specific to my topic.

CHAPTER II

PRIOR RESEARCH

IMPLEMENTATION RESEARCH

Implementation is the translation of policy into action. Each of the three states I have chosen for this study has formulated and translated educational telecommunication policies differently, and has produced different governance or coordination structures to administer these policies. Although, nationally, educational institutions face similar issues in providing educational telecommunications services, the political, cultural, and organizational environment for higher education in each state shapes the way institutions respond to administration and service delivery issues. Implementation research provides a framework for describing these responses.

Methods employed in implementation research have typically involved a combination of activities. In this study, I followed as closely as possible the methods used in exemplary studies of policy implementation, which have relied on interviews, observations, and review of documents and reports. Many themes emerged from the data as they were collected, while others were framed by theory drawn from prior research.

In traditional policy implementation literature, a distinction is made between formulation and implementation, and the policy process is viewed in three parts: formulation, implementation, and reformulation. The "top-down" approach to implementation research, as exemplified by the work of Mazmanian and Sabatier (1989), focuses on the perspective of central decision makers, while the "bottom-up" approach is concerned with the network of actors involved in service delivery. In Goggin et al. (1990), the authors describe "Third-Generation Design" as a way to "shed new light on implementation behavior by explaining why that behavior varies across time, across policies, and across units of government . . . (1990, 171)."

This model is appropriate to my purpose in describing environmental and functional differences surrounding educational telecommunications implementation in Oregon, Colorado, and Utah. National trends and federal policies have an impact on the environment for educational telecommunications in Oregon, Colorado, and Utah. But, as I hypothesize, political culture, the history and structure of higher education, and the characteristics of organizational structures that create and administer policies in each state have the most influence on implementation and service delivery.

ORGANIZATION THEORY

Activities on the state planning level are the focus of both Zeller and Hezel's research. In this dissertation, I add another dimension to their

research by applying organization theory and political feasibility analysis to descriptions of policy and implementation activities in three states.

Descriptions are provided through documentary research and interviews with actors involved in distance education activities across organizations and organizational levels.

In his descriptive research on the organizational interface between educational sectors in Utah, Abrams (1993) employed concepts from the "systems perspective" in organization theory (Harmon and Meyer 1986, 156-196) to examine the political dynamics of organizational competition and cooperation between public and higher education policy elites within the Utah state government. In employing this perspective, Abrams sought to examine how relevant actors in the area of educational policy in Utah interacted to define their organizations' goals and produce policy outcomes. As I attempt to show in this dissertation, the systems perspective also provides a useful tool for understanding differences in state involvement in educational telecommunications in Oregon, Colorado, and Utah.

The Systems Perspective

One of the most important contributions to the systems perspective was made by James D. Thompson in Organizations in Action (New York: McGraw Hill, 1967). In this work, Thompson expanded on the "open systems" theory of Katz and Kahn (The Social Psychology of Organizations, 1966) by offering a

framework for analyzing how organizations will behave in various circumstances. He viewed organizations as "natural systems," and focused his analyses on two key variables: the environments to which organizations must respond, and the technologies that organizations use to accomplish their activities (Harmon and Meyer 1986, 175). Organizations exist in a complex environment characterized by interrelationships with other organizations and entities. Thompson recognized the presence of an informal organization within the formal organization structure, and argued that rational organizations use both closed and open systems strategies in combination:

We will conceive of complex organizations as open systems, hence indeterminate and faced with uncertainty, but at the same time subject to criteria or rationality and hence needing determinateness and certainty (1967, 10).

Although organizational decision makers would prefer to adopt efficient and rational strategies, they often are prevented from doing so. Environmental uncertainties typically lead them to adopt what Herbert Simon termed "satisficing" strategies--choosing alternatives that are satisfactory, but no more--in order to survive (Harmon and Meyer 1986, 175). In the three case studies, I expected to find that state budget constraints, disparities in levels of service delivery to urban and rural areas, levels of available technology, and varying student demand for courses would lead some institutions to undertake these strategies in implementing educational telecommunications policies.

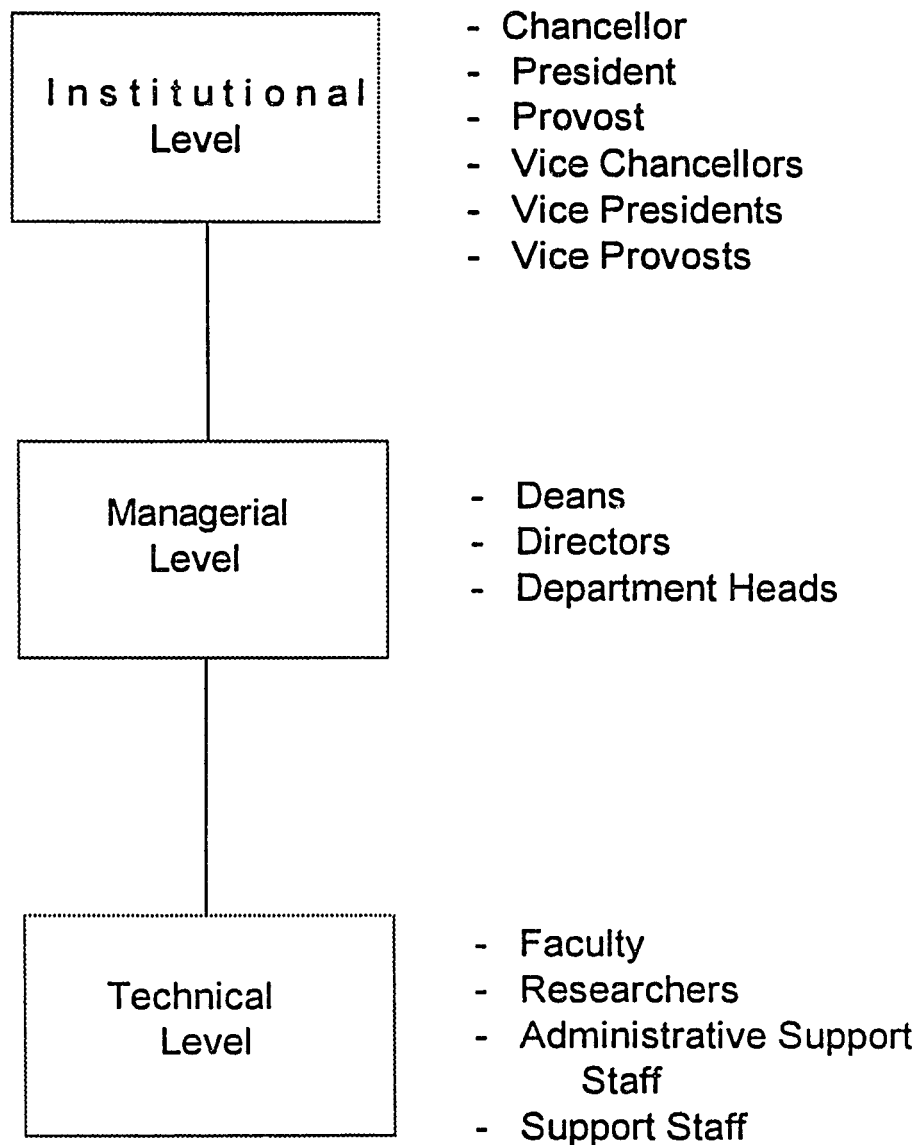


Figure 1. Organizational Levels in Higher Education Institutions

Organizational Levels

Thompson elaborates Parson's three organizational levels (1960), which carry out either open or closed system strategies in a hierarchical framework. These sectors are the technical core, which is responsible for performing the organization's primary functions; the managerial level, which administers internal affairs, procures and manages resources, and mediates between the technical core and the users of its services; and, the institutional level, which mediates between the organization and the interests it is intended to serve. In higher education organizations, the technical core is made up of faculty and administrative staff; the managerial level includes directors, department heads, and deans; and the institutional level includes upper-level administrators, such as the provost, vice presidents and vice provosts, and the president. Where there is a state system of higher education, officers such as the chancellor and vice chancellors also play an institutional role in relation to the individual colleges and universities within the system.

The technical core prefers to use closed system strategies in performing its functions, and is protected by the managerial sector from uncertainties in the external environment. The managerial sector also mediates between the institutional and technical sectors, which come into frequent conflict because of their differing goals, strategies, and values (Harmon and Meyer 1986, 177). At the points of articulation between these systems within the organization, each can exercise power independently. By withholding information, one system can

interfere with the functioning of the others. Individuals within organizations often have different goals than the organization as a whole. Coalitions of individuals form within or across systems, necessitating bargaining to achieve the desired result. This creates a "politically-negotiated order," in which power is distributed across systems (Abrams 1993).

Domain and Task Environment

Thompson describes an organization's domain as the functional area defined by the organization in performing its tasks (i.e., what it does and whom it serves), and comprises the "points at which the organization is dependent on inputs from its environment (Thompson 1967, 27)." It involves both organization goals and ideology (Harmon and Meyer 1986, 176). For example, the domain for statewide higher education governance structures might be the provision of post-secondary educational services through a system of individual institutions, while for an institution, the domain might be the provision of post-secondary educational services, perhaps in specific academic or professional areas, through programs and departments. The focus of these domains may be statewide, regional, international, or a combination of any of the three.

The task environment involves elements in the organization's environment that relate to goal setting and attainment, such as customers, suppliers, competitors, and regulatory groups (Thompson 1967, 27). In the language of higher education, the task environment for an institution would include

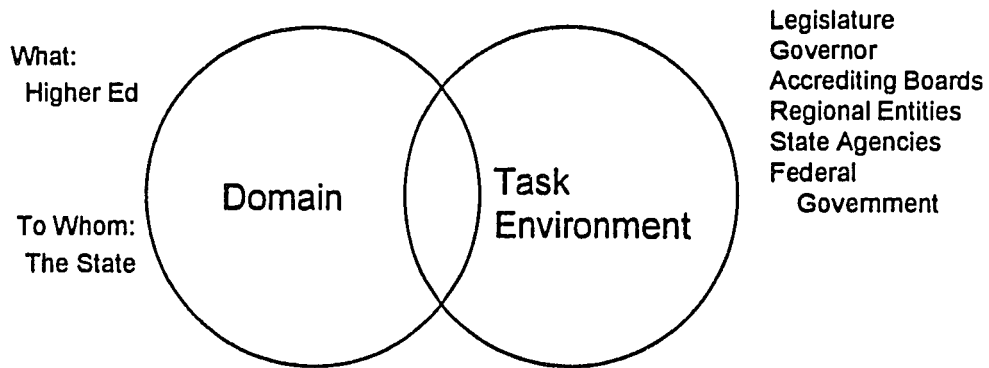
students, governance boards, other institutions, the state system, and accrediting boards; for a governing board, it would include institutions, political actors, other state agencies, labor unions, and the state legislature.

Organizations face constraints (factors that are fixed, and to which the organization must adapt) and contingencies (factors that may change, but are not subject to the organization's control) in their task environments, as well as other factors over which they may exert control. These affect how the organization will behave in a given situation.

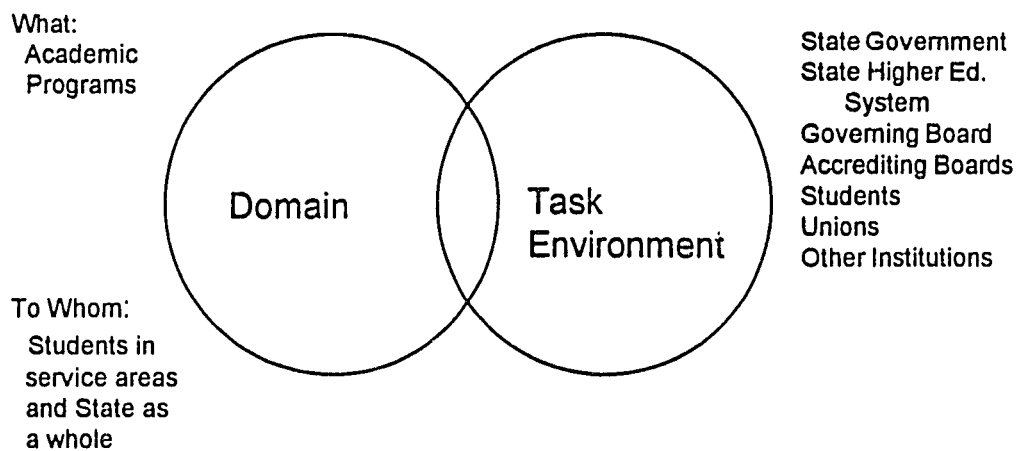
As Thompson indicates, attainment of a viable domain is a political problem that requires establishing a position (Thompson 1967, 36).

Dependencies on the environment are "acquired" when the domain is established. An organization may seek to expand its domain to include new populations and territories, but economies of scale may determine whether or not it is feasible to apply its technical capacity to a given situation. For example, it may be too costly for an organization to carry out a particular activity on a small scale. Also, territorial expansion may require costly investments in facilities or personnel, which may deter an organization from expanding its boundaries. Diversification is one means of either expanding the domain or developing multiple domains to respond to newly emerging demands in the task environment.

The relationship of an organization to its task environment is one of exchange, and the organization's claim to its domain must be recognized by the



State Higher Education System Environment



Institutional Environment

Figure 2. Domains and Task Environments of Higher Education Institutions

task environment: "... unless the organization is judged by those in contact with it as offering something desirable, it will not receive the inputs necessary for its survival (Thompson 1967, 28)." This "domain consensus" reflects the image or the organization's role in the larger environment, and influences the direction of organizational action. As I indicated earlier, the task environment imposes both constraints and contingencies, and the organization responds by attempting to control its power and dependency relationship with the task environment. One way of doing this is to maintain alternatives to inputs provided by the task environment, and by forming coalitions with competitors (Thompson 1967, 32). The role of administration is to co-align an organization's technology (its method of undertaking domain activities--for example, teaching) and task environment, and an organization's design and structure, with its domain (Thompson 1967, 147).

Power Relationships

In discussing the distribution of power between organizations in Utah, Abrams drew from the writings of Henry Mintzberg (1983) on the political behavior of organizations. Mintzberg's model is based, in part, on Thompson's work, and provides another way of understanding the complexity of implementation behaviors in Oregon, Colorado, and Utah. In this model, the political behavior of organizations is seen to emerge from a power game, in which internal or external "influencers" attempt to control the organization's

decisions or actions. These "influencers" form coalitions of individuals or groups who bargain among themselves to distribute power to their own advantage. Internal coalitions consist of members of the organization who are responsible for deciding and acting on its behalf. In the context of higher education organizations, internal coalitions would consist of the commissioner or chancellor, associate commissioners, university presidents, the professorate, and professional and support staff. The goals favored by each coalition reflect the needs and interests of its various members.

The External Coalition is comprised of persons and groups outside the organization. This coalition can be powerful, and affects the organization's decisions and actions by exerting various controls on internal coalitions, including norms, pressure campaigns, and formal constraints (Abrams 1993,7). In the context of higher education, the External Coalition is represented by the state board of higher education, the public, the legislature and the governor, policy elites, and interest groups.

Between internal and external coalitions, the power relationship is reciprocal: if the External Coalition becomes either divided or passive, power reverts to the Internal Coalition. If internal coalitions do not feel that the External Coalition is meeting their needs, they will tend to cooperate and bargain together to achieve their ends. Peers within various internal coalitions will tend to come together to find a mutually acceptable solution to a common problem.

POLITICAL FEASIBILITY

Political feasibility analysis provides another method for examining how educational technology initiatives differ among Oregon, Colorado, and Utah. In applying political feasibility analysis to the policy process, Webber (1986) and Meltsner (1972) add another dimension to policy analysis by identifying criteria for successful policy adoption and implementation. Central to this method of analysis are the actors and events at each stage in the process; the likely resolution of a policy problem is anticipated as it moves through the process. Key determinants in the acceptance or rejection of a proposal are the salience, or timeliness of the proposal; the consistency of a proposal within the prevailing political climate; the presence of a policy entrepreneur or champion who promotes the proposal; support from the implementing bureaucracy; and support from interest groups (Webber 1986, 550). These criteria vary at each stage of the process.

To be successful, a policy should be initiated at a time when interest in an issue is high. If an issue is too new or too old, there may not be enough interest among citizens or politicians to sustain it. At the formulation stage, a policy should be consistent with the current political climate, and elicit broad support without prompting strong opposition (Webber 1986, 551). The policy implementation stage should be characterized by support from the bureaucracy

and the legislature; it is here that the "policy entrepreneur" plays an important role.

PLANNING AND GOVERNANCE

Statewide Planning

By 1990, more than half of the western states had initiated statewide planning and implementation systems for educational telecommunications (Dively and McGill 1991). Research on these initiatives suggests that inter-local variables may explain state variations in implementation and service delivery. For example, in states with little experience in providing telecommunications services, coordinated planning and governance appears to be easier to accomplish than in states with existing agencies that have provided such services in the past. In states that have mandated a comprehensive approach, and in which entrenched agencies do not have an established hold on telecommunications service provision, coordinated systems are more likely (Midson 1992; Hezel 1991).

Statewide educational telecommunications activities have been documented by Richard Hezel and Associates since 1987. Reports issued each year document and analyze the implications of statewide coordination of telecommunications in the fifty states. The reports are descriptive, including summaries of interviews with nearly 500 individuals across the U.S. and documents from an extensive library of materials collected from each state.

Hezel (1992) suggests that state government is the central actor in planning educational telecommunications, and that planning and governance models are peculiar to the political and organizational environments in each state. In some states, policies have been developed, but not implemented; in others, planning continues after an implementation structure has been set in place. He also indicates that there is movement toward adopting planning models from states that have experienced the greatest success with the implementation of their systems, and that there is a need for policy research to assist states in formulating their own policies (Hezel 1991, 19-20).

In many cases, economic development goals have encouraged statewide plans that include partnerships between the state, education, and business (Jonson and Johnstone 1991). Generally, the western states have undertaken statewide planning activities in response to issues with interinstitutional implications, such as jurisdictional conflicts, articulation issues, equity and access issues, and the cost of infrastructure, training, and personnel (Jonsen and Johnstone 1991). However, methods of implementation have varied among states, from highly centralized to highly decentralized systems.

Models of Administration and Service Delivery

In selecting the three cases I examine in this dissertation, I relied on the works of Zeller (1995) and Midson (1992). As they indicate, educational telecommunication services in U.S. typically are provided by single institutions,

or by the cooperative efforts of multiple institutions (Midson 1992). Zeller (1995) sets out four descriptive, conceptual models of educational telecommunications systems along eight policy-oriented dimensions: purpose; planning/coordination; ownership/control of the technical capacity; methods and media selection and use; access/clientele served; programming; role of institutions; and cost efficiency. The models are useful in describing the major forms of educational telecommunications systems across the U.S.

None of the three cases in this dissertation fits neatly into Zeller's framework. As she points out, "The placement of each model along the policy continuum is approximate; the models do not fit all situations exactly (1995, 126)." Thus, Colorado represents features of the Laissez-Faire and Consortium Models; Utah, the Comprehensive Model; and Oregon, features of both the Coordinating Board and Comprehensive Models.

In the "Laissez-faire Model" (1995, 127), a single institution provides educational programming to its students, or to other institutions through television, video cassettes, or telecommunications. Recipient institutions are not involved in governance of the system. While individual institutions may collaborate for a narrow purpose, there is no statewide planning; decisions about course offerings and technology are made by institutions.

Multiple institutions either are physically connected or cooperate over articulation issues, such as coordination of admissions, accreditation, transfer, or the administration of joint programs (Midson 1992). The "Consortium

Model" (Zeller 1995, 132), which places governance within nongovernmental or nonprofit organizations, links several institutions with information services that may be regional or national in scope; the National Technological University in Colorado is an example of the Consortium Model. Little planning or system development occurs under this scheme. Consortia typically rely on technology that is funded but not controlled by the state; each institution controls access to its own programming.

A third model is the "Coordinating Board Model" (1995, 135), in which state-level planning is carried out by a board or committee composed of service providers and related agencies. Through coordination, the state attempts to reduce duplication and contain costs. The state may provide the technology, but individual institutions also may have their own.

A fourth model is the "Comprehensive Model" (1995, 138). Under this model, the state designates one institution or agency as responsible for state-level planning, coordination, integration, and service delivery. Individual institutions do not have their own technology, but make use of a shared system and are charged for its use. One advantage of the Comprehensive Model is that it allows the state to set and implement public policy goals.

System Type	Delivery Mode	Governance	User Types	Planning
Single Institution	One site transmits to recipient sites in adjacent geographical area.	Individual transmitting institutions.	Educational organizations.	Institutional level/local.
-Linked	Physically linked institutions, with each member responsible for transmissions and reception.	Individual institutions, coordinating boards, commissions, public broadcasting.	Educational organizations.	Institution level/local. May have statewide component if telecommunications involved.
	Physically linked institutions, with some members acting only as recipients.	Educational system, coordinating board, commission, public broadcasting, existing state agencies.	Educational organizations.	Institution level. May have statewide component if telecommunications involved.
		*In Oregon, new state agency.	*Educational organizations, businesses, state agencies.	*Full statewide planning.
-Consortia	Institutions form consortia to coordinate articulation of programs: often national in scope.	Board of directors, coordinating board, commission.	Educational organizations, businesses, state agencies.	Statewide.

Figure 3. Statewide Educational Telecommunications Models. Data from "Cooperative Electronic Distance Education Programs in Higher Education," Tony Midson, Portland State University (1992).

CHAPTER III

ISSUES IN EDUCATIONAL TELECOMMUNICATIONS

Oregon, Colorado, and Utah face policy issues surrounding educational telecommunications that are common to all states. However, each state responds to these issues differently. A discussion of these common issues will help to frame the individual case studies in their larger context, and provide background for the cross-case analysis described in a later chapter.

SERVICE DELIVERY ISSUES

Distance education refers to a range of techniques for providing educational services to students who are unable to attend regular courses on a college or university campus because they are located in remote locations or placebound for some other reason. The range of techniques used in providing educational services includes satellite broadcast, cable TV, video tape, computers, teleconferencing, or written correspondence. While these methods have been in use for several decades, the last twenty years have seen an increase in their use, as schools, colleges, and universities attempt to broaden accessibility to their programs. In most universities, distance education is

housed in university extension programs, serving the needs of continuing education for adult learners; however, degree programs are offered at some institutions. Distance education often is promoted as a cost-saving alternative to traditional programs, as advances in technology and the relaxation of federal communications regulations have provided new opportunities for expanded course offerings.

Prior research indicates that faculty attitudes toward distance education and educational technology are an important issue for higher education institutions. Results of a national survey of faculty in two- and four-year institutions across the U.S. suggests that educators should regard the future of distance education with "cautious optimism" (Clark 1993) because faculty attitudes toward educational telecommunications are complex. In general, faculty respondents at community colleges, and those who were most familiar with the use of distance education, expressed positive attitudes toward the use of educational telecommunications. However, most respondents expressed concerns about access, quality and standards, effectiveness, the appropriateness of technological applications, administrative and technical support, and professional rewards for faculty engaged in distance education (Clark 1993, 32).

In Campus Trends 1995 (American Council on Education, July 1995), Elaine El-Khawas, Vice President for Policy Analysis and Research, reported the results of ACE's twelfth annual survey of senior administrators at U.S. colleges and universities. The survey is designed to collect information on

changes underway in higher education each year. In the 1995 study, the growing interest and use of telecommunications for education and administration is illustrated in responses to several questions. Most respondents expect that within the next five years their institutions will offer more courses using electronic materials and through distance education, will increase classroom assignments that are submitted electronically, and have course registration that is almost entirely computerized (Khawas 1995, 8). However, most respondents offered low ratings of their institution's status in areas relevant to technology, including electronic infrastructure for administration and academics, library resources, the physical plant, and equipment for teaching and research (Khawas 1995, 28). With all institutions expecting declines in revenue in the coming years, improvements in these areas may be difficult to achieve. Says Khawas (1995, 27): "Among public institutions, one-half had no funding increase from state or local governments this year and expected budget cuts in the next year."

Technology Trends

Interest in the use of distance education has been increasing in recent years, both nationally and internationally, driven by access and equity concerns and an increasing supply of technology from telecommunications equipment and service providers (Hezel 1994). However, telecommunications providers have been slow to recognize the market possibilities for their services in the

education sector (Hezel 1994, 4). Large-scale activities in providing equipment and services to educational institutions, such as Bell Atlantic initiatives in the southeastern U.S., began after 1990, although public statewide initiatives were underway in several states during the 1980s.

Recent national developments in telecommunications technology have focused on entertainment services, such as shopping networks and DirecTV, or on business communications, such as wireless services (Landler 1996a, 1996b). Two of the largest long-distance telephone service providers, AT&T and MCI, have announced plans to move into competition with cable television providers by investing in the direct-broadcast satellite market; local telephone service providers also have begun moving into the television market (Landler 1996b). However, across the U.S., educators worry that there may be too much emphasis on commercial use of the emerging "information highway," and too little attention paid to the needs of higher education. "Commerce has no record in understanding our needs," said Douglas E. Van Houweling, vice provost for information technology at the University of Michigan. "They have very few people who really understand education (DeLoughry 1993, A19)." Educators also worry that the emphasis on business' use of telecommunications networks gives too much influence to telephone companies, which have a financial incentive to use existing technologies, rather than develop new ones. However, with \$2 billion currently being spent in educational telecom-

munications, private providers cannot afford to ignore the needs of higher education (Hezel 1994, 4).

Inter-Jurisdictional Issues

Through my research, I expected to find that individuals in the three states would frame their descriptions around six basic educational goals common to higher education, generally, which have been shaped by traditional campus-based structures: access and equity, efficiency, diversity, quality, and contributions to economic development (Jonsen and Johnstone 1991). Prior research indicates that institutions also apply these goals to the provision of educational services through telecommunications; however, new issues arise when telecommunications are used for educational service delivery. For example, the political nature of planning on the state and campus levels has implications for changes in institutional service areas that occur when telecommunications services are adopted, as well as for competition between campuses in providing services (Jonson and Johnstone 1991).

In recent years, a new regulatory issue has arisen over how to prevent higher education institutions that provide distance education programs from infringing on the traditional services of other colleges and universities. Although most higher education institutions publicly insist that they wish to eliminate duplication, competition between higher education institutions for faculty, students, and resources is commonplace, even within state systems.

Shelly Weinstein, president of the National Educational Telecommunications Organization, maintains that because of this competition, elimination of duplicate courses will never be achieved. In addition, she points out, students want to have choices among institutions and course offerings (DeLoughry 1995, A21). Says Grace E. Leon, president of EFC Startime Inc., about competing institutions:

They cut each other's throats. They have to get smart and look at this from a business-like point of view and realize that in unity there is strength (DeLoughry 1995, A21).

Regional service provision is an issue for western states, largely because of their geographical characteristics. Remote rural areas often have more in common with neighboring areas in other states than they do with more distant areas of their own states. For example, although most of Oregon is located within the Pacific Time Zone, the city of Ontario is located within the Mountain Time Zone because it is closer geographically and economically to neighboring urban areas of Idaho. Proponents of regional provision feel that it may make more sense in these cases for courses to be offered from a regional center, than for each state to transmit its own courses. To this end, the Western Cooperative for Educational Telecommunications has prepared guidelines for interstate distance education offerings among its member states.

Although Jonsen and Johnstone (1991) argue that all states will begin to address regional service provision, and that, as a result, higher education coordinating boards will begin fostering cooperation instead of protecting their

institutions from jurisdictional incursions, recent actions by faculty in the Maine State System of Higher Education have cast an ominous shadow over the future of regional efforts. In 1995, the University of Maine System attempted to reduce competition and administrative overlap among their campuses by creating a separate institution to handle all of system's distance learning programs. Chancellor J. Michael Orenduff sought accreditation of the six-year old Education Network of Maine, housed on the Augusta campus, as a separate institution within the state system. Accreditation of the Network was intended to centralize record keeping and admissions procedures for students seeking degrees through distance education programs. In addition, the Chancellor had hoped to begin offering degrees regionally through the Network. Up to 1995, the Network was looked to by many, including western states like Oregon, Colorado, and Utah, as a model for their own distance education programs.

However, the Chancellor's move was met by strong resistance from the Maine faculty, resulting in his resignation. In a vote of no confidence, faculty senates from all seven campuses accused the Chancellor of failing to consult with faculty on plans for the Network and other projects. One of their complaints concerned the Network's technology, which the faculty felt was of low quality and inappropriate for most course offerings. They also complained that the Chancellor was trying to strengthen the system at the expense of individual campuses by "homogenizing" courses (DeLoughry 1995). As a result of the controversy, forty-four legislators sponsored a bill to establish a

commission that would place strict controls on the System by requiring a review of all future plans and halting activities to gain accreditation for the Network. In the words of State Representative Elizabeth H. Mitchell, author of the legislative bill, "I don't think the debate is about distance learning at all. The debate is about how it's utilized and how it is planned (DeLoughry 1995, A25)."

HIGHER EDUCATION GOVERNANCE AND FINANCE

Governance and Coordination

In Oregon and Utah, state systems of higher education are responsible for administering educational policies articulated by governing boards; in Oregon, community colleges also have their own coordinating board. Among individual institutions, there is competition for funding and programs. The Colorado Commission on Higher Education provides policy direction in that state, and is responsible for presenting higher education budget proposals to the legislature. However, several governing boards for public two- and four-year institutions come under the Commission's umbrella, and competition between them is fierce.

Schick et al. (1992) suggest that, while a distinction is not always clear in practice, particular characteristics of "governing" and "coordinating" can be used to clarify the terms. In general, coordinating bodies have no statutory authority or advisory role in hiring staff; exercise some form of legally-mandated oversight; mediate or resolve disputes between organization members;

represent the interests of external constituencies; and act as a buffer between external and internal constituencies. Governing bodies, on the other hand, are created by statute; maintain a "sustained attention" to effectiveness and long-term vision; develop short-term plans; allocate funds; and ensure accountability. The lines between governance and coordination are blurred. In fact, because coordinating activities are legally mandated, they often come to resemble governance action (Schick et al. 1992, 26).

As in most states, institutional and statewide goals within Oregon, Colorado, and Utah are sometimes very different, leading individual institutions to regard statewide governance or coordination with some suspicion. In an article in The Chronicle of Higher Education (June 16, 1995), James L. Fisher, a professor at Union Institute and former president of Towson State University and the Council for the Advancement and Support of Higher Education, voices some of these sentiments. He argues that statewide coordinating boards and the central administration of multi-campus systems are costly and ineffective. He cites conversations with more than 300 college presidents, politicians, academics, members of coordinating boards, and other higher education experts across the U.S. in describing four areas of concern in statewide governance: state boards result in costly and time-consuming bureaucracy; they have politicized higher education and function like "miniature governments"; decisions made by state boards tend to be compromises applied across institutions in the system, regardless of the varying sizes or missions of

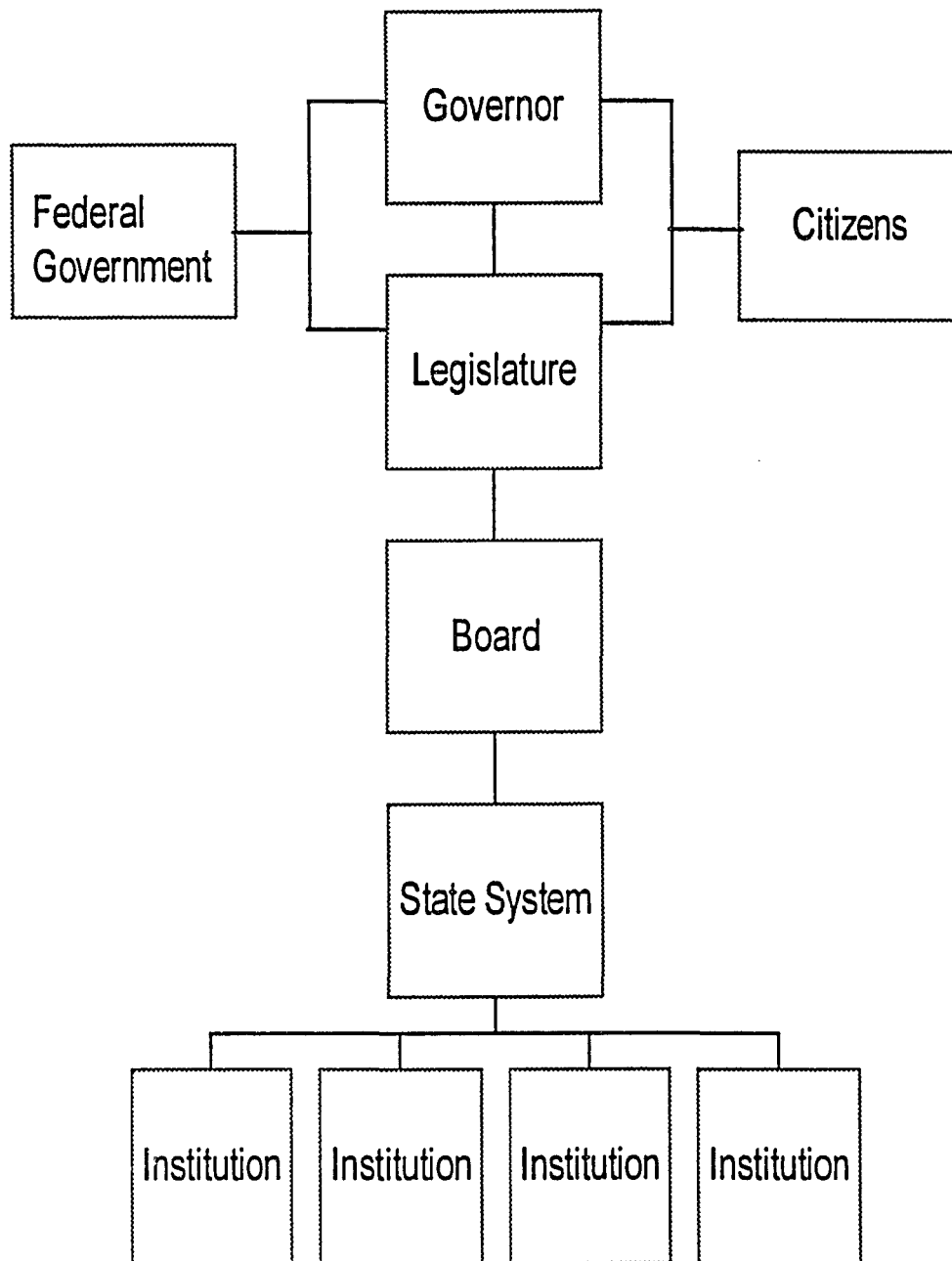


Figure 4. Governance and Coordination Structure for Higher Education

individual institutions; and the quality of board staff members generally is low (Fisher 1995, A48). Fisher argues that higher education institutions would be better represented by councils of college and university presidents, and says,

Higher education would be better off, taxpayers spared the expense, and students better educated if institutions that now have separate off-campus governing boards were left to deal with their own state budget officers (Fisher 1995, A48).

TELECOMMUNICATIONS INFRASTRUCTURE AND FINANCE

Technology

Both Oregon and Colorado use satellites as one means of transmitting educational telecommunications. All three states are involved in microwave transmission, cable TV, compressed video, computer networks, and public television to deliver distance education. Each type of technology involves different logistical and financing issues. Each state has based decisions about the choice of technology on availability, appropriateness, and cost, and supports administrative structures that are most suited to technology type. In general, satellite systems have required the creation of centralized administrative structures, while other telecommunications systems, such as compressed video or cable television, have required less centralization and more cooperation between institutions.

Satellite uplink and downlink sites, microwave transmission systems, fiber optic cable systems, or computer networks require major capital investments

during the initial implementation phase. Many states have relied heavily on satellite systems because of their ability to link several locations simultaneously, and because for many years they were regarded as a low-cost alternative to constructing additional classroom space (DeLoughry 1995). However, broadcasters, cable companies, and others have placed increasing demands for time on existing satellites, and the decreasing availability of bandwidth has caused a sharp rise in costs to educational users (including Oregon and Colorado). C-band technology, on which educational institutions have relied, requires large satellite dishes, and is being replaced by technology that requires much smaller and less expensive dishes (such as DirecTV). As a result, fewer satellites now carry C-band signals.

For institutions that have not been able to upgrade their systems to take advantage of cost-saving options, such as digital compression, the cost increase amounts to a crisis. Few institutions have formed consortia to share satellite time; instead, they often compete with each other to offer similar courses at different times. In addition, distance educators as a group are not confident that the national "information highway," which will be based on fiber optics networks linking homes, schools, colleges, and other organizations across the U.S., will be completed for decades, and so do not see it as offering a viable alternative to satellites in the near future (DeLoughry 1995, A21). One solution being offered by the National Education Telecommunications Organization is to designate new satellites for educational use only. In late

1995, legislation was being prepared by Senator Conrad Burns of Montana that would provide federal loans for the construction and launch of satellites for use by nonprofit organizations.

Few states rely on general revenue for telecommunications funding, and many are involved in collaborative efforts among legislators, administrators, and regulators to explore alternative funding mechanisms (Hezel 1994, iii). Oregon planned for its Ed-Net system to become self-supporting in three to five years, after receiving start-up funds from Oregon State Lottery proceeds; however, self-sufficiency has not been reached, and fees for using the system are prohibitive for some smaller institutions. Utah's EDNET system is heavily subsidized by general fund revenues, while Colorado's institutions largely are responsible for financing initiatives out of their institutional budgets. In Colorado, as in some other states, many technology initiatives are funded by private foundations or the federal government, with little state involvement. Colorado has been successful in implementing single or cooperative institutional initiatives using funding from these areas.

According to Jonsen and Johnstone (1991), current patterns of financing higher education are not appropriate to investments that must be made to develop, maintain, and operate large-scale telecommunications systems. Rapid depreciation, the cost of programming and operations, and advances in new technology are features of telecommunications systems that do not fit higher education's standard model for capital expenditures, which for many years has

been building construction. Institutions that plan to expand their use of telecommunications face increased costs in restructuring their admissions, registration, and other support services for distance learners.

TELECOMMUNICATIONS POLICY

The State Role

While the degree of state involvement in setting educational telecommunications policy varies among Oregon, Colorado, and Utah, the governments of these three states face some issues that are national in scope. For example, communications technologies have advanced rapidly in recent years, and the cost of communications services, such as telephones, home computers, cable television, and FAX machines has been decreasing, making them accessible to more consumers. Increased availability of these technologies has raised statewide issues in access and equity, regulation, taxation, and the administration of services.

Although states have been involved in intrastate regulation of telecommunications for many years, the state role in telecommunications regulation increased during the 1980s, chiefly in the context of long-distance regulation (Teske 1992; Schmandt et al. 1989). The AT&T divestiture served to shift a major part of the debate over telecommunications policy decisions from the federal to the state level. In many states, pressure for regulatory policy changes came directly from AT&T and the "Baby Bells," while in other

states the debates over policy changes originated in public utility commissions or state legislatures. No general pattern occurred in all states (Schmandt et al. 1989); however, research has suggested that institutional structures and actors, rather than the presence of interest group pressures, are determinants of state variation in technology policies (Teske 1990).

In many states, increased competition in telecommunications has been viewed as an economic development opportunity. Arguments for changes in state telecommunications policies often have been linked with "economic development," a term that serves as an umbrella for a variety of activities, from industrial recruitment to economic growth through increased production. In Oregon, for example, Ed-Net received lottery funds because of its stated goal of contributing to the state's economic development agenda. Research has shown a clear link between the use of telecommunications services and economic development (Schmandt et al. 1989). Although the federal regulatory environment for telecommunications is relaxing, the quantitative evidence of a link between deregulation and increased economic development opportunities on the state level is not strong (Schmandt et al. 1989). However, many states are taking initiatives based on this assumption.

Taxation of telecommunications technology and services is an important issue with states. Taxes on these services can add significantly to costs and work as a disincentive to economic development. A new issue--particularly for states contemplating regional service provision--is the difficulty in collecting

taxes on interstate or national communications that use high-speed fiber optics systems or satellites, as the costs associated with these methods are insensitive to distances (Teske 1992).

RURAL TELECOMMUNICATIONS

Educational service delivery to rural areas is an issue for all three states in this study. Substantial geographic areas of each state are rural, and there is a difference in the level of communications services available to urban and rural residents. In all three states, rural areas have had a voice in shaping policy and implementation for distance education. However, educational service to rural parts of Oregon has been more successful than in the other two states, in part because strong, cohesive rural coalitions in eastern Oregon played an important role in the creation of the statewide network, and in part because Eastern Oregon State College has a mandate to provide higher education services to that part of the state. However, the level of telecommunications technology available in the rural areas of all three states is lower than that available in urban areas, and demographic trends are creating an increasing need to improve the level of service.

Population Trends

Rural areas in the western United States experienced increased population growth between 1990 and 1992, according to studies by the U.S.

Census Bureau (O'Malley 1994). Most of the growth of small towns in the west has resulted from urban out-migration, with 43 percent of the new population in rural areas coming from outsiders moving in (O'Malley 1994, 26). Increases are greatest in nonmetropolitan retirement or recreational communities, and in nonmetropolitan areas in which large manufacturing firms have sited new plants.

However, studies of rural areas in Washington State suggest that information technologies are entering rural areas slower than urban areas (Dillman and Beck 1987). Although rural residents in Washington were more likely to have cable TV and satellite dishes than their urban counterparts, they were less likely to have personal computer modems or advanced telephone services, like call waiting or high-quality long distance connections. Across the U.S., digital switching and fiber optic cables, important elements in high-speed data transmission, are not widely available in rural areas (Wilson 1992). Cellular telephones, which require the construction of transmission towers, are becoming more prevalent in some areas as a lower-cost alternative to fiber optic cabling. However, costs to users for service connections and air time are higher than for conventional long-distance dialing.

Established methods of communication deeply entrenched in rural culture, the types of skills used in conducting business in rural areas, and a lack of information on how to adapt the new technologies to their way of life have served as barriers to the adoption of telecommunications technologies in rural

areas (Wilson 1992; Dillman and Beck 1987). However, the effect of urban flight will place an increasing demand on rural areas to provide the same types of services available in urban areas. In states in which the delivery of telecommunications services is not coordinated, heavily populated urban areas and wealthier organizations tend to receive most of the services, while rural areas continue to be left out. This places rural areas at a disadvantage in accessing national and international data bases that may be used to increase their economic viability and contribution to the state's economy as a whole.

The use of telecommunications systems in bringing higher education services to rural areas has great potential and many states have installed sophisticated systems for this purpose. The cost of installing these systems can be great. Alaska took advantage of oil revenues to build a telecommunications system between 1975 and 1985 (Sponder and Schall 1990). However, in many areas, educational services are provided by less expensive means, such as telephone conferencing, cable TV, correspondence programs, and video-taped courses. Currently, demand for the extension of fiber optics lines to nonmetropolitan areas is high, although in some states progress has been slow.

CHAPTER IV

RESEARCH DESIGN AND METHODOLOGY

MULTIPLE CASE STUDY DESIGN

Yin (1994) outlines a scientific and rigorous methodology for conducting case study research. This methodology is designed to conform to standard, generally-accepted techniques for conducting experimental or nonexperimental research in the social sciences (Babbie 1983; Campbell and Stanley 1963), and attempts to overcome traditional criticisms of case studies, such as the problem of a small "N," lack of generalizability, and the difficulty of interpreting results. Yin advocates collecting data from multiple sources in order to address issues in construct validity and to develop converging lines of inquiry. He also recommends the development of formalized case study protocols to guide the collection and analysis of data in order to manage the complex processes involved in the approach.

It was through a review of exemplary implementation studies that Yin began to develop the methodology described in Case Study Research. Common to the exemplary studies was the use of unstructured interviews, field observations, and documentary evidence to build explanations of the implementation process. However, few of the studies presented formal

methodological discussions. Yin recognized the need for methodological structure for implementation research when he wrote:

The research craft or methods associated with these implementation studies appear not to be rigidly defined or even very rigorous by standard laboratory or research criteria (Yin 1982, 61).

Through his review of existing research, Yin concluded that unstructured interviews, or conversations, were the preferred method for describing or explaining implementation behaviors, and recommended that researchers combine unstructured interviews with documentary evidence and field observations to develop a picture of the implementation process. Implementation, Yin writes, is a "sum of complexity" that is more than the "sum of incidence reports typically created by a survey (1982, 45)."

Yin uses the example of a detective, who must construct an explanation of a crime, to illustrate the process of explanation building in case study research. Initially, the detective has information on the scene of the crime, its description, and, sometimes, eyewitness reports. From this she must make decisions on the relevance of various factors: some will be misleading or irrelevant, while others may be clues that must be pursued. Her explanation of the crime becomes "a plausible rendition of a motive, opportunity, and modus operandi (Yin 1982, 58)." As the detective is confronted by another crime with similar relevant factors, she may try to test the first explanation to see if the second crime was committed by the same perpetrator. Even though the case

may exhibit the same *modus operandi*, the detective must learn how to ignore irrelevant variations from case to case.

The Problem of Generalizability

As Yin suggests, the distinction between "statistical generalizability," which is associated with quantitative research, and "analytic generalizability," which is associated with qualitative research, must be considered when conducting case study research. In survey research, a sample usually is drawn from a larger population, and results obtained from the sample are used to make statistical generalizations about the population as a whole. However, in case study research, individual cases are not sampling units. As Yin suggests:

Multiple cases, in this sense, should be considered as multiple experiments (or multiple surveys). Under these circumstances, the method of generalization is "analytic generalization," in which a previously developed theory is used as a template with which to compare the empirical results of the case study. If two or more cases are shown to support the same theory, replication may be claimed (Yin 1994, 31.)

Yin compares the replication logic used in case study research to that used in experimental research. Repeated experiments that produce the same results provide evidence that theory is supported by research. Yin suggests that multiple cases are similar to multiple experiments and should not be considered as similar to multiple respondents in a survey. Generalizations are not made to a larger population, but to propositions within a theoretical context. Theory is vital to case study research, and analytic generalization provides a means for replicating a study across multiple cases.

Pre-Analysis

In analyzing data collected from multiple sources, Yin describes a "preanalysis" step, in which analysis occurs as part of the process of collecting data (1982, 51):

Overfamiliarity with experimental research leads one to the simplistic belief that 'data collection' and 'data analysis' are completely isolatable steps. When one conducts an experiment, for instance, the pertinent variables are identified beforehand, data are collected, and analysis follows. In nonexperimental fields, however, whether a social science or a profession such as law or journalism, these two steps are not so clearly differentiated. In particular, analysis may occur as part of the process of collecting evidence (Yin 1982, 51).

Preanalysis involves selecting which evidence should be considered or ignored; the operationalizing of variables; the "depth and detail" used in following a line of inquiry; and the development of classification schemes into which data are grouped. Yin points out that, while in experimental research these steps are part of the formal research design, in implementation research, and organization research more generally, the processes of collecting and analyzing data are more fluid, requiring a more flexible design.

Analysis in case study research involves "piecing together" the facts gleaned from multiple sources of data. Evidence from multiple sources is merged, using informal methods, such as combining unstructured discussions with documentary evidence, or formal methods, such as quantitative tabulations of data from observations and interviews. Data and analysis protocols

contribute to the process of "piecing together" facts by providing a structure in which to conduct these activities.

Research Hypotheses

My initial hypotheses were that state characteristics--political culture, the history and structure of higher education, and the characteristics of organizational structures that create and administer policies in each state--influence policy and implementation behaviors in educational telecommunications, and that goals inherent in the underlying mission of higher education institutions are also applied to the provision of distance education. Each of these is characterized by individual and organizational behaviors that result from interdependencies within an organization's task environment. Using Thompson and Mintzberg as a guide, I would expect that the degree of diversity and uncertainty in the task environments of higher education institutions and agencies in Oregon, Colorado, and Utah would have an influence on organizational responses to policy and implementation problems in educational telecommunications.

Concepts from network analysis (Knoke and Kuklinsky 1982) help to define the variables I used to measure diversity and uncertainty in the task environments surrounding the three states. Organizations exist in a state of interdependence with elements of their task environments. The linkages, or relations, between organizations and their task environments are an "emergent

property of the connection or linkage between entities" (1982, 10), and the patterning of these linkages has an effect on organizational behavior (1982, 13).

Thus,

Relational measures capture the emergent properties of social systems that cannot be measured by simply aggregating the attributes of individual members (1982, 11).

The task environments surrounding higher education organizations are multidimensional; their attributes involve multiple actors, inputs, and outcomes. While task environments in all three states are characterized by similar attributes, they exhibit these attributes in varying degrees along two basic continua, as described by Thompson (1967, 72): homogeneous/heterogeneous, stable/dynamic.

Variables used to measure these continua were operationalized by conditions that impose constraints or contingencies for organizations in each state, as they relate to my initial hypotheses. They are:

1. Increasing numbers of organizations that come into competition with each other.
2. Increasing layers of governance and administration involved with higher education or educational telecommunications.
3. Increasing levels of institutional experimentation with emerging forms of distance education technology.
4. Increasing demand for distance education services.
5. Increasing availability of alternative funding mechanisms for distance education.

6. Increasing use of satisficing strategies in providing distance education services.

Satisficing strategies involve "making do" with less than optimal choices.

Strategies employed in each state would be evidenced by conditions such as a reliance on existing technologies and lack of experimentation resulting from financing constraints, or a reliance on funding sources that may cover some costs, but not others.

In addition, five dichotomous variables were defined to measure attributes of political culture and the relationship between higher education and state government:

1. The presence or absence of a history of statewide planning.
2. The presence or absence of a history of legislative support for higher education.
3. The presence or absence of mechanisms for inter-institutional cooperation or coordination.
4. The presence or absence of policy entrepreneurs.
5. The presence or absence of interest groups exerting an influence on state policy decisions regarding higher education.

The five goals of higher education that Jonsen and Johnstone (1991) related to goals for educational telecommunications were operationalized as follows:

1. Access and equity: Affordable and equitable access to services, which is related to number and types of users, the financing mechanisms used in the state, and the range of technologies available.

2. Efficiency: The cost to providers and users of the range of technology available to them.
3. Diversity: The range of courses and methods of instruction available to users.
4. Quality: The use of appropriate technology and training available to instructors, and accreditation and certification issues.
5. Contributions to economic development: The extent to which rural and business interests were included in service delivery.

Qualitative, textual analysis of the frequency and content of interview comments, documentary evidence, and prior research regarding these issues provided a means for determining the degree of diversity and uncertainty within each state. I expected to find that in Colorado, which has no statewide planning process or coordination for distance education programs, task environments would be heterogeneous and dynamic, resulting in a high level of uncertainty and diversity. The overall structure of higher education would be decentralized, and organizations in this environment would seek to cooperate in order to assert control over their power and dependency relationships with the task environment. They would be expected to employ satisficing strategies in providing service. In Utah, which has articulated a statewide plan and a coordinated strategy for distance education, task environments would be homogeneous and stable, resulting in less uncertainty, less diversity, and more domain consensus (agreement over which institutions will provide which services, and to whom). The overall structure of higher education would be relatively simple, and satisficing strategies employed by institutions would be

fewer. Occupying a middle ground, Oregon, which has a statewide plan that does not include continued general fund support, would exhibit homogeneous and dynamic task environments, resulting in uncertainty in specific areas, moderate diversity, somewhat weaker domain consensus, and moderate use of satisficing strategies as a result of institutional experimentation with emerging technologies and funding alternatives outside the statewide system. The overall structure of higher education would be centralized, but would include different missions and domain assignments for individual institutions.

Figure 5 illustrates the expected position of each state along the two continua:

Figure 5. Task Environment Continua

	Stable	Dynamic
Homogeneous	Utah	Oregon
Heterogeneous		Colorado

I expected that the technology employed in each of the states would also have an effect on organizational responses to policy and implementation issues. In Oregon, where satellite technology is a mainstay, consensus over the need for centralized administration would likely be found. However, in Utah, where satellite technology is not employed, centralized administration would likely be a result of policy concerns about system compatibility and access. In Colorado,

where choice of technology has varied among institutions, administration would likely be dispersed and resources less certain than in the other two states.

Research Design

My research design followed a "multiple case study" format, in which replication logic, not sampling logic, underlies the design. In this format, cases were selected either to (1) predict similar results (literal replication), or (2) produce contrary results for a predictable reason (theoretical replication). I chose Oregon, Utah, and Colorado for this study because each is an example of a structure that has been successful in providing distance education across the state; each structure allows for the examination of governance and service delivery issues indicated in the literature as relevant to policy makers; and, each structure represents one of the major governance types and degrees of state involvement in educational telecommunications in the U.S.

Yin's methodology is appropriate to an examination of my research questions, and precedence for the use of this method can be found in prior research in policy implementation. A multiple case approach allows for the elimination of rival hypotheses, and provides a method for describing state variations in governance and service delivery, which has been identified in the literature as important to state policy makers (Hezel 1991). Also, the reliance on multiple sources of data, including documents, interviews, and site visits, contributes to internal and external validity.

DATA COLLECTION PROCEDURES

My initial data collection involved informal conversations with individuals involved in educational telecommunications in one of my subject states, and served as a preanalysis step. During this phase, I was invited to attend a class session conducted through a satellite broadcast that consisted of one-way video (students could see the instructor) and two-way audio (students and the professor could hear each other). I took field notes of my observations and conversations with the instructor and technical staff involved in the broadcast. A second set of initial field observations came from my attendance at a teleconference for instructors in adult education, which was presented at one of Oregon's satellite downlink sites. Combining these experiences with a review of documentary evidence and existing data bases, I began to identify possible themes around which to develop my formal interview questions.

I selected a semistructured interview format for this study because I planned to conduct most of the interviews over the telephone. I contacted my subjects at their place of business during the work day and felt that, as a courtesy, I should provide them ahead of time with an idea of how long our conversations would take, and the specific subject matter I hoped to cover. Interviews were conducted with key informants involved in educational telecommunications governance and practitioners experienced with the implications of that structure for service delivery.

Sampling

I constructed two groups of interview subjects from lists I obtained of members of the Western Cooperative for Educational Telecommunications and persons who attended a national distance education conference held in Portland, Oregon, in 1993. Subject sampling was purposive, rather than statistical (Skrtic 1985, 187). One group was contacted by U.S mail, and the second group through electronic mail ("e-mail"). However, each group was given the opportunity to respond to the interview questions by another method, if they chose to; that is, the mail recipients were given my e-mail address, while the e-mail recipients were given the option to ask for a telephone interview. I hoped to accomplish two purposes: one, to provide an opportunity for respondents to use the most convenient method, and two, to test the use of e-mail as a method for gathering data.

To construct the groups, I merged the two lists and selected only those individuals who had organizational affiliations in Oregon, Utah, and Colorado. I drew one sample of job titles and institutional affiliations for those who included e-mail addresses and another for those who listed only mailing addresses, taking care to ensure that the lists were matched as closely as possible. Those who listed e-mail addresses formed the first group (n=36), and those who listed only a mailing address formed the second group (n=32). There was no apparent difference in job titles or organizational types between

those who listed e-mail addresses and those who did not. Out of the total (N=68), I hoped to complete from eighteen to twenty-one interviews.

Interviewing

During this phase, I developed formal data collection protocols and a series of interview questions that broadly addressed the issues I identified through the preanalysis step. Either through U.S. or electronic mail, each subject group received the interview questions with a cover letter explaining the research and asking for their participation (Appendix F). I sent copies of an Informed Consent Form (Appendix E) to members of both groups, and asked respondents to complete the forms and return them to me before providing answers to the interview questions.

I received a small research grant from my university that allowed me to train an assistant who conducted many of the initial interviews. This person had substantial experience in telephone interviewing and was able to act as an impartial and unbiased data collector during this phase of the study. Because I am a full-time research faculty member at one of the institutions included in my study, I felt that an impartial data collector could assist me in ensuring objectivity during this phase of the research. The training I provided included an overview of the research design, explanation of the research protocols, and guidance on note taking and transcription of the interview texts (Appendix D).

Interviews were arranged by telephone a week to ten days after the letters were sent--earlier, if the completed Informed Consent Form had been returned. Subjects who declined to be interviewed wrote back or sent electronic mail indicating that either they were no longer associated with educational telecommunications at their institutions, did not feel qualified to respond and referred me to other individuals (some of whom I had already included on my lists), or did not have time to respond. Only two respondents actually sent their answers to the questions through electronic mail (one provided only a partial answer, so I did not count it as a valid response); two others contacted me requesting a telephone interview. Approximately ten of the e-mail transmissions came back as undeliverable; either addresses had changed or were no longer active. My assistant followed-up with telephone calls to seven persons from the e-mail list to request a telephone interview.

Electronic mail was not a satisfactory method of data collection for this project. Three factors appear to be relevant here: (1) my questions required lengthy responses and were better suited to telephone or in-person interviews; (2) e-mail addresses within organizations change frequently and listings are not uniformly accurate; and, (3) there is wide variation in use of e-mail within organizations--in short (as we discovered in our follow-up calls), many who have e-mail accounts do not read their mail. Although the prevalence of discussion lists on the Internet might suggest that e-mail is an appropriate mechanism for collecting unstructured or semi-structured responses, the

individuals I contacted preferred the telephone as a means of communication over e-mail because they perceived that a telephone conversation would take less time away from their work day.

However, fourteen (42.0%) responded to the mailed request for a telephone interview; another seven had been contacted previously by e-mail. Interviews were conducted from March through August 1995, each lasting from forty-five to sixty minutes in length. The interviews consisted of a series of semi-structured questions regarding the governance, finance, and delivery of educational telecommunications in each state (Appendix G). In talking with the subjects, we made it clear that the interview structure was simply a guide for conversation, and encouraged respondents to provide details of their experiences and perceptions, rather than a recitation of facts about activities in their states.

We kept detailed notes during the interviews and typed transcripts immediately following the calls. At the end of each call, I sent a personalized thank-you card to the respondent, expressing my appreciation for his or her time and contribution to the project. In some cases, I contacted respondents a second time to clarify issues or follow-up on comments. However, most respondents were willing to offer detailed comments during the first interview and went beyond the scope of the interview format in their responses.

It must be noted here that each respondent was asked to sign the Informed Consent Form prior to the interview, and that transcripts of the

interviews were reviewed only by me and my assistant. We assured respondents that their names, titles, and organizational affiliations would be kept confidential throughout the research. There were no cases in which a person refused to be interviewed. Many simply did not respond, or declined an interview because they lacked the time or expertise to provide answers to my questions. However, we were able to contact respondents across a range of organizations and positions, from state higher education officials to those responsible for scheduling equipment.

FRAMEWORK FOR ANALYSIS

I constructed a framework for analysis of the interviews on three levels: (1) individual transcripts, (2) state-by-state summaries, and (3) a cross-case summary (Appendix H). I compared respondents' statements regarding factual information with documentary evidence, to ensure consistency. Concepts from the systems perspective in organization theory and political feasibility analysis provided me with a means for interpreting the interview texts in their organizational contexts. The literature on higher education governance and prior research on technological change in educational telecommunications provided me with specific concepts to apply to the analysis.

My first step was to review the transcripts and begin to identifying major themes. As a cross-check for my method, I asked my assistant to do the same thing, independently. For the state-by-state analysis, we each produced a

chronology of events as described in the transcripts, which I later matched against the documentary evidence to ensure consistency. I then summarized the major themes found to be emerging from the interviews: policy history, technology type, administrative structures, financing methods, political climate, current issues, and perceptions of what was working and what was not. As we went through this process, it became clear to both of us that "where you stand depends on where you sit," both within organizations and the overall higher education structure, which placed the responses in their organizational context. For each state, I constructed overall summaries, then moved to a cross-case analysis.

For the cross-case analysis, I reviewed themes that had emerged from the state-level analysis, and matched statements or ideas expressed in the interviews with each of the five goals of higher education and telecommunications, as articulated by Jonson and Johnstone: access and equity, efficiency, quality, diversity, and contributions to economic development. I recorded these statements onto index cards, and indicated the state and organizational level to which each respondent belonged.

Yin's method for explanation building is iterative, and involves a considerable investment in time. However, I found the process to be useful in constructing the analysis. The steps in the process are:

1. Stating an initial proposition about policy behavior (hypotheses)
2. Comparing the findings of an initial case against the proposition

3. Revising the proposition
4. Comparing the details of the case against the revised proposition
5. Revising the proposition again
6. Comparing the revision to the facts of additional cases
7. Repeating the steps as often as necessary

This process of iterations was integral to building the analysis. As Yin has suggested, I developed protocols for data collection, built a data base for each case, and constantly referred to the initial purpose of the study to uncover possible rival explanations.

CHAPTER V

OREGON

MAJOR INITIATIVES

Oregon Ed-Net

In 1987, the Oregon Legislature passed House Bill 3167, which established a committee to study the feasibility of a statewide educational telecommunications system. The Bill was a response to a 1985 proposal initiated by a planning committee of the American Electronics Association, composed of representatives of business and education in the state, to develop an educational network that would link the state's higher education institutions to high-technology industry sites in the Portland metropolitan area (Ed-Net Committee documents, 1987). Governor Neil Goldschmidt appointed the nine members of the Committee, who represented business, educational, and public broadcasting organizations. The initial phase of the Committee's work consisted of a needs assessment, followed by the development of models of technical, organizational, governance, and financial arrangements.

By July 1, 1988, the Committee submitted its findings to the Legislature. The model that emerged from this initial study expanded on the original proposal for an educational network dedicated to the needs of business and

industry. While continuing to describe Ed-Net as a tool for economic development, the Committee expanded its notion of the purpose of the system:

To strengthen Oregon's educational and economic infrastructure, Ed-Net would enhance current education, training, and information activities of the organizations that use it. Using the network, organizations could deliver courses, data, information, meetings, etc., to virtually any location in Oregon. They could also access these resources from any location in Oregon or beyond (Oregon Ed-Net Committee Documents, 1988).

As proposed, Ed-Net would serve not only business, but the state's higher education institutions, public schools, private and independent schools and institutions, libraries, government agencies, and non-profit community service organizations.

Domain issues were clearly defined during the initial planning stages for Oregon Ed-Net. Rural areas in the state were demanding increased educational services and connections to the information services located in the urban areas. The state feared that these needs would be met through other states or regional entities if the state failed to include them in its telecommunications plan. The perceived danger in this was that Oregon might not be in a position to increase its economic development, or to link effectively to national networks, if rural areas (which play an important role in the state's economy) were left out.

The technical design for Ed-Net involved a mix of existing telecommunications infrastructure, including cable TV and telephone technology, with satellite transmission of full broadcast video, compressed

video, and high-speed data. Portland served as the network hub, with a C Band satellite uplink designed to transmit signals to a network of downlink sites across the state. Thus, technology and educational facilities located in the urban center of Oregon could become available to a wider geographic area.

One interesting feature of the Committee's recommendations was the proposal to establish a new state agency to coordinate and administer Ed-Net services. Called Oregon Ed-Net, this agency was to have its own independent board and advisory committee structure. The organization was described as "user-oriented," representing education, business, government, and non-profit sectors (Ed-Net Committee documents 1988). As envisioned by the Committee, Oregon Ed-Net would maintain a small staff and contract with Oregon Public Broadcasting for technical and administrative support. After an initial investment by the state, Ed-Net was to be totally self-supporting in its third year of operation, relying on fees from its member organizations. An interview respondent reported that Governor Goldschmidt agreed to support the effort only if Ed-Net was designed to be self-supporting.

In forming the Ed-Net Committee, the legislature took into consideration themes that had begun to emerge nationally during the 1980s: a renewed emphasis on lifelong learning; the growing numbers of adult, non-traditional students, often placebound and challenged by competing priorities; emerging technologies that were making communications and access to information faster and more economical; and the need for worker training to improve economic

development. At that time Oregon was recovering from a recession that had hit many parts of the state with unemployment rates as high as twenty-five percent. As economic development was an overriding theme in Oregon state policies during the 1980s, the Legislature expected most proposals to contribute to that goal.

Following extensive review of the Committee's proposal, the Oregon Legislature passed Senate Bill 203 during the 1989 session, dedicating \$8 million from state lottery revenues to establish the new state agency. Governed by a nine-member board representing business, education, and government organizations, Oregon Ed-Net linked the state's four-year institutions and community colleges, as well as state agencies and community sites, from its headquarters in the Oregon Public Broadcasting offices in Portland.

Implementation of the Ed-Net system was designed to occur in three phases, with the development of three major networks, each using a different technology. "Network 1," providing two satellite channels for public schools and libraries, and "Network 2," a fifteen-channel compressed video system serving educational institutions and businesses, were fully operational by 1991. Network 1 delivers one-way video and two-way audio transmissions using Ku-band satellite downlink to 200 sites around the state. Network 2 includes a digital satellite network, piloted in 1992, which included forty-one sites in 1994. The pilot year for "Network 3," a computer-mediated system, was 1992-93; in 1994 it served 2,000 users. Ed-Net leased a full-time transponder, and began to

use the satellite network for a variety of purposes, including in-service training for state employees and a series of townhall-style meetings with former Governor Barbara Roberts.

Oregon was one of the first states to establish a new state agency to manage statewide educational telecommunications. Although the Oregon State System of Higher Education and the Department of Education lobbied hard to take over its management, Oregon Ed-Net is now managed by the Department of Administrative Services. It includes more than 250 member organizations in government and education, and is used by professional organizations serving private industry to deliver professional training programs, continuing education, and special events.

Senate Bill 1208 in 1992 made affordable access to information for economic development and improvement in the quality of life for Oregonians a state priority. Under the Bill, a proposed strategic telecommunications plan was developed by the Telecommunications Advisory Committee of the Oregon Economic Development Department. The plan called for the establishment of a new nonprofit corporation, the Oregon Telecommunications Foundation, to develop infrastructure for expanding the state's telecommunications networks.

Oregon Ed-Net relies primarily on satellite technology, although a computer network is in the early stages of implementation. However, institutions have adopted other technology types, based on their individual needs, ability to pay, and appropriateness to the types of courses they offer.

While Ed-Net is available to all state agencies, many higher education institutions have developed their own relationships with each other, and with private providers, outside of the organizational context of Ed-Net.

Eastern Oregon State Colleges operates under a state mandate to offer educational services to the eastern part of the state, and is heavily involved in distance education. It transmits teacher education courses to seven regional sites using Ed-Net's Network 2 and Network 3. Southern Oregon State College offers a variety of distance education courses to seven regional sites in the southern part of the state. Coaxial cable technology is used by SOSC, Oregon State University, and Western Oregon State College. A distance education instructor training center is housed at Oregon State University, which also offers AG*SAT programming (an agricultural network comprised of land-grant colleges and universities) through Ku-band satellite uplink. The state's community colleges use Ed-Net, public broadcasting, coaxial cable, ITFS compressed video, and video tape to offer courses through their distance education programs.

OSSHE, together with Ed-Net and Portland Community College, has established an ITFS compressed video network (LERN) to provide telecommunications services to businesses in the Portland metropolitan area. Through an Annenberg/CPB New Pathways to a Degree award, OSSHE offers degree programs in nursing and liberal studies through Ed-Net. During the

1994 academic year, 100 courses were delivered through Ed-Net by the eight OSSHE institutions.

In the context of political feasibility analysis, the proposal for Oregon Ed-Net met the criteria for a successful proposal. It was timely, in that rural and business needs converged, and technology was available to meet common needs; consistent within the political climate, in that it was innovative, contributed to state goals for economic development, and was designed to be self-supporting; was championed by a coalition of policy entrepreneurs, in the form of rural interests and the electronics industry; and had support from the implementing bureaucracy and interest groups, in the form of state agencies and other potential system users. Oregon Ed-Net was the beginning of heightened activity in educational telecommunications in the state. However, as the system has evolved, problems with its initial design have begun to emerge.

ENVIRONMENTAL COMPLEXITY AND UNCERTAINTY

Governance and Competition

The Oregon State System of Higher Education was established in 1947 to provide coordination and reduce duplication in higher education. Oregon's state institutions of higher education are governed by the eleven-member Oregon State Board of Higher Education, whose policies are administered through the Oregon State System of Higher Education. Community colleges

are governed by a coordinating commission, and receive funding from property tax revenues and tuition. OSSHE receives a lump sum amount from the legislature, and allocates the funds among the institutions, based on budget proposals they submit to the Board. The intent is that individual institution should not come before the Legislature and enter into competition with each other for funding. However, in reality, each institution sends lobbyists to the Legislature to solicit support for funding individuals programs and capital expenditures.

Respondents commented on the tradition of territorialism and competition among State System institutions. Cooperation among the institutions is infrequent, while competition and rivalries are common. Also, in the words of one respondent, there is "no strong mandate" at the state level to change. One factor that causes some discomfort for many institutions is that the Chancellor's Office is located on the campus of the University of Oregon. This leads to suspicion among the U of O's sister institutions that it receives special consideration in resource allocations from the State System.

In recent years, restructuring within OSSHE has been a topic of discussion among the institutions, the business community, and the legislature. Some feel that Oregon has too many state higher education institutions for its population size (Appendix B), and plans have surfaced to combine one or more institutions, or to eliminate others. One critical feature of the state system is

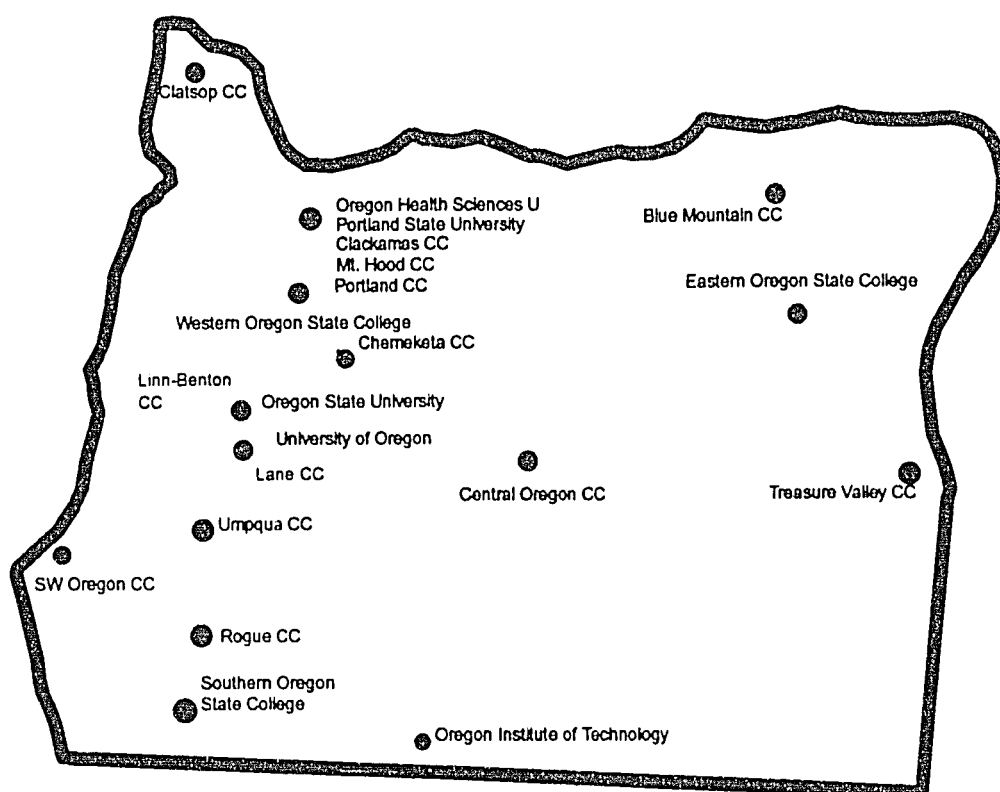


Figure 6. Oregon Higher Education Institutions

that the two land-grant institutions, University of Oregon (a liberal arts university) and Oregon State University (an agriculture and engineering university) are located in the rural Willamette Valley, several miles outside of the major metropolitan center. Portland State University, located in Portland, began as an extension college and evolved into a urban university, serving the Portland metro area with an array of undergraduate and graduate programs. This situation has led to sometimes fierce competition between the "downstate" schools and PSU over domain and task environment issues.

The state's major higher education institutions are clustered along Interstate 5, within one to two hours of each other (Figure 6). Eastern Oregon State College, located near the Washington and Idaho borders, serves the entire area east of the Cascade Mountains. Southern Oregon State College, located near the California border, and the Oregon Institute of Technology, just to the east of SOSC, serve southern Oregon. Western Oregon State College is located in Monmouth, west of Corvallis.

The Oregon State System of Higher Education plays an active and important role in statewide educational telecommunications. The OSSHE Ed-Net Office cooperates with the Ed-Net Committee, community colleges, and public education in planning and publicizing activities, developing policies and guidelines, and facilitating inter-institutional and regional projects. Policies include guidelines for assuring quality in the provision and use of distance education. OSSHE Ed-Net recognizes that scheduling problems and system

capacity for Ed-Net are important issues limiting its use, and is working on developing policies and management tools to address these issues.

OSSHE Ed-Net convened the inter-institutional Media Council, Library Council, and Student Affairs Council with the OSSHE Ed-Net Steering Committee to gather input on new policies for distance education. The group produced a proposal to the OSSHE Academic Council, which consists of executive-level officers from each of the State System institutions, that articulated twenty-six action items for addressing issues in statewide distance education. After review and revision, the Academic Council returned the document in the form of twenty-six principles, which, as one respondent commented, took the "teeth" out of the group's work. However, the principles form the basis for a series of state policies presented to the State Board. As one respondent commented, although OSSHE Ed-Net is understaffed and underfunded, they have been successful in bringing institutional representatives together to discuss common issues.

Jurisdictional Issues

One respondent commented that institutions are not concerned with expanding their distance education programs at this time, and coordination between institutions is "not where it's at right now." In his words, there is "not a lot of agreement" over what should be done or how; leadership in setting a direction for program development is lacking. Institutions have adopted a

cautious approach; demand for distance education services has not been clearly measured, except for specialized programs, such business, social work, or engineering. Standards are an important issue with institutions, but most are moving slowly. While business interests drove the initial efforts at establishing the statewide network, they are no longer active, and institutions have been experimenting with technology and programs on their own.

While Eastern Oregon State College has a state mandate to provide educational services to that part of the state, no similar mandate exists west of the mountains. Willamette Valley institutions have a limited history of providing courses to outlying areas, and only in specific programs. Oregon State University was the first to offer engineering courses through telecommunications technology, and Portland State University offers a Statewide MBA (business administration) and Statewide MSW (social work program), using a combination of distance education methods. The impetus for the Statewide MBA Program, which preceded Ed-Net, came from Eastern Oregon State College, which approached Portland State University about collaborating to provide MBA courses to students in the eastern part of the state.

Rural interests in Eastern Oregon have been strong in asserting their needs; however, rural counties in western Oregon have not been as vocal. Telecommunications links between western rural counties and higher education institutions are in the early stages of development. A series of statewide

Telecommunications Forums have been offered in the eastern part of the state, resulting in state legislation to set a unified policy for rural telecommunications. However, as one respondent commented, private providers have attended the forums in an attempt to protect their interests. Legislation emerging from the 1995 Forum was referred to as the "U.S. West Bill," because of that company's lobbying efforts. The legislation ties fiber optic development with lottery sites across the state, but will result in increased access to high-speed data transmission for rural areas.

Community colleges have a long history of providing distance education courses, and have experienced continued growth in enrollment and courses. Three methods currently are employed: Ed-Net, televised courses, and computer networks; a fiber optics network is in the planning stage. Cooperation occurs among these institutions, as one respondent commented, "because we've been at it so long." Enrollment of out-of-district students is a common practice. For five consecutive years, the highest state per capita enrollments in distance education were through community colleges, a respondent noted, and seventy percent of these student have been women. However, some domain issues remain, particularly between larger, wealthier institutions and their smaller, less-affluent counterparts in remote areas of the state.

The Oregon Community College Technology Consortium has been formed as an informal organization through which community colleges pool

resources to accomplish common goals. It has been successful in framing long-range plans for distance education. One criticism of the consortium, expressed by an interview respondent, is that it does not include executive-level officers, such as presidents or vice presidents, and "lacks the kind of clout" that these officials could bring. Although community college executives are pleased that the consortium exist, the respondent noted, they continue to relate to each other "more in terms of their turf," and may be somewhat reluctant to participate in the consortium.

Several respondents commented that distance education should be viewed regionally, rather than statewide. Technology employed in distance education lends itself to course delivery over wide geographical areas, and many issues in rural access, or access to specific programs or study, could be addressed by regional agreements on service provision. New technology development and changing federal regulations will have an effect on local service provision, as well. However, as one respondent pointed out, some institutions would view regional agreements as reducing their prestige, and might be reluctant to participate. She felt that her institution would feel that it might "look smaller, less influential" by allowing other institutions into its service area. Discussions about these issues are being carried on by coalitions of peers involved in distance education across institutions, however, and at the state level.

Funding Constraints and Contingencies

Oregon Ed-Net has its own technology systems, governance structure, and business plan, and formulates instructional policies for distance education. Although Ed-Net was designed to become self-sufficient by 1994-95 through membership fees, user fees, and grants, it has not accomplished that goal because the cost of providing services through the system is greater than its ability to generate revenue. Alternative funding strategies are being explored. Some institutions continue to use older forms of technology, rather than become involved with Ed-Net, a satisficing strategy that results from financing constraints on individual campuses.

Funding issues dominated the content of interviews with Oregon's distance education policy makers and practitioners. Respondents indicated that they are actively seeking technology outside of Ed-Net, because the system is expensive and difficult to use for many institutions. Respondents also commented on state policy statements that promote distance education as a less-costly alternative to traditional programs. As one respondent remarked, "we're fooling ourselves" with this argument. In addition to tuition, primary expenses for distance education programs are paid directly out of campus budgets, which takes resources away from other programs.

Some institutions are able to spend a larger percentage of their institutional budgets on distance education than others, but, as one respondent commented, in Oregon "we spend more and get less." Indirect costs to

campuses, such as support activities for faculty and students, are high, and have not been adequately addressed in State System policy statements. In order to deliver distance education programs, one respondent commented, many institutions engage in satisficing strategies by "stealing" from other programs, or not providing faculty and student support. Competition for grants means that some institutions gain access to alternative funding sources, while others do not. In addition, money from grants typically cover start-up costs for a program, and no more.

Uplink and downlink sites for Ed-Net are owned by individual agencies and institutions, requiring a high-level of cooperation between the institutions supplying the facilities and personnel, and the institutions who wish to use the sites. Respondents from the technical and managerial levels of their organizations commented frequently on these problems. Equipment and services available at each site varies, and scheduling and booking arrangements are "time-consuming and awkward." At this time, all Ed-Net II sites have been "exhausted," and two or more simultaneous broadcasts are impossible. This arrangement imposes contingencies on an institution's ability to use the system.

Respondents pointed out, however, that although financing problems have slowed progress, generally, and have inhibited access to educational telecommunications services, there have been benefits. System "governance, or the lack of it," has contributed to experimentation and growth in programs that employ alternative technologies. Economies of scale, however, have deterred

some institutions from experimenting with newer technologies, and the benefits of decentralization have not accrued to everyone. Also, rather than establishing policies that might have to be changed or abandoned, the strategy, as one respondent indicated, was to develop policies as the system developed. According to respondents, this has given policy makers time to develop policies that make the most sense.

Political Constraints and Contingencies

Oregon, which was one of the first states to create a new agency to manage its telecommunications network, has a tradition of legislative innovation. The State was an early leader in governmental reform; it was among the first states to enact initiative and referendum (1902), the direct primary (1904), recall (1908), and women's suffrage (1912). More recently, this tradition of innovation has been reflected in such policies as the "Bottle Bill" of 1971, which requires a deposit on all soft drink containers to encourage recycling, statewide land use planning, the decriminalization of marijuana possession, and, most recently, vote-by-mail. To be successful in the Legislature, a bill should be promoted as innovative in some way; in particular, if the suggestion is made that a bill will make Oregon the first state to do a particular thing, the bill will almost certainly pass (Mason 1994, 7). However, Oregon's political culture also is characterized by an innate suspicion of any person or idea coming from another state, particularly from California.

A major feature of Oregon's political culture is the constant conflict between urban and rural interests in the state. Oregon's geography plays a role in this: the state has one major metropolitan area (Portland) west of the Cascade Mountains, in which 60 percent of the population resides; two smaller metropolitan areas surround Eugene and Medford, further down the western slope of the mountains. The rest of the population is largely rural, or located in small towns and cities. Coalition politics, sometimes cutting across party lines, have characterized many Legislative Sessions. Over some issues, including educational telecommunications, rural coalitions have had considerable strength, while urban coalitions have dominated in other areas.

One of the strongest lobbying forces in Oregon is the high-tech lobby, represented by the American Electronics Association (AEA), Tektronics, Intel, and Hewlett-Packard, among others. Historically, support for higher education has been strong within this group. Although primarily interested in supporting programs that are related to the electronics industry, they have also been behind activities that have served to strengthen graduate education, in general. However, despite initial activism and support for the statewide telecommunications network, business interests have not played a prominent role in Ed-Net's development.

During the mid- to late 1980s, the political environment of the state was focused on economic development, and the business interests that pushed for the creation of Ed-Net mirrored this environment. During this period, the

Oregon Department of Economic Development was created. The Oregon State Lottery was a new and untested source of revenue, and was looked to by proponents of new state initiatives as a way to finance their programs.

However, in the 1990s, the economy has improved, and economic development is not the issue it once was. In fact, it has been suggested that the ODED be terminated, and its functions reallocated to other agencies. While the lottery continues to be an enormous source of state revenues, disenchantment with the lottery as a dependable financing method for state programs has been growing. Business has turned its interests toward different issues, including educational restructuring.

Legislative support for higher education has never been strong in Oregon. This has led to a perception among higher education institutions that they are not highly-valued by state government. Each session, Oregon's institutions struggle to document productivity and justify requests for funding. Mason (1994) suggests that this is because higher education receives a lump-sum allocation (the only exception to the state's line-item budget process), so legislators never see the line-item budgets for individual institutions. This contributes to their suspicion that funds are being spent inappropriately. Also, higher education officials are the highest paid group of state employees, making them a target for criticism. Unfortunately, this tends to overshadow the fact that faculty and staff are among the lowest paid in their professions, nationally.

Budget cuts resulting from the 1990 passage of Ballot Measure 5, a property tax limitation initiative, were spread over three budget cycles to reduce the effect on Oregon's higher education institutions. As of 1993-94, ninety programs had been eliminated systemwide; tuition increased by 66 percent from 1991-92 to 1995-96. Oregon's colleges and universities now have the sixth highest tuition in the U.S. Community colleges have fared better than OSSHE institutions because their revenue had come from property taxes and tuition before passage of the measure; Measure 5 requires the state to replace revenue lost to public schools and community colleges from reductions in property tax. To reduce the effect on four-year institutions, the legislature in 1993-94 included \$29.7 million from lottery proceeds in its \$654.9 million appropriation to higher education. Discussion has been carried on in the legislature about dedicating lottery proceeds to education; however, because competition for lottery revenue is keen, and because some legislators have expressed a reluctance to use gambling proceeds for funding education, debate has ended for now.

By 1994-95, OSSHE budgets as a proportion of the state general fund had dropped from 35 percent to 20 percent. Although Governor John Kitzhaber recommended a 14.8 percent reduction in appropriations to higher education in 1995-96, the legislature passed a 10 percent reduction instead. During the same period, the community colleges received a 7.3 percent increase. OSSHE

expects to develop more cooperative agreements between the State System institutions and community colleges as a response to declining revenues.

Changing Technology

The implications of advances in technology for administration, approaches to curriculum and teaching, and financing arrangements were mentioned frequently by respondents in their discussion of statewide issues facing Oregon. Several mentioned the role of electronic mail and the Internet in providing the kind of interaction that is often missing in distance education. They indicated that on-campus efforts at integrating instructional technology into the curriculum will change thinking toward distance education, and enhance its acceptance.

Regional service provision and alternative structures for providing services regionally or nationally play a prominent role in discussions about distance education in Oregon. One critical area around which these discussions are focusing is library service. Several respondents indicated that there is too much duplication in library services across the state, but that resources for electronic services and personnel to support them are lacking. Formation of a regional consortia to coordinate distance education and library services was mentioned by several respondents as a possible solution to these issues.

Respondents commented that demand in the state for distance education must be better assessed. While clear needs have been articulated in specific

areas, needs in more traditional academic areas are less certain. Once these needs become clearer, respondents remarked, discussion on the proper location for distance education programs--within continuing education or in academic departments--must be discussed.

Faculty and student support for participation in distance education programs is another important issue for the state. Preparation time for developing and offering a course is not given proper consideration within institutions, and incentives for faculty to participate are minimal. Distance education is treated as an "add-on" on most campuses, rather than part of the regular curriculum. One respondent commented that incentives for faculty must come from "some level of leadership," either within individual institutions or at the System level.

Respondents agreed that Oregon's governance and administration of educational telecommunications will become increasingly decentralized. While Ed-Net gave institutions a "place to start," new technology will require new financing and administrative arrangements, and new thinking about curricular structure and teaching techniques. Most were optimistic that the state is heading in the right direction, but expressed concerns about the disparity between policy statements and support activities on the state level.

CONCLUSIONS: PERSPECTIVES ON OREGON

Although state policy intended that educational telecommunications

should be coordinated through Oregon Ed-Net, constraints imposed in the task environment for higher education have caused institutions to develop initiatives and cooperative arrangements outside the system. The most important of these constraints involves financing for system activities. Legislation that created Oregon Ed-Net included start-up funds from the Oregon State Lottery, but no provision for continued state funding. Measure 5, a property tax limitation measure passed in 1990, has resulted in declining revenues for higher education, and the Ed-Net provision that the system become self-supporting in three to five years has proven unrealistic. Another constraint involves the fixed capacity of the satellite system on which Ed-Net is based. There is a limited number of up- and downlink sites in the state, and cost and scheduling problems restrict the ability of institutions to use the system to meet demand for distance education courses. One respondent indicated that the choice of technology drove decision making for Ed-Net, resulting in a costly and unwieldy system that is difficult for many institutions to use.

Among community colleges, a tradition of cooperation has contributed to the development and implementation of distance education programs. Community colleges are heavily involved in distance education, and offer a variety of courses statewide. Conversely, the competitive tradition among public four-year institutions, combined with a tradition of limited legislative and budgetary support for higher education, has placed contingencies on the development of cooperative ventures among four-year institutions. However,

OSSHE Ed-Net, a department within the Oregon State System of Higher Education, has been successful in bringing together existing Internal Coalitions of peers, such as directors of media centers, student services, and librarians, to discuss standards and cooperative ventures for distance education programs. These individuals have a tradition of formal and informal communication and cooperation among themselves, and their organizational positions place them at the center of distance education activities on their campuses. According to Thompson (1967), when power in a coalition is widely dispersed, an inner circle emerges informally to conduct coalition business; in this case, the coalition is all OSSHE institutions, which are collectively involved in a power relationship with the State System. OSSHE Ed-Net has acknowledged this aspect of organization behavior in convening these "inner circles" from across institutional boundaries to address crucial State System issues in distance education.

OSSHE is the heaviest user of Oregon Ed-Net, and the State Board of Higher Education has articulated policy statements concerning expanded use of distance education among public four-year institutions. In their position papers and official statements, Oregon's policy makers have articulated their intent to expand educational telecommunication in the state, and appear to recognize a growing demand for distance education programs, particularly in rural areas. Rural areas have been successful in articulating their needs for educational services and technology development in the eastern part of the state, and

played an important role in the creation of Oregon Ed-Net. As one respondent commented, Ed-Net has been a catalyst for telecommunications development in Eastern Oregon.

Institutions have localized distance education programs within extended or continuing education in order to cope with resource uncertainties, and to buffer these programs from fluctuations in the funding environment. As one respondent indicated, off-campus programs have always been self-supporting, and distance education has followed this model. Although discussions about the proper place for distance education within institutions and State System structures are continuing, it is unlikely that change will occur without a corresponding change in funding arrangements.

Domain consensus surrounding distance education activities is moderate. Policy makers and higher education officials offer distance education as a less-costly means of providing educational services in all areas of the state. But, as respondents remarked, practitioners know this is not the case. The role of higher education institutions in offering these programs is recognized in policy, but not in financing or system capacity. Although the State Board encourages institutions to expand their domains to offer enhanced educational services across the state, it does not provide the funding necessary to do so. This results in task uncertainty and an unbalanced power relationship between institutions and the Board. OSSHE Ed-Net, however, provides a means by which institutions may explore alternatives to the constraints and contingencies

imposed by the task environment.

The External Coalitions surrounding higher education are divided; the legislature, public, and State Board do not always agree on the role of higher education in the state. Institutions have become powerful by using prestige to assert their positions within the System, or by exploiting aspects of their own task environments to carve out a specialized niche for their services. The policy of the State System to limit duplication in course offerings among institutions has contributed to these behaviors. Although OSSHE receives a lump-sum amount from the State Legislature, and allocates that amount among institutions, each institution also lobbies the legislature on its own behalf. Also, each aggressively pursues alternative funding sources through specialized or innovative programs on its own campus.

Although governance of satellite services provided through Ed-Net is centralized, most of the State's activities can be characterized as highly decentralized and institution-specific. This decentralization has prompted experimentation and innovation, but has also produced duplication and uneven access for students. Domain issues, involving over-lapping service areas and role assignment, and task environment issues, chiefly concerning financing, are growing in importance. As one respondent remarked, the image of Oregon Ed-Net may be better outside the state than within; however, most institutions are willing to make the system work.

CHAPTER VI

COLORADO

MAJOR INITIATIVES

Formation of the Northeast Alliance

House Bill 93-1035 created a ten-member Colorado Telecommunications Advisory Commission in 1989. The Commission, comprised of representatives from the telecommunications industry, state government, and public and higher education, was charged with identifying issues and recommending policy options to the legislature regarding the state's telecommunications infrastructure. In an attempt to develop a statewide plan for telecommunications, the Commission recommended the creation of the Colorado Learning Network, a consortium of state educational telecommunications users, including the Department of Education, the CCHE, University of Colorado System, Colorado State University, University of Northern Colorado, University of Southern Colorado, and the state colleges. Incorporated as a nonprofit organization in 1993, the CLN has embarked on demonstration projects; however, each network member is responsible for financing its own project, so results may vary (Hezel 1994, 30).

Hezel reports (1994, 29) that the CLN has asked for federal funding for a

statewide plan to connect distance education providers. The Northeast Alliance of the CLN has begun to coordinate efforts with the Colorado Division of Telecommunications, which operates an analog and digital microwave system for the wildlife and transportation divisions. The legislature has allotted \$1.5 million per year for five years for digital upgrades to the system. Included in the Alliance's system will be education and training institutions, businesses, local and state agencies, health care providers, libraries, museums, and other educational organizations.

According to Hezel (1994, 30), the Alliance was driven to create a coordinated system by the following factors: (1) a mandate from the legislature to reduce educational inequalities in rural areas; (2) the need for health care in rural areas; (3) the passage of Amendment One, a constitutional spending limit; (4) state economic development goals, which call for telecommunications to aid in job training; (5) the need for educational services among traditionally underserved or disadvantaged areas of the state (including minorities and rural residents); (6) a CCHE mandate to University of Northern Colorado to offer teacher recertification throughout the state; and (7) Colorado State University's strategic plan, which calls for the University to provide services to all citizens (Hezel 1994, 30). The goals of Phase One of the Alliance's project are directed toward economic development and training in the Northeast part of the state, using the Department of Telecommunication's backbone.

As the interview subject explained, the history of state agency use of

telecommunications provided the background for the Alliance's efforts at forming a network. Since the 1940s, the Colorado State Highway Patrol and Highway Division have maintained a microwave communications system. In 1993, the judicial branch of state government initiated a plan to use the system for arraignments, which would save the cost of transporting prisoners, and the state approved a digital upgrade of the system to a compressed video network. At that time, the state was showing some interest in extending higher education services to prisoners.

The state's two- and four-year institutions saw an opportunity to form a network for educational telecommunications without investing in costly new technology, which would require additional funding from the CHCC and the legislature. In an example of an Internal Constituency forming to solve a mutual problem, a group of executives from higher education's governing boards came together to discuss the creation of a network. One respondent stated that the executives had known each other for a long time, and had participated in events together. They had been trying for ten years to get a telecommunications initiative off the ground, and started talking about it again when the opportunity arose to join the microwave network. One of the executives played a leadership role in calling the others together and suggesting that they cooperate to solve their common problem. A respondent indicated that the group decided "not to worry about the rules and just get things going." The Alliance is now working on self-governance, and is hoping to demonstrate

cooperation among the institutions and agencies involved in order to gain financial support from the state. In this case, a policy initiative was undertaken in spite of the existing structures for planning and governance in the state; the action of an entrepreneur in mobilizing his peers was a key element.

The Department of Telecommunications administers the digital backbone, and works with a committee made up of representatives of the Alliance to develop policies and manage scheduling. The Department offers a three-part fee structure for users: hourly, monthly per semester, or a flat fee. One respondent commented that the Alliance unanimously approved the fee structure, which was proposed by the Department of Telecommunications, but probably would have accepted any fee structure at that time because the network was "the only game in town." She also commented that there is no talk of expansion, now that the network is in place, because institutions would be forced to pay for it--an example of "satisficing" behavior by the Alliance. In addition, there are scheduling problems in using the state office building for transmitting courses because it is not available after regular business hours. However, the system is viewed as being better than none at all.

Statewide Extended Studies Program

During 1991-92, the Statewide Extended Studies Program was created to administer distance education programs in the state. The Program was created in response to the expansion in distance education courses that occurred from

the early 1970s on, as the state experienced rapid population growth and increased revenues. Respondents reported that state policy makers felt that growth in the number of distance education courses had diluted the quality of courses through duplication and unmanaged competition, and designed the Program to address these issues. In this case, state government exerted control over both domain and task environment issues by implementing a new structure to administer regulations regarding distance education activities.

Under this program, all off-campus programs provided by four-year institutions must be submitted for approval, and be cash funded; the Program provides no additional funds for these courses. The only exception is interstate courses that four-year institutions may offer through Western Cooperative for Educational Telecommunications programs without charging out-of-state tuition. However, two-year institutions receive some state funding for their distance education courses. This has resulted in a disparity in the number of undergraduate and graduate course available through distance education in the state, and contributes to competition between the institutions. Most respondents pointed to this situation as a contributing factor in the disparity between the number and variety of distance education programs offered by two- and four-year institutions, a domain issue for both institution types. They also indicated that this funding disparity contributed to a reluctance to experiment with new technologies among four-year institutions.

Community colleges have seen what one respondent described as an

"unplanned, adhoc growth" in distance education courses in recent years.

Although inexpensive Public Broadcasting Service telecourses continue to be the primary method of service delivery, a consortium of two-year institutions has contracted with a cable operator to offer courses through compressed video. The consortium has brought the plan before the legislature and received funding. One subject commented that students who enroll in community college courses typically are older, working women who have a "focused reason for studying," and that this type of student is the ideal recipient for distance education services. From respondent comments, it appears to be easier for community colleges to gain funding for their projects, in part because of their student profile, and because of what the legislature sees as their contributions to economic development through worker training and other professional development programs.

ENVIRONMENTAL COMPLEXITY AND UNCERTAINTY

Governance and Competition

The Colorado Commission on Higher Education was created in 1965 to provide coordination for the state's higher education institutions. It is a regulatory and coordinating body that formulates policies and makes recommendations to the legislature concerning budget allocations to each institution. However, governance of the state's higher education institutions is complex. Three governing boards for two- and four-year public institutions fall

under the jurisdiction of the Commission: the State Board for Community Colleges and Occupational Education governs two-year institutions, a Board of Regents governs the University of Colorado System, and the State Board of Agriculture governs Colorado State University and the smaller four-year institutions. In addition, a community college system serves as an interface between the Board and the community. Competition between these governing boards is fierce, as they vie for limited funds provided by the fiscally conservative state legislature. Although the CCHE was designed to provide coordination, the governing boards behave as if they were autonomous, and have a history of undertaking initiatives with little coordination or cooperation among themselves.

The governing boards reflect homogeneous structural units designed to deal with aspects of a heterogeneous task environment surrounding higher education; discretion is dispersed among these units (Thompson 1967, 75). Each governing board has a domain and task environment of its own, but operates within the larger domain and task environment surrounding the Coordinating Commission. Each board copes with constraints and contingencies in its own environment, and adopts cooperative strategies with other boards to minimize the power exerted on it by the task environment. This produces a lack of overall coordination among the governing boards and the institutions they represent.

Colorado's educational telecommunications governance and service

delivery reflects a state in the early stages of developing a statewide approach. Several of the interview subjects referred to governance of educational telecommunications in the state as "anarchistic" or non-existent, implying a great deal of uncertainty in the task environment; however, one respondent noted that this is not different from the situation in many other states at the time they began forming statewide networks. Some respondents suggested that this was not necessarily bad, as the lack of formal structure has encouraged healthy competition and experimentation. On the other hand, some remarked that the lack of formal coordination has produced duplication and waste, and pointed to the lack of sufficient state funding as encouraging an over-cautious reliance on existing technology--a satisficing strategy.

Two factors were identified as contributing to the lack of coordination among state colleges and universities: (1) the political culture of higher education governance, and (2) state financing arrangements for educational technology. All of the respondents commented negatively on the multiplicity of governing boards involved in higher education in the state, and on the fierce competition that exists between institutions, and the boards themselves, over funding and students. One respondent referred to the governing boards as "little empires" that have no desire to cooperate or coordinate, and which show little sign of changing their ways. Each system lobbies the legislature on its own, although the CCHE is responsible for bringing the higher education budget to the legislature.

Although there is a growing awareness in the state that things must change, one respondent remarked, the environment for higher education is the product of a competitive tradition. The problem is the "whole culture of higher education governance" and distance education is "part and parcel of the whole." An "enormous, bitter battle" will be fought, he stated, when problems are finally addressed. Another subject commented that developments have occurred "in spite of governance structure," and not because of it.

During 1992-93, legislators moved to take more control over the state's public higher education institutions. Governor Roy Romer (who is known as a "pro-education" governor) signed a bill into law that requires agreement each year between the General Assembly and the Governor on five areas in higher education that will be the only ones to receive appropriations above those allotted through enrollment formulas. The law also forbids institutions from enrolling more than 45 percent of their freshmen from out of state--in 1991-92, slightly more than 50 percent of the enrollment at University of Colorado-Boulder was non-resident, which alarmed legislators. However, a constitutional spending limit passed in November 1992 (Amendment One) drove institutions to look beyond state revenue for their sources of funding. For fiscal 1993-94, the maximum budget increase for higher education was 6.5 percent, including financial aid.

Higher education officials were concerned that if five new areas were defined each year, long-range planning would become impossible. However, in

1994-95, a new bill that would have added more detailed and prescriptive criteria on the five spending areas failed. A strong state economy reduced the effects of the spending limit during 1994-95, and the operating budget for higher education was increased by \$32 million, and student aid by \$6.2 million, the largest increase since 1989-90. Tuition increases were capped at 2.4 percent for in-state and 4.4 percent for nonresident.

The General Assembly attempted to "streamline" higher education in April 1993 by replacing two of Colorado's governing boards with a "super board," and by reducing the CCHE to advisory status. The legislation did not pass. However, it is expected that the bill be brought up again, perhaps in another form (The Chronicle of Higher Education Almanac XL, no.1, 25 August 1993).

Jurisdictional Issues

Colorado's major higher education institutions are located in the Metropolitan Denver area, or along the Front Range (Figure 7). The number of higher education institutions compared to population size is one of the highest in the U.S. As one respondent indicated, at one time having a college became a "political plum." Community colleges are scattered across the state; however, the Western Slope has limited access to higher education because of its remote location. In addition, many rural areas in the western and eastern parts of the state do not have digital telephone service or access to cable

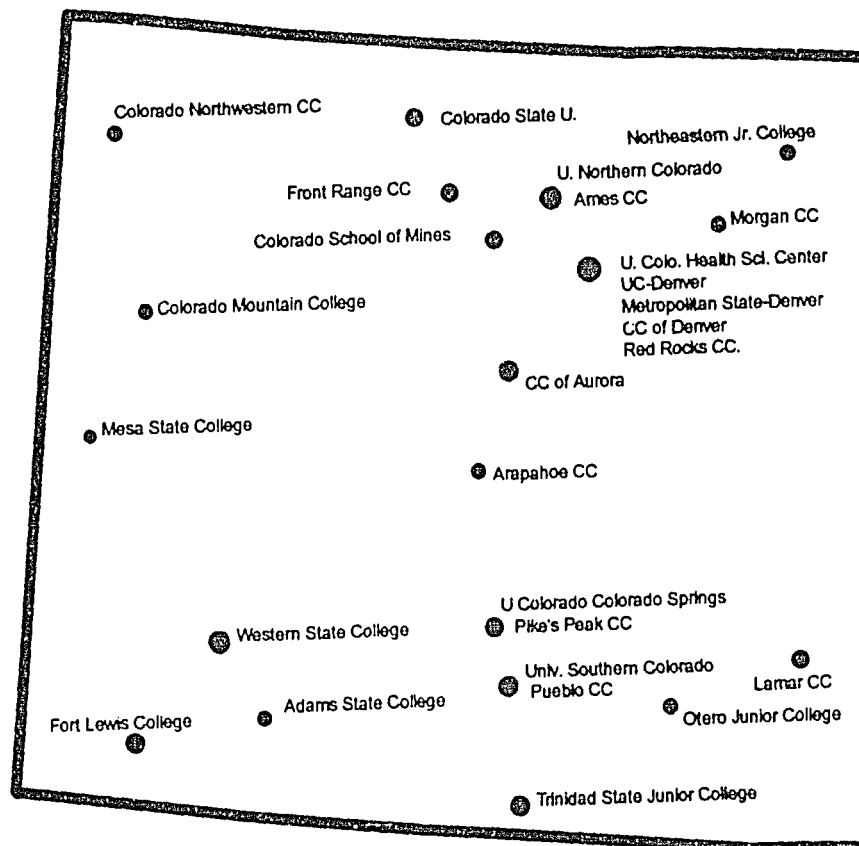


Figure 7. Colorado Higher Education Institutions

television. Higher education in these areas has been provided by community colleges through public broadcasting and courses on video cassette. Population increases are creating pressure on state government to provide educational services to rural areas.

Jurisdictional issues are emerging in Colorado, as institutions are beginning to compete in providing distance education courses across the state. One respondent commented that the current form of governance restricts the ability of institutions to enter each other's service areas and is "cutting the pie up awfully thin." Another respondent commented that, historically, community colleges were assigned distinct service areas, and that the structure has become "an old bastion of power." While existing statutes are being reinterpreted, the community colleges have had a tradition of cooperation, and have simply enrolled any students who wanted to take distance education courses, even if they resided outside a service area. In the respondent's words, "we just enrolled them."

Community colleges are coping with domain issues by beginning to lead rather than follow, as one respondent commented: they are forming their own network. With the expanding role of distance education in the state, four-year institutions are beginning to encounter service area issues, and as one respondent commented, "problems start when you're competing for the same student." Territorialism exists "even between university campuses."

Funding Constraints and Contingencies

Contributing to higher education's competitive environment is the fact that two- and four year institutions receive funding for distance education from different sources. For all general operating budgets, funds are allocated based on tuition and FTE reimbursements; any available funding above this historically has gone to the four-year institutions. For distance education projects, some grants are available from the state and federal government, or from private organizations. But as one respondent remarked, there are many applicants for grants, and grants are difficult to obtain. Institutions respond with satisficing strategies that entail doing their best with what they can "get their hands on." Another respondent commented at length on the limited amount of money available through state grants for distance education. He indicated that the state had recently offered \$2 million in grants to all of the state's governing boards, but referred to that amount as a "sneeze." He felt that state officials are "just testing the water" to "see what's out there." Grants ranging from \$100,000 to \$500,000, he stated, are hardly enough to set up one classroom.

Nearly seven out of every ten adults living in Colorado were born outside the state. Among U.S. states, Colorado has one of the highest percentages of residents holding college degrees; however, approximately half of these persons earned their degrees in another state. However, Colorado's investment in public and higher education has been lower than that of most other states.

Education represents two-thirds of the state's budget; in 1993-94, higher education represented 18 percent of General Fund expenditures, but ranked forty-sixth in the nation in per student expenditures. State appropriation to education are made by formula. A 1988 Western Governors' Association Report strongly criticized the state for deficiencies in several areas: investment in adult education; a comprehensive policy or coordination mechanism for managing education; educational accountability measures; a statewide program to improve the technology, physical infrastructure, and productivity of its educational institutions; choice among providers of educational services; and for spending too much on education with too little result (Cronin 1993, 298).

Political Constraints and Contingencies

Most of the interview subjects commented on the lack of legislative support for higher education. Respondents characterized legislators as "conservatives" who have "blocked" state telecommunications initiatives because of their collective attitude that higher education is "an expense, rather than an investment." One subject commented that he sees no change in the funding prospects for higher education in the state because the legislature controls key decision-making bodies, including the Public Utilities Commission, which sets rates for telecommunications users and providers.

Colorado has been described as a " . . . pro-business, pro-work, antigovernment and antitax state (Cronin 1993, 18)." The state legislature

traditionally has been dominated by Republicans, while the governor's office has been held by Democrats (Appendix C). However, political observers feel that Colorado has three political parties: conservative Republicans, moderate Republicans, and Democrats. In a 1990 survey, 44 percent of respondents identified themselves as conservative, 33 percent as moderate and fewer than 25 percent as liberal (Cronin 1993, 107).

State government is characterized by a strong legislature (the General Assembly) and a weak governor. An adversarial relationship exists between the executive and the legislature. The Governor has limited powers in making administrative appointments, and the budget structure allows agency heads to go directly to the legislature with their requests, rather than through the Governor's Office. The most powerful influence over the state budget is the legislative Joint Budget Committee.

Notorious for its budget-cutting tendencies, the JBC sees itself as the guardian of taxpayers against wilful spending by the Governor and state bureaucracy. A group of six legislators make up the JBC, four from the majority party and two from the minority. Typically, the most conservative members of each party have been chosen to sit on the Committee. The JBC is responsible for preparing the annual state budget; although the Governor and agency heads make recommendations to the JBC, the Committee is not bound to follow their recommendations.

The legislature meets in formal session each year for four months. Bills

are introduced and advanced according to a detailed deadline schedule, designed to promote efficiency and cost-effectiveness. Introducing large numbers of bills or rushing new bills through late in the session is discouraged. Some political observers feel that the formal structure of legislative activities, especially the JBC, prevent the state from developing innovative policies (Cronin 1993, 198). In general, the legislature sees its role to keep taxes low by containing the expansion of state services and programs.

Within Colorado, there is little agreement over how or where planning activities should be carried out. The needs of the various regions of the state are different, and statewide planning has never been a priority. Although long-range plans have been devised periodically, none has been fully implemented. The individualistic political culture of the state fosters a suspicion of planning, activities and goals and cost projections set by planning groups are viewed with some skepticism. In the absence of formal planning, the budget document serves as the state's planning document. In 1973, a legislative committee concluded that adequate long-range planning was the largest unfulfilled need in state government. In 1990, the Subcommittee on Long-Range Planning for State Government was formed; however, a proposed State Long-Range Planning Commission was not approved by the legislature.

One product of the conservative culture in the state is that there is little interest in investing in educational telecommunications, even though there are disparities in access to educational and telecommunications services across

urban and rural areas. The state has promoted some programs to address this issue, but funding continues to be limited. As one respondent remarked, there is little incentive for private providers to undertake large-scale projects in the rural areas, and many still do not have digital telephone service: most projects are ad hoc, so when the project is done, "it's over." In addition, there is no policy entrepreneur in the state who is a strong proponent of distance education; most activities have occurred as a result of institutions coming together on their own without state involvement.

Regional Responses to Constraints

According to Thompson (1967, 37), when captive organizations, such as higher education institutions, are restrained from performing activities, they will often coordinate with non-captive organizations that provide "yardsticks" for rationality and set standards for such things as accreditation. Cooperation or coordination with these organizations can loosen the constraints applied to higher education institutions by allowing them to perform activities outside of their formal domains and task environments. The Western Cooperative for Educational Telecommunications is an example of a this kind of organization.

Established in 1989 by the Western Interstate Commission for Higher Education (WICHE) and located in Colorado, the Western Cooperative facilitates resource and information sharing in the use of educational technologies for fifteen member states. Annual dues from each state provide

basic support for WICHE, which was formed by an interstate compact established by the western states. The Cooperative is involved in developing standards for good practice in distance education for the region, and is working with regional accreditation associations and member institutions to develop policies for regionally-offered degrees. Institutions in Colorado that offer courses through the cooperative are not required to charge out-of-state tuition to non-residents, resulting in domain expansion for distance education to include areas across state boundaries.

Technological Complexity

Institutions in Colorado are involved in a wide variety of technological applications in higher education. Several institutions have their own fiber optics or compressed video systems that are used to provide services to other institutions in small-scale consortia. Existing differences in technological applications across institutions are the product of individual actors who have had their own motives for adopting each kind of technology. In the search for appropriate, cost-effective, and flexible technologies, several respondents commented, there is a desire among institutions to develop compressed video systems that are not "U.S. West-driven." This indicates that a range of providers and services is preferred when institutions design courses and programs.

Colorado has been a leader in educational telecommunications through several independent programs. The National Technological University, a

private nonprofit consortium operating out of Colorado State University, has long been a leader in providing business and engineering graduate programs across the U.S. through video taped courses offered by forty member universities. Recently, the NTU has increased its course offerings by moving to digitally compressed video. Colorado State University also is the site of the twenty-year old SURGE program--Sharing University Resources in Graduate Education. Courses are offered on video cassette, and in exchange with the University of Wyoming through a point-to-point microwave system. CSU participates in AG*SAT, an agricultural network comprised of land-grant colleges and universities, and offers an exclusive MBA from a Denver suburb through Mind Extension University: The Education Network, a privately owned educational network.

Red Rocks Community College operates a compressed video network to deliver twenty three courses per year to high school students in four rural counties. In 1991 Red Rocks received a Title III grant for the project, and has expanded its use by the business community to generate more revenue for system maintenance and expansion. In another local project, Adams State College is the lead institution in collaborative arrangements among state colleges in Colorado to offer high school and college courses through compressed video. In 1992, Adams State was transmitting courses from six sites on a dedicated T-1 network.

CONCLUSIONS: PERSPECTIVES ON COLORADO

I asked respondents to comment on what they saw as the most important service delivery issues for the state as a whole, for institutions, and for students. Their list reflected both domain and task environment issues, including cost, system compatibility and capacity, appropriateness, scheduling, "system territorialism," service to rural areas, and faculty and student support issues as the most important. As one respondent remarked, "There's a whole list." Another commented that until there is a change in the composition of the state legislature, development of a statewide network will continue to be a difficult proposition. He also pointed to a need for changes in policy that can address the educational telecommunications needs of both education and private industry.

Issues surrounding the definition of services areas and financing arrangements appear to be the most important facing Colorado. Although demand is increasing from rural areas for general distance education services and specific programs, such as nursing, institutions are constrained by the existing governance and finance structures from expanding their domains to include overlapping jurisdictions or other areas outside their established service areas. Individual institutional technology choices that have been made in the state will have implications for system compatibility and appropriateness when service areas issues are finally addressed. Finally, faculty acceptance of the

need for distance education, and of the techniques and technologies it relies on, is an important issue in Colorado. Structures for compensation, promotion, and tenure are lacking in most institutions.

Achievement of domain consensus among members of higher education task environments over distance education is an increasingly important issue in Colorado. Unless faculty, who are important actors in the technical core of higher education institutions, can be convinced that distance education is a viable and valuable instructional tool, and unless there is a policy change on the state level regarding funding and support for distance education, it will continue to be difficult for institutions in Colorado to meet the increasing demands for enhanced educational services.

In the absence of statewide planning, higher education institutions across the state have come together to form coalitions that have taken advantage of existing technology to meet their distance education goals. The External Coalitions surrounding higher education in Colorado are fiscally conservative and generally reluctant to spend state money on large-scale telecommunications projects. In addition, there is no history of statewide planning to provide the political and policy environment necessary for a statewide telecommunications initiative. Individuals on various organizational levels across institutions have come together to solve mutual problems without relying on the existing governance structures for guidance. Although there is a growing recognition of the need for cooperation and coordination in the provision of distance

education, and for a more student-centered approach, changes are occurring incrementally, and largely as the result of the actions of individual actors and institutions within the higher education system.

Uncertainty in the task environment for higher education in Colorado results from fiscal conservatism and legislative attitudes toward higher education, the history of statewide planning, issues in expanding and overlapping domains that result from the provision of distance education services, and the changing nature of educational technology, which in turn produces changes in organizational goals. Support capacity for higher education is concentrated in one aspect of the task environment, the state legislature; however, policy direction from the governing boards regarding distance education is dispersed. In this environment, institutions must cooperate among themselves and seek alternative funding arrangements to achieve their organizational goals. Satisficing strategies are reflected in the reliance by many institutions on older forms of technology and less-than optimal financing arrangements. As Thompson states, although a less-than perfect technology (or activity) produces a desired outcome only sometimes, the desire for a particular outcome often will cause a organization to settle for a possible, rather than probable, outcome (1967, 15).

CHAPTER VII

UTAH

MAJOR INITIATIVES

Utah Educational Network

In 1979, a telecommunications task force recommended that Utah invest in a statewide network. Following a needs assessment in 1982, the legislature dedicated \$4.4 million to the construction of a two-way interactive microwave network, linking state agencies, colleges and universities, and public schools across the state. Named EDNET in 1986, the system is managed by the Utah Education Network Consortium, and is housed at the University of Utah. The Network also manages KULC, a non-PBS education channel that offers both credit and non-credit courses for K through 12 and higher education; a public television station, KUED; two public radio stations, KUER and KUSU; a satellite broadcast and reception system; ITFS microwave transmission system, which serves metropolitan Salt Lake City; and a fiber optics network.

Respondents indicated that both the Utah Educational Network and resulting statewide financing arrangements for distance education grew out of activities that had been evolving for several years. During the late 1970s, the University of Utah assumed responsibility for broadcast of distance education

programs to both public and higher education. KUED developed a backbone for microwave transmissions and installed new channels to deliver courses. When the microwave system began transmitting statewide, public and higher education and state agencies came together to discuss coordinating data-sharing over the system.

The state was able to obtain funding from the legislature, in part because the technology and organizational cooperation for establishing the system already existed. Concepts from political feasibility analysis suggest why the proposal was successful: the initiative to form the Network was timely; had the support of the governor, who was a champion of education; fit within the political context of the state, which encourages cooperation; and had the support of implementing agencies and interests groups.

The Utah Educational Network provides a "single point of contact," as one respondent called it, for financing distance education programs and technology initiatives. One respondent indicated that one of the Network's strong points is that in negotiations for equipment, one entity can bargain on behalf of all institutions involved and come up with the best pricing. Also, respondents indicated that the Network promotes collaboration among institutions to provide courses and programs, and opens the way for cooperation and shared sites.

Local area networks and personnel are provided by individual institutions, while the network, broadcast studios, and training for personnel are provided

by the Network; scheduling for public and higher education is monitored through a program called Utah Link. Because the Network facilitates program delivery, one respondent noted, providers are prevented from developing individual systems that may not be compatible statewide. Although institutions pay for their own infrastructure to connect to the Network, the major costs of constructing and maintaining the Network are covered by the legislature. Student access is enhanced because all institutions participate.

In recognition of the statewide goal to provide educational services to an array of constituencies, a steering committee was established to provide policy direction and planning for the Utah Educational Network. In 1993, six members were added to the committee, which is now comprised of vice presidents from two- and four-year institutions, K-12 teachers, the director educational technology for public education, school superintendents, and representatives from the Board of Regents, the governor's office, state legislature, private industry, the state Office of Education, and the Department of Economic Development. In addition, the Utah Partnership has been formed to help coordinate and develop the mutual interests of the state and business; telecommunications is one issue being addressed by the Partnership.

However, one respondent commented that "the power, the money" gets fed to the flagship institution, the University of Utah. For example, while new facilities have been provided for distance education on that campus, other institutions have older or even makeshift facilities. In examining the interview

texts, I found differences in perceptions of the Network between institutional level respondents and managerial and technical level respondents. In short, respondents on the policy-making or state governance level were less likely to comment on disparities and problems within the Network than were respondents responsible for managing or providing services in individual institutions. This may be a result of pressures for consensus and cooperation that are inherent in the state's political culture. The managerial and technical levels are shielded from these external pressures by the institutional level, and so are freer to comment on problems. Also, actors on the managerial and technical levels are more likely than institutional actors to be aware of problems that result when a statewide plan of action is implemented.

When the Network was being planned, satellite technology was rejected as a method of providing educational services statewide because, as one respondent indicated, it would not provide an interactive method of service delivery. Also, it was judged to be an inefficient method for creating an information highway between industry, government, and business. Policy makers in Utah wanted a system that would be flexible enough to meet the needs of a combination of constituencies, and found satellite technology to be limited and expensive.

However, the main form of service delivery within the Network is broadcast television, which reaches about 95 percent of the state. As one respondent commented, this technology provides the most access, but the least

interaction: it is simply a "talking head." As such, it is the least effective method for learning outcomes that rely on teacher-to-student and student-to-student interactions. Another respondent indicated that low-budget, low-technology methods were chosen because they were "a way to accomplish it," and that institutions have stayed with these methods largely because of cost. Until more areas of the state have access to higher technologies, and the costs to both providers and users become more feasible, most institutions will continue to resort to satisficing strategies in using existing, less-than-perfect technologies.

KULC offers 3,000 hours of air time annually for higher education, and an additional 3,000 hours for public education. Over 5,000 students were enrolled in thirty-eight credit courses through KULC during 1993. EDNET offers mostly graduate-level courses and teleconferences, providing 3,000 hours per year; over 1,000 students are served in a typical year. A T1 compressed video system is being laid to connect all rural high schools to the network. The deans of university continuing education and extension programs set priorities for course offerings, coordinate plans, and resolve issues regarding competing requests. All courses must have institutional and state approval before they can be offered.

ENVIRONMENTAL COMPLEXITY AND UNCERTAINTY

Governance and Competition

In 1969, Utah passed the Higher Education Act, establishing the Utah System of Higher Education. Governed by a sixteen-member Board of Regents, the State System has jurisdiction over nine publicly-supported institutions in the state. Members of the Board are appointed by the governor, with approval of the state senate, and one seat traditionally is reserved for a representative of the Church of Jesus Christ of the Latter-Day Saints.

Governance of higher education is centralized and top-down. In an previous study, a former governor stated that appointments to the Board were the most prestigious and important appointments he could make (Abrams 1993, 33).

Although the appointment process is designed to ensure representativeness across the state, accusations of regionalism in appointments have been made in recent years (Abrams 1993, 38).

The Commissioner of Higher Education is appointed by the Board as the chief executive officer, and individual college presidents are named by the Board to a Council of Presidents, which is directly responsible to the Board. The Council has no formal authority, but serves in an advisory role to the Regents. The governor is a central educational policy maker in the state, exerting his influence through appointments to the Board of Regents and the State Board of Education, which governs Utah's public education.

Higher education institutions provide courses in designated academic areas, which serves to reduce competition. Often, an institution will be the only one in the state offering courses in a particular area; institutions receive course credit hours and tuition revenue from the courses they offer and produce, so participation in EDNET is increasing. To meet degree requirements at Utah institutions, a student may enroll in transferable courses through any distance education program in the state; the System has an existing policy of transferability among its nine institutions for traditional academic offerings.

Despite policies designed to foster cooperation and coordination, relations between institutions within the State System are competitive, and fall along rural and urban lines. The largest public institutions are located in the state's major urban areas, while smaller institutions are located in rural areas (Figure 4). The Council of Presidents is dominated by the larger institutions, leading smaller institutions to feel that they are kept at a disadvantage. However, a 1990 decision to change the name of two smaller institutions from college to university was viewed by state politicians as capitulation to regional interests, and as weakening the power of the Board (Abrams 1993, 38).

The Board of Higher Education has begun a series of initiatives designed to address the expected 48 percent increase in enrollments by the year 2000. Rather than building new facilities, the Board hopes to make better use of existing institutions and to increase the use of educational telecommunications

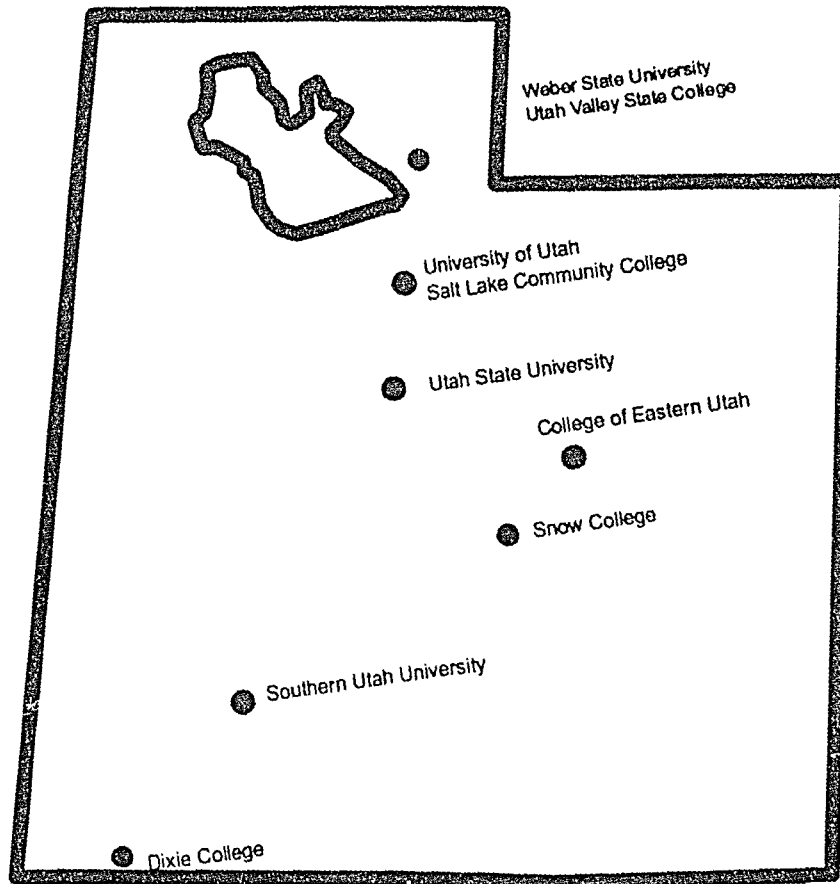


Figure 8. Utah Higher Education Institutions

technologies. In 1993-94, the Board of Regents changed the name of Utah Valley Community College to Utah Valley State College, and allowed it to begin offering bachelor's degrees. Admissions standards at four-year institutions have been tightened, and students are encouraged to complete their first two years of study at a community college. In some community colleges, faculty from four-year institutions teach upper division courses in selected majors, and student can earn bachelor's degrees in those fields without transferring to a four-year institution. The Board expects to offer more of these cooperative programs in the near future.

Funding Constraints and Contingencies

Funding for institutional initiatives in public and higher education is provided through "Educational Technology Initiatives," funded by the legislature. Institutions and districts are required to develop plans, and money is allocated based on Requests For Proposals (RFPs) through the Network. Accountability to the legislature is enhanced through this process, one respondent remarked, and allows the Network to "leverage change."

One respondent indicated that statewide policies for distance education are being placed within the context of existing policies to avoid isolating telecommunications from other issues faced by higher education. The financing arrangement for distance education programs was a "very deliberate" creation, relying on one-time allocations from the legislature, balanced by budgetary

reallocations within individual institutions. Continued funding for distance education is expected to come from money that would have been spent constructing new buildings. This arrangement provides a solid line-item for distance education from year to year and allows for planning, another respondent commented, but is still subject to ups and downs in the state economy. The state is expanding at such a rapid pace, one respondent indicated, that this policy may not be realistic in the long-term.

The Executive Committee of the Joint Appropriations Committee is where decisions on appropriations to state agencies takes place. The Committee has a reputation for its budget-cutting activities. However, historically, education has been given high priority in budget decisions, and, as a respondent indicated, there is a history of legislative funding for distance education. Traditionally, the co-chairs of this committee have been members either of the Public Education or Higher Education Joint Appropriations Subcommittee. The governor makes recommendations to the Appropriations Committee through the Office of Planning and Budgets, which has "education specialists" among its staff.

The Joint Appropriations Committee of the legislature is comprised of the full membership; joint appropriations subcommittees are appointed for public and higher education and standing committees on education exist in both the House and Senate. Budgets for all nine higher education institutions are consolidated within the State System: individual presidents submit institutional

budgets to the Board of Regents, who prepare a single budget request to the legislature. However, institutional recommendations are advisory; the Regents define the budget, which has served to dilute the influence of higher education in the legislative budget process (Abrams 1993, 41). In addition, the public education is perceived as having a higher priority in the state, and the size of the budget for public education, although funded at the lowest level per student in the nation (Abrams 1993, 36), places limitations on the amount that can be allocated to the Board.

In 1994, the legislature granted \$9 million to the State System to expand its use of distance education and related technologies. Governor Mike Leavitt presented his "Technology 2000" plan, which calls for the development of UtahNet, a statewide communications network that would link citizens, businesses, government, and educational institutions through interactive video, audio, graphics and data (The Chronicle of Higher Education Almanac 1994, 110-111). The Information Technology Commission was created by statute during 1994-95, and although the Commission is still formulating its role, an interview subject indicated, the notion is that it will coordinate policy and legislation, create budgets, approve financing, and identify issues in all areas of information technology, statewide. During 1995-96, higher education received a \$26.6 million increase, with \$2.5 million earmarked for distance education and an additional one-time \$7.7 million for start-up projects.

Senate Bill 12 in 1993 appropriated \$200,000 to EDNET for on-going support, and another bill, Senate Bill 26, appropriated \$2 million for matching funds to expansion grants for public education. An additional \$3,000,000 was appropriated to add additional EDNET sites during 1994-95, and \$5,000,000 to link public and higher education systems through Utah Link.

Political Constraints and Contingencies

The External Coalitions surrounding higher education in Utah are powerful and focused. The legislature, Board of Regents, and the Governor play important roles in defining the mission of public higher education, and in providing the resources it needs to achieve its goals. The last two governors have played central roles in the expansion of higher education's domain to include distance education activities designed to manage projected demands for increased educational services in the state.

Utah has a strong governor and citizen legislature. One respondent indicated that some things happen within the state because "the governor wants them to." The Mormon Church exerts a strong influence on legislation, and Church values can be recognized in many policy areas. Politics are characterized by restraint and the political culture supports cooperation and consensus (Abrams 1987, 386). Rarely is conflict between the governor and legislature publicly expressed; rather, emphasis is placed on how the two sides come to joint agreement over issues.

Several interview subjects indicated that leadership in establishing the statewide network came from the Governor; as one respondent commented, "It happened because of him." A strong proponent of higher education, the Governor supported distance education as a method for serving an increasing number of students without constructing more buildings. The initiative was timely, as higher education enrollment projections indicate that Utah will be serving nearly twice its current enrollment by the year 2000. The current governor, Mike Leavitt, who, as one respondent reported, gave a "technology-oriented" speech when elected, is also supportive of distance education as an alternative service delivery method for public and higher education. One respondent commented that Utah has a Governor who "understands the implications" of technology for higher education and other state agencies.

One respondent commented that one of the problems for education in the state is that major policy decisions are left up to "electees" and not to educators. Board members are appointed by the Governor, and appointments are subject to gubernatorial politics. Top-down decision making by the legislature and the Board of Regents, she remarked, often leaves higher education "at the mercy of their whims," their "lack of understanding" of pertinent issues, and in competition with other entities that press for funding.

Rural service provision is an issue in Utah, as the rural population in the state has been outdistancing the level of telecommunications services available in those areas. As one respondent commented, there is wide variation even in

telephone service across the state, and television reception is poor in many areas. However, another respondent indicated that the state is undertaking a deliberate policy to develop telecommunications capabilities in rural areas as rapidly as possible through incentives to private providers to bring new technology into the state. The state wants to promote competition and not "lock with one provider," in order ensure an array of available technology. One statewide goal, the respondent remarked, is to be able to "deliver on demand" to every student in the state.

Changing Technology

Utah State University was an early user of audiographics technology, which is now combined with ITFS microwave and satellite technology to offer four undergraduate and four graduate degree programs to thirty five sites in the region. The program was begun in 1984, and now serves over 1,300 students in thirty three credit courses per year. In 1990, Utah State received federally funding for a satellite uplink to distribute agricultural programs to other land grant universities through AG*SAT. As of 1994, the university had entered into a three-year partnership with U.S. West to develop telecourses for public education and the general public.

CONCLUSIONS: PERSPECTIVES ON UTAH

Utah's approach to the provision of educational telecommunications statewide appears to be as much a product of the state's political and cultural characteristics as an attempt to manage uncertainties in demand and available funding for higher education. The state supports one governing board for nine public two- and four-year institutions, and has a history of coordination among institutions within the state system (Appendix C). In addition, the influence of the Church of Jesus Christ of the Latter-Day Saints on Utah's politics and society plays an important role in fostering centralized structures for planning and administering educational services. Sixty-nine percent of the state's population are church members, and virtually every major political, educational and cultural organization in Utah is influenced by the traditions and cultural practices of the Mormon Church, which encourages cooperation and collective action among its membership. Historically, the Church has supported both public and private education, and several of the state's public institutions were originally operated by the Church.

Funding for higher education comes from the state legislature through the Utah State System of Higher Education. Domains for each institution are defined by the governing Board of Regents, resulting in a high degree of domain consensus among institutions. With the creation of the centralized Utah Educational Network, power relative to educational telecommunications

was concentrated in one aspect of the task environment. This can be seen as a "buffering" activity on the part of the Board of Regents and the state legislature, which form an External Coalition surrounding higher education institutions. Centralized planning and decision making helps to protect higher education institutions from fluctuations and contingencies in the environment.

However, institutions had a history of cooperation and coordination before the creation of the Network, and use those existing relationships to balance their institutional power against that concentrated in the Network. The University of Utah, the state's flagship institution, is home to the Utah Educational Network, and absorbs most of the state funding and political support for educational telecommunications. It exerts power over its task environment--which includes the legislature, Board of Regents, Utah State System of Higher Education, students, and other institutions--largely through its prestige and history as the oldest public institution in the state. Competitor institutions, thus, do not pose a contingency for the University. However, smaller institutions maintain alternatives to the centralized structure by developing cooperative strategies to share technology.

"Outsourcing" to private providers is encouraged by the legislature, which has granted financial incentives to private providers to enter the state. One-time appropriations have been granted for educational telecommunications initiatives with the understanding that reallocation of institutional budgets is a condition of continued distance education funding. This is an

acknowledgement of the limited resources available to the state to support distance education, and of the disparities among institutions in their ability to reallocate funding toward distance education and away from traditional programs.

Although Utah is characterized by a high degree of domain consensus among members of the task environments surrounding higher education, generally, and individual institutions, interview respondents indicated that appropriate roles for institutions in delivering distance education programs, and methods to reduce duplication of programs and services, are issues for the state. As one respondent remarked, should an institution be responsible for providing a particular program, or should the responsibility be dispersed among individual institutions? As domains are extended into areas not previously served by higher education, cooperation among institutions will become increasingly important. Historical competition between institutions should be offset by state policies that foster cooperation and shared resources, respondents commented.

The state is trying to foster equality and equity through its financing arrangements, a respondent remarked, but not all institutions can invest the same amount, which results in disparities in service provision across institutions. Equal access is not possible in all parts of the state because of geographical barriers to some types of technology. Respondents indicated that the state should aim for equity, rather than equality, and that an assessment of demand

among students across the state, which has not yet been undertaken, needs to be a focus of state policy. One respondent was concerned that, without a proper assessment of needs, investments will be made in technology that is not appropriate and will result in a high cost for a low number of students.

Support for faculty training and development in distance education technologies and methods is provided through a program development fund. Faculty are recommended by each institution and receive stipends, reduced teaching loads, training, and other incentives to participate in the program. An initiative was submitted to the legislature in 1994 to enhance faculty development programs, course development, equipment purchases, and system expansion. The proposed budget was \$19 million for the first year, with a \$76 million total for four years, including on-going support.

Limited rural access and problems associated with technological change continue to limit Utah's ability to extend the network across the state. Initiatives to promote "outsourcing" should help to alleviate these problems, respondents remarked, but more needs to be done. One issue is how to maintain existing technology, while keeping up with new advances. Faculty and student support, training and technical standards, and expanding the capacity of the system to provide all the programs students want, are issues being examined by institutions and state officials. Through its centralized planning and governance structures, Utah has the means for examining these issues from a statewide perspective.

CHAPTER VIII

CROSS-CASE ANALYSIS

To conduct the cross-case analysis for this study, I examined issues that emerged from the interviews in the context of the five variables Jonsen and Johnstone (1991) identified as being common to higher education institutions. These five variables allowed me to look for similarities and differences among the three states, from a common perspective. Interview comments related to these variables reflect the position of each state along the homogeneous/heterogeneous and stable/dynamic task environment continuum.

Access and Equity

Access and equity are defined as affordable and equitable access to distance education services. Equity implies that services in one form or another will be available to all parts of the state, although the same level or type of service may not. Access and equity present both domain and task environment issues for the states, in that they involve demand, financing, technology type, and feasibility concerns. In Utah, which has a relatively simple structure for higher education, domains are established by policy; however, questions about the appropriateness of these assignments are being raised as technology is making it easier to cross jurisdictional lines. In the

other two states, which represent increasingly complicated structures and increasingly complex task environments, institutional domains are less rigidly defined, and conflicts over service areas are more likely. Financing methods for distance education take different forms in each state, and have implications for the type and level of service that can be provided. As a result, institutions within the states have resorted to satisficing strategies to meet access and equity concerns.

Comments related to this variable varied widely across the three states, reflecting the position of each state along the task environment continuum. In Colorado, which exhibits a heterogeneous and dynamic task environment, characterized by multiple and competing actors, limited state funding, and technological variation, respondents were most likely to address financing, feasibility, jurisdictional, and demand issues relating to access and equity. In Oregon, which exhibits a relatively homogeneous and dynamic environment, characterized by a single governing board, state policy and planning tradition, limited state funding, changing technologies, and a strong rural constituency, institutions were most likely to discuss financing, jurisdictional, and feasibility issues. In Utah, which exhibits a relatively homogeneous and stable environment, respondents were likely to discuss demand and feasibility issues.

Agreement could be found on several issues that have implications for the provision of educational telecommunications. These issues are related to principles for ensuring that demands for services are met equitably within the

constraints and contingencies faced by higher education institutions.

Respondents agreed that affordable and equitable access to programs and technology is an important issue for their states. Most have policies that state this as a goal, not only for distance education, but for higher education, generally.

The use of "low-tech" methods, such as telecourses, sometimes may be a satisficing strategy in response to funding or jurisdictional contingencies.

Constraints imposed by state financing structures may severely limit an institution's ability to experiment with more sophisticated methods that could provide better service to students. However, as technical and managerial respondents pointed out, "low tech" may simply be the easiest, most effective, and most appropriate way to provide courses that students demand.

Respondents indicated that the demand for distance education offerings needs better assessment in all three states. Expected increases in the number of students demanding services will require the development of new approaches to curricular offerings, and policies should be formulated on the institutional level. Respondents agreed that the traditional classroom model does not fit well with many new technologies, and commented that institutions must commit to better incentives, training, and support for faculty to develop new instructional methods that can make the best use of technologies. Utah has moved in this direction by establishing a development fund for this purpose. Respondents agreed that the increasing use of computers in classroom

instruction will contribute to a growing interest and knowledge about distance education, and enhance its standing within institutions.

In all three states, rural areas need more access to telephone and other communications technologies, in general. The availability of distance education offerings in these areas will continue to be limited to older methods of communication (chiefly, telecourses) until there is more incentive for private providers to install enhanced telephone service in rural areas. Rural demands for more educational and medical services are often frustrated by the lack of digital and fiber optics service in those areas.

In Oregon, rural interests in the eastern part of the state have been active and successful in expanding services there, with Eastern Oregon State College working under a mandate to provide educational services east of the mountains. A respondent from an institution which serves rural areas west of the mountains and along the coast commented extensively about the limited telecommunications services in those areas, and the effect on distance education offerings there. During 1996, U.S. West Communications began laying fiber optics lines to Oregon State Lottery sites. These connections can be expected to link remote parts of the state with information centers. Population growth in the rural areas of Utah and Colorado will undoubtedly spur development of telecommunications services in the near future. Utah has been attracting private telecommunications by offering state funding incentives for technology development ("outsourcing").

Satellite broadcasting is dependent on the number of available up and downlink sites, and involves scheduling and capacity issues that may limit the range of courses that can be offered and the number of students that can be reached. Classes are usually large, and interaction between students and instructors is inhibited. Governance and administration for statewide satellite systems tend to be centralized, and aspects of the task environments in each state have an influence on whether or not this structure is appropriate. In Colorado, decentralization has provided opportunities for institutions to select technologies that are most important to the types of courses they offer. In Oregon, respondents indicated that they are seeking technology options outside of the Ed-Net structure, while using Ed-Net for specific purposes. Respondents agreed that, while satellites serves some purposes quite well, states should provide an array of technologies from which faculty can choose.

Competition among institutions in the three states has largely resulted from a lack of statewide coordination or policy direction, or constraints imposed by state financing arrangements. However, respondents agreed that the lack of rigid planning structures encourages experimentation with newer technologies. Again, the choice of technology will drive the type of governance or financing structure that is required, and elements in the task environment for higher education will indicate whether or not that structure is feasible. Respondents felt that states should encourage entrepreneurial activities by institutions by providing financing for new initiatives.

Efficiency

Efficiency is defined as the cost of the service to providers and users, and of the range of technology available to them. Again, both domain and task environment issues face institutions in meeting this goal. Centralization of policy and administration may help to keep costs down for individual institutions, but, as in the case of Oregon, if reliable funding mechanisms are not available and the indirect costs to institutions in providing services are not recognized, the benefits of a statewide system are not accrued by all institutions. In Utah, although network costs are borne by the State, individual institutions are responsible for other costs associated with providing service on the network, and smaller institutions feel that the flagship university absorbs most of the resources provided by the State. Although there is no statewide network in Colorado, institutions are able to experiment with different technologies and have the flexibility to search for an efficient and cost-effective means of providing service. This flexibility, however, has often proven too costly for individual institutions to take advantage of on their own, prompting many to come together to form alliances and other cooperative arrangements.

Respondents indicated that the financing method and types of technology used in state are directly related to costs to providers and users, and that choices must be carefully considered. Some types of technology require high initial investments, but may reduce costs to users in the long-run. In many cases, respondents agreed, the least costly technology may be the most effective

as well as efficient means to provide service.

In the three states, differences in the extent to which institutions use a network caused differences in the costs between smaller and larger institutions. Disparities result when larger institutions are able to devote more of their campus budgets to distance education programs, and infringe on the domain of smaller institutions by offering courses across traditional jurisdictional lines. Economies of scale also impose constraints on institutions in providing certain services. Respondents agreed that some level of subsidy may be necessary for an efficient system. Also, accountability issues must be considered when courses are self-supporting.

Diversity

Diversity is defined as the range of courses and methods of instruction available to users. This variable mainly concerns domain issues: what should be provided and to whom. Jurisdictional issues are central to this goal, as is demand. Statewide governing or coordination boards have been established in the three states to eliminate duplication among institutions in offering courses and programs. However, technology advances now make it possible to reach wider geographic areas, and one of the resulting issues is whether certain universities should be assigned responsibility for all distance education programs, or individual institutions be responsible for providing courses in their designated areas.

The history of state planning for higher education and relationship between higher education and state government are important conditions for changes in this area. Utah and Oregon would most likely be in a better position to develop policy over this question than Colorado; in Colorado, it might be expected that institutional responsibilities will simply evolve over time. Several institutions in Colorado have historically provided courses in designated areas, and will continue to do so, while institutions that have formed alliances can be expected to have internal mechanisms for deciding on which program areas to focus. In Oregon, OSSHE Ed-Net is in a position to provide a forum for discussion of these issues; the centralized decision making structures in Utah will likely provide direction there.

Respondents commented that certain types of courses, such as engineering and medical courses, are easier to define and to offer than others, and historically have been the focus of most distance education programs. However, demand for other types of programs in traditional academic areas will move the discussion about distance education toward agreement over domain issues, such as the proper location of these programs on campuses, and within systems.

Uncertainties in the financing of higher education in all three states have led to the practice of "buffering" distance education programs by placing them in extended studies programs. Policy, financing, administrative, and quality issues can be expected to arise if these programs are moved into the regular

curriculum. Declines in available resources, combined with increasing demand and available technology, will lead to more discussion among higher education institutions over which areas within or outside of institutions should be responsible for distance education.

Quality

Quality is defined as the use of appropriate technology, training available to instructors, and standards for program content and delivery. For statewide programs, higher education governance and coordinating bodies play an important role in assuring quality among institutions. In the absence of direction from the institutional level and a forum for discussion of standards and faculty support, statewide agreement may be difficult to obtain. In Oregon, OSSHE Ed-Net provides such a forum, and state policy on distance education provides guidance--if not financial support--on the issues of appropriateness, faculty support, and standards. Utah's centralized planning provides a top-down structure for ensuring quality, while Colorado's institutions work through their cooperative arrangements and alliances to ensure quality among themselves. However, all three states have begun to consider regional service provision, which will bring discussion of quality issues into a broader domain.

Technology choice must be related to the goals of instruction, and choices made to match technology to the courses offered. Transmission quality is an issue with some types of technology, and must be considered when institutional

investments are made. Cheaper forms of technology, while attractive to institutions facing financial constraints, may also have lower transmission quality, which will affect the willingness of students and faculty to participate in distance education.

Respondents agreed that faculty support, in the form of training, range of technologies, promotion and tenure guidelines, and funding for course development, contributes to curriculum quality. Student support, in the form of library services, financial aid, range of course offerings, and access to a range of technologies, also contributes to curriculum quality. In all three states, both forms of support are limited, but are recognized as growing in importance. Related to this, respondents commented that accreditation and certification standards are important considerations in statewide or regional systems, and are currently under review in all three states. In addition, curriculum and course assessment are issues that must be addressed in distance education program.

Economic Development

Contributions to economic development are defined as the extent to which rural and business interests were included in policy development and receive services from state distance education programs. However, in all the three states, comments falling under this heading concerned issues of rural access, rather than business or industry use. Interest group pressures and

population growth in rural areas will increase demand for educational and telecommunications services. In this environment, jurisdictional issues among institutions will increase, and will drive the need for more statewide planning to ensure service provision to these areas.

Technology improvements to rural areas have lagged behind urban areas, and high-speed data services will not be widely available for several years; in the mean time, Oregon has initiated a program of fiber optics expansion into rural area, and Utah has a program of out-sourcing to increase service. In this environment, institutions will continue to offer courses through traditional means. Two important issues facing the states, respondents agreed, are the need for rural access to educational and medical services through the development of telephone and microwave technologies, and the development of a wider variety of courses available in rural areas.

CHAPTER IX

CONCLUSIONS AND RECOMMENDATIONS

In this dissertation, I set out to describe statewide educational telecommunications in three states through the lens of organizational theory and political feasibility analysis. I attempted to describe, in greater detail, differences among states that have been noted in prior research, and to add another dimension to existing literature on the topic by examining those differences within a theoretical framework. In so doing, I hoped to contribute to the policy research Hezel and others suggest is needed to assist states in developing their own policies and in assessing the feasibility of adopting another state's educational telecommunications model into their environments.

The case studies I have developed in this dissertation illustrate how educational telecommunications policy implementation may be described within a theoretical context. Organizational, historical, and political factors within individual states influence planning, governance, and implementation of educational telecommunications policies, as earlier researchers have suggested. However, that research has not provided detailed examination of factors leading to the differences among state policies and systems. As my research indicates, the systems approach to organizational theory may provide a useful

method for examining how and why the implementation of educational telecommunications has varied among states. It is complemented by Mintzberg's method of examining power relationships within organizations, and concepts from political feasibility analysis, which identify factors leading to the successful adoption of a policy.

Conclusions

My initial hypotheses regarding Oregon, Colorado, and Utah were largely borne out in the study (Figure 9). However, Utah exhibited a greater degree of satisficing behavior among individual institutions than was expected. Financing uncertainties have produced disparities in the ability of individual organizations to adopt technological innovations on their campuses, despite the existence of centralized administration and strong legislative support for distance education. Smaller institutions perceive that the University of Utah, which maintains a high level of prestige within the state, absorbs most of the resources directed toward distance education programs, and a competitive environment exists between larger and smaller institutions in the state.

Concerns about expanding or redefining organizational domains (what services should be provided, and to whom) for both state higher education systems and individual institutions are emerging in all three states. Inter-jurisdictional conflicts result from the ability of institutions to provide

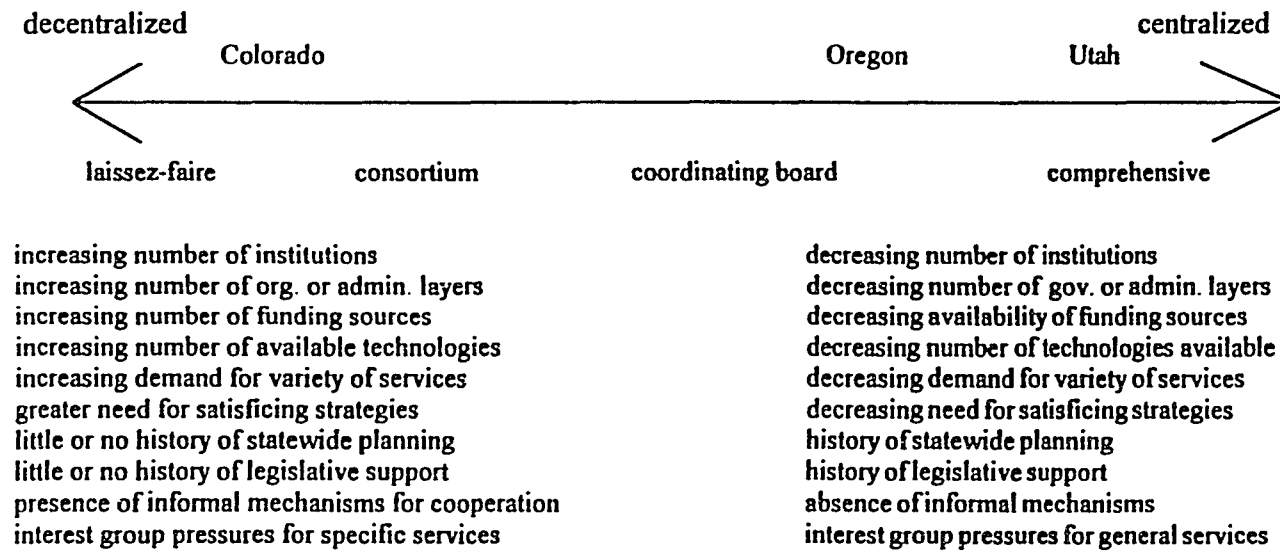


Figure 9. Continuum of Independent Variables and Statewide Models. Models derived from "Distance Education and Public Policy," Nancy Zeller, The Review of Higher Education 18, no.2 (Winter 1995): 123-148.

distance education services with powerful new technologies that can easily cross service boundaries. Cooperative agreements are being formulated to deal with these issues. Student demand relates directly to an institution's assertion of domain, and most interview subjects commented that better assessment of student demand for distance education must be conducted before resources are committed to expanding institutional domains.

Task environment issues varied among the three states. In Oregon, the task environment element that most affects the implementation of state policy regarding educational telecommunications is financing. While the State Legislature and higher education governance board have promulgated many policies articulating statewide goals for distance education, funding to implement these policies has not been forthcoming. Institutions support distance education programs through a combination of self-support and campus budgets. This leads to disparities in the ability of institutions to provide needed services, and has resulted in an "overcautious" reliance on existing forms of technology. Libraries appear to be a critical area of service provision that suffers under the existing systems. Oregon should move toward greater alignment between policy expectations and funding arrangements; however, additional funding for higher education will continue to be unlikely in the near future.

However, OSSHE Ed-Net has played a vital role in fostering collaboration and cooperation among four-year institutions in the State.

OSSHE staff have brought media center, student services, and library directors together with Oregon Ed-Net staff to discuss policy and implementation issues facing higher education institutions. These practitioners are close to the administration and service delivery of institutional programs, and are in a good position to provide input and insight to policy makers. Respondents commented frequently on the importance of the role played by OSSHE Ed-Net in setting the tone for distance education in the state.

In Colorado, lack of statewide planning and the multiplicity of governing boards has led to wide variation in distance education implementation and service provision. In this environment, institutions have come together to form alliances and other cooperative arrangements, and have resorted to alternative funding sources to make up for the lack of financial inputs from state government. However, institutions have shared existing technologies, and have had the freedom to experiment with new technologies. This has led to innovation and improvement in service delivery among some institutions. Many respondents indicated that they feel the decentralized nature of distance education governance and finance in Colorado has produced a healthy environment for competition and experimentation, while others commented on the duplication and waste that has resulted. A balance is needed between cooperation and entrepreneurship, and appears to be evolving. The state is beginning to move toward adopting a statewide planning approach for educational telecommunications, although most activities continue to be

localized in individual or cooperative efforts.

Utah has a long tradition of centralized decision making and governance, and supports the fewest number of higher education institutions in the three states I examined. Respondents in Oregon and Colorado commented on Utah's educational telecommunications consortium as a good model for regional service provision. While Utah's efforts are moving forward, an adequate needs assessment is still lacking.

In all three states, changes in technology are outdistancing policy responses in educational telecommunications. Rapid changes in technology available to meet specific needs of programs and institutions within a system are more easily adopted and shared by entrepreneurial actions on the part of individual actors, or groups of actors. Centralized systems may have difficulty responding to changes in the environment; governance and finance of statewide systems is closely related to the type of technology chosen. Some technologies, such as satellites, require more coordination and centralization to manage resources for multiple users; others, such as digitally compressed video and computer networks, can be used by smaller groups of institutions acting together. All methods have implications for regional service provision, and a combination of technologies appears to be the best way to provide distance education to meet the range of demands faced by statewide telecommunications systems.

Currently, the most important issue facing these states is the development

of standards for good practices in course development and instruction. The Western Cooperative for Educational Telecommunications is developing standards on the regional level; statewide systems must contribute to development of these standards, as well. Also, changes in the notion of how classes and courses should be structured and taught are required if distance education is to be effective. Faculty must buy into the need and applicability of distance education methods to instruction, and be trained to use them. Rewards and incentives for faculty to take on new technology are needed in all three states.

Domain issues occur when institutions begin competing for students across established service areas. For all three states, assessment of student demand for distance education is a critical need. Currently, small numbers of students, relative to regular institutional enrollment, are using distance education programs. However, needs are being expressed in several areas; in Utah, distance education seen as a way to deal with increasing overall enrollments without constructing more classroom space. State policies that advance the use of distance education methods into new areas must be matched with an adequate assessment of need, and with sufficient funding to meet that need without adding another burden to declining institutional budgets.

Rural areas are demanding enhanced telecommunications services, and their growing populations will be placing increasing pressure on states to attract private providers into these areas. Utah is actively providing incentives to

private providers to enter the state; Colorado is turning to cooperative arrangements among institutions to reach out to rural areas. In Oregon, Ed-Net has acted as a catalyst for eastern part of the state, and the voice of eastern Oregon has been well-served. However, other rural areas in the state still lack connections to higher education institutions. Through needs assessment and state policy that combines "outsourcing" with institutional collaboration, states may position themselves more effectively to address rural needs.

Recent changes in federal regulation have allowed more access to local services markets for long-distance providers, and vice-versa; for example, cable TV companies can now offer telephone services. This will prompt changes in state regulations and make it easier for groups of institutions to join forces. Technology advances will continue to have a powerful effect on service area, governance, and financing arrangements in every state. The challenge facing states is how to balance maintenance of existing systems with adoption of new technology.

Directions for Future Research

Following the Third-Generation implementation model, future research should focus on longitudinal studies of the educational telecommunications policies in Oregon, Colorado, and Utah, which would provide information on changes in the policies over time and across contexts. The increasing use of

distance education among higher education institutions described in Chapter III will require continuing research to assist states in developing policies, and in selecting appropriate structures and technologies. However, future case study research in this area should incorporate site visits and unstructured interviews to a greater extent than I was able to accomplish within the limitations of my research. As Yin indicated in his research on exemplary implementation studies, site visits and informal interviews contribute to the "depth and detail" that is central to sound implementation research.

What should policy makers consider when evaluating the feasibility of adopting another state's model into their environment, or in formulating their own policies for educational telecommunications? As my research suggests, organizational theory and political feasibility analysis can be used to analyze policy adoption and implementation behaviors within the historical, organizational, and political context of individual states. Policy makers should engage in research on domain issues and constraints and contingencies posed by elements of the task environments surrounding relevant organizations within their own and other states before adopting policies or implementation structures for statewide educational telecommunications. As I suggest in my research, political, financial, and organizational complexities in Oregon, Colorado, and Utah influenced how organizational actors responded to both explicit and tacit state policies for educational telecommunications. In particular, financing methods, levels of political and legislative support, and

jurisdictional conflicts present constraints and contingencies for higher education institutions in all three states, although in somewhat different ways in each case. Also, the appropriateness of technological systems to educational needs should be considered carefully before a statewide system is set in place.

States that engage in careful planning for statewide telecommunications, taking into account the political culture, organizational behaviors, and historical relationships between higher education and state government, will have the greatest success in implementing policies for educational telecommunications policy. What works in one state may not apply in another. The descriptions of statewide implementation activities in Oregon, Colorado, and Utah may contribute to a body of knowledge that state policy makers can turn to in developing statewide plans.

REFERENCES

- Abrams, Douglas M. Conflict, Competition, or Cooperation? The Dilemmas of State Policymaking. Albany, New York: State University of New York, 1993.
- American Federation of Teachers. "Teaming Up With Technology: How Unions Can Harness the Technology Revolution on Campus." Report of the Task Force on Technology in Higher Education. American Federation of Teachers, 1996.
- Annals of The American Academy of Political and Social Science. Electronic Links for Learning 514 (March 1991). Newbury Park, California: Sage Publications.
- Averch, H. A Strategic Analysis of Science and Technology Policy. Baltimore: Johns Hopkins Press, 1985.
- Babbie, Earl. The Practice of Social Research. Fifth Edition. Belmont, California: Wadsworth Publishing Company, 1989.
- Berman, Evan. "The Politics of Federal Technology Policy: 1980-1988." Policy Studies Review 10, no. 4 (Winter 1991/1992): 28-41.
- Blumnestyke, Goldie. "Many Attempts at Distance Learning are Impeded by Unforseen Political and Financial Problems." The Chronicle of Higher Education XXXVIII, no. 8 (23 October 1991): A23-A25.
- Campbell, Donald T., and Julian C. Stanley. Experimental and Quasi-Experimental Designs for Research. Dallas, Texas: Houghton Mifflin Company, 1963.
- Carl, Davie L. "Electronic Distance Learning: Positives Outweigh Negatives." Technological Horizons in Education 18, no. 10 (1991): 71-72.
- Church, Foster. "On-Line in the Outback." The Oregonian, 17 March 1996, D1 and D8.

- Clark, Tom. "Attitudes of Higher Education Faculty Toward Distance Education: A National Survey." The American Journal of Distance Education 7, no. 2 (1993): 19-33.
- Cronin, Thomas E., and Robert D. Loevy. Colorado Politics & Government: Governing the Centennial State. Lincoln, Nebraska: University of Nebraska Press, 1993.
- Cross, K. Patricia, and Anne-Marie McCartan. "Adult Learning: State Policies and Institutional Practices." ASHE-ERIC Higher Education Research Report No. 1. Washington, D.C.: Association for the Study of Higher Education, 1984.
- DeGrand, Linda K. "Development of a Distance Learning Infrastructure." Metropolitan Universities: An International Forum 3, no. 1 (1992): 9-19.
- DeLoughry, Thomas J. "Distance-Learning Program Inflames Maine Faculty." The Chronicle of Higher Education XLI, no. 30 (7 April 1995): A24-A25.
- _____. "Steep Increase In Satellite Costs Concerns Colleges." The Chronicle of Higher Education XLI, no. 26 (17 March 1995): A21.
- _____. "Campus Officials Pleased but Worried by Clinton Plan for 'Information Superhighway.'" The Chronicle of Higher Education XL, no. 37 (31 March 1993): A17-A19.
- Dillman, Don A., and Donald M. Beck. "Information Technologies and Rural Development in the 1990s." The Journal of State Government (1990): 29-38.
- Dively, Dwight, and Molly McGill. "State Planning and Implementation of Educational Telecommunications Systems in the West." Western Cooperative for Educational Telecommunications report, 1991. Copy from microfiche.
- El-Khawas, Elaine. "Campus Trends 1995." Higher Education Panel Report, no. 85. Washington, D.C.: American Council on Education, 1995.
- Erman, Stephen C. "Reaching Students, Reaching Resources: Using Technologies to Open the College." Academic Computing (April 1990): 10-34.

- Fisher, James. "The Failure of Statewide Coordination." The Chronicle of Higher Education XLI, no. 40 (16 June 1995): A48.
- Fratkin, Susan. "The Future of Information Technology in Higher Education: II. The Federal Perspective." Change (January/February 1991): 46-51.
- Goggin, Malcolm L., Ann Bowman, James Lester, and Laurence J. O'Toole. Implementation Theory and Practice: Toward a Third Generation. HarperCollins, Inc., 1991.
- Greydanus, John, Jon Root, and Larry Pribyl. Teaching from a Distance: Faculty Handbook. Eugene, Oregon: The Oregon State System of Higher Education, 1991.
- Harmon, Michael M., and Richard T. Meyer. Organization Theory for Public Administration. Boston, Massachusetts: Little, Brown & Company, 1986.
- Hezel Associates. Educational Telecommunications: The State-By-State Analysis 1994. Syracuse, New York: Hezel Associates, 1994.
- Hezel, Richard T. "State-Wide Planning of Telecommunications in Education: Some Trends and Issues." TechTrends 36, no. 5 (1991): 17-20.
- _____. "Policies for Educational Technology: A National, State, and Local Agenda." Paper. Chief State School Officers' Conference, 1990. Copy from microfiche.
- _____. "Telecommunications for Education: State Policy Issues." TechTrends 36, no. 1 (1990): 47-54.
- _____. "State-Wide Planning for Telecommunications in Education: Executive Summary." Washington, D.C.: Corporation for Public Broadcasting, 1987. Copy from microfiche.
- Johnson, Kenneth M., and Calvin L. Beale. "The Rural Rebound Revisited." American Demographics (July 1995): 46-54.
- Jonsen, Richard W., and Sally M. Johnstone. "The Future of Information Technology in Higher Education: I. The State Perspective." Change (January/February 1991): 42-45.
- Keegan, Desmond. The Foundations of Distance Education. London: Croom Helm, Ltd., 1986.

- Knoke, David, and James H. Kuklinsky. Network Analysis. Beverly Hills, California: Sage Publications, 1982.
- Landler, Mark. "AT&T Enters TV Business Via Satellite Broadcasting." The New York Times, 23 January 1996, C1 and C20.
- _____. "US West's Continental Ambitions." The New York Times, 28 February 1996, C1 and C4.
- Mason, Thomas L. Governing Oregon: An Insider's Look at Politics in One American State. Kendall/Hunt Publishing Company, 1994.
- McCracken, Grant. The Long Interview. Newbury Park, New Jersey: Sage Publications, 1988.
- Meltsner, A. "Political Feasibility and Policy Analysis." Public Administration Review 32 (1972): 859-867.
- Midson, Tony. "Cooperative Electronic Distance Education Programs in Higher Education: Selected Examples From Throughout the U.S." Portland, Oregon: Portland State University, 1992.
- O'Malley, Sharon. "The Rural Rebound." American Demographics (May 1994): 24-29.
- Oregon State Board of Higher Education. Board Meeting Notes, Meeting #644, 15 September 1995: 39-42.
- Oregon State House of Representatives. House Bill 3167. 64th Oregon Legislative Assembly, 1987 Regular Session. House Measures H203.
- Oregon State Senate. Senate Bill 203. 65th Oregon Legislative Assembly, 1989 Regular Session. A-Engrossed SB203 and B-Engrossed SB203.
- Oregon State Senate. Amendment to A-Engrossed Senate Bill 203. 65th Oregon Legislative Assembly, 1989 Regular Session.
- Oregon State System of Higher Education. Fact Book 1995. Eugene, Oregon: Oregon State System of Higher Education, 1995.
- _____. "Board Hears Status Report on OSSHE Distance Education." The Board Bulletin no. 70, 25 February 1994: 2.

- _____. "ED-NET: Technology Brings Dreams to Reality." The Board Bulletin no. 51, 24 January 1992: 3.
- Poll, Richard D., Thomas G. Alexander, Eugene E. Campbell, and David E. Miller, eds. Utah's History. Provo, Utah: Brigham Young University Press, 1978.
- Portland State University. "Classes Coming to Portland State Via Microwave." PSU Currently 13, January 1992: 1.
- Randall, Ruth E. "Trio of Telecommunications Projects are Paradigms for Rural Education." Technological Horizons in Higher Education 18, no. 10, (1991): 71-72.
- Rumble, Greville. The Planning and Management of Distance Education. New York: St. Martin's Press, 1986.
- Schmandt, Jurgen, Frederick Williams, and Robert H. Wilson, eds. Telecommunications Policy and Economic Development: The New State Role. New York: Praeger Publishers, 1991.
- Schick, Edgar B., Richard J. Novak, James A. Norton, and Houston G. Elam, eds. Shared Visions of Public Higher Education Governance: Structures and Leadership Styles that Work. Washington, D.C.: American Association of State Colleges and Universities, 1991.
- Schrump, Lynne. "Innovation and the Process of Change: A Case Study in Distance Education." Paper. Annual Meeting of the American Educational Research Association, 1992. Copy from microfiche.
- _____. 1991. "Distance Education: A Primer for Administrators." Oregon School Study Council 35, no.1 (1991).
- Teske, Paul E. "State Telecommunications Policy in the 1980s." Policy Studies Review 11 (Spring 1992): 1.
- The Oregon Ed-Net Committee. "Oregon Ed-Net: A Report on the Feasibility of A State-Wide Telecommunications Network." Report to the Oregon Legislature. Salem, Oregon, 1988.
- Thomas, Clive S., ed. Politics and Public Policy in the Contemporary American West. University of New Mexico Press: 1991.

- Webber, David J. "Analyzing Political Feasibility." Policy Studies Journal 14, no. 4 (1986): 545-553.
- Western Cooperative for Educational Telecommunications. "Balancing Quality and Access: Reducing State Policy Barriers to Electronically Delivered Higher Education Programs." Project Report. Boulder, Colorado: Western Interstate Commission for Higher Education, 1995.
- Wilson, Robert H. "Rural Telecommunications: A Strategy for Community Development." Policy Studies Journal 20, no. 2 (1992): 289-300.
- Yin, Robert K. Case Study Research: Design and Methods. 2nd Ed. Newbury Park, New Jersey: Sage Publications, 1994.
- _____. Applications of Case Study Research. Newbury Park, New Jersey: Sage Publications, 1993.
- _____. "Studying the Implementation of Public Programs." In Studying Implementation: Methodological and Administrative Issues, ed. Walter Williams, 36-72. Chatham, New Jersey: Chatham House Publishers, 1982.
- Zeller, Nancy. "Distance Education and Public Policy." The Review of Higher Education 18, no. 2 (Winter 1995): 123-148.

APPENDIX A

TABLE OF SELECTED STATE CHARACTERISTICS

TABLE 1
SELECTED CHARACTERISTICS OF THREE STATES:
COLORADO, OREGON, AND UTAH

State	Colorado	Oregon	Utah
Category			
<u>Resident Population 1992</u>			
Total	3,470,000	2,977,000	1,813,000
Rank	26	29	34
Percent Increase '90 - '92	5.3	4.8	5.2
Rank	5	7	6
<u>Urban and Rural Population 1990</u>			
Total	3,294,000	2,842,000	1,723,000
Urban	2,716,000	2,003,000	1,499,000
Percent	82.4	70.5	87.0
Rural	579,000	839,000	224,000
Percent	17.6	29.5	13.0
<u>Population Per Square Mile of Land Area</u>			
In 1970	21.3	21.8	12.9
In 1990	33.5	31.0	22.1
Percent Change	36.4	29.7	41.6
<u>Percent Change in Population 1970 through 1994</u>			
1970 - 1980	30.8	25.9	37.9
1980 - 1990	14.0	7.9	17.9
1990 - 1992	5.3	4.7	5.2
1992 - 1994	2.7	1.8	2.5
<u>Median Household Income 1990</u>			
Income (\$)	30,140	27,250	29,470
Rank	18	30	20
<u>State Appropriations for Operating Expenses</u>			
1992-93	529,158,000	485,482,000	345,888,000
1993-94	534,418,000	428,099,000	363,668,000
1994-95	543,690,000	434,654,000	397,539,000
<u>Expenditures by Public Higher Education Institutions</u>			
1992-93	1,452,137,000	1,329,794,000	993,625,000
1993-94	1,546,642,000	1,484,621,000	1,116,845,000
1994-95	1,670,921,000	1,566,990,000	1,174,239,000

SOURCE: Statistical Abstract of the United States 1993, U.S. Dept. of Commerce, Economic and Statistics Administration, Bureau of the Census; The Chronicle of Higher Education Almanac Issue, XL, no.1 (25 August 1993); XLI, no. 1 (1 September 1994); and XLII, no. 1 (1 September 1995).

APPENDIX B

TABLE OF ENROLLMENT IN PUBLIC HIGHER EDUCATION

TABLE 2

ENROLLMENT IN PUBLIC HIGHER EDUCATION INSTITUTIONS
COLORADO, OREGON, AND UTAH

State/Year	Public Four-Year	Public Two-Year
<u>Colorado</u>		
Number of Institutions	13	15
<u>Enrollment</u>		
1992-93	131,870	79,368
1993-94	131,564	75,081
1994-95	132,113	77,819
<u>Oregon</u>		
Number of Institutions	8	13
<u>Enrollment</u>		
1992-93	64,854	80,848
1993-94	65,169	79,282
1994-95	63,113	80,239
<u>Utah</u>		
Number of Institutions	4	5
<u>Enrollment</u>		
1992-93	62,361	34,597
1993-94	61,782	33,020
1994-95	74,011	26,260

SOURCE: The Chronicle of Higher Education Almanac Issue XL, no. 1 (25 August 1993);
XLI, no. 1 (1 September 1994); and XLII, no. 1 (1 September 1995).

APPENDIX C

TABLE OF COMPARATIVE STATE POLITICAL FEATURES

TABLE 3
SELECTED GOVERNANCE AND LEADERSHIP CHARACTERISTICS:
COLORADO, OREGON, AND UTAH 1994-95

State	Colorado	Oregon	Utah
Category			
<u>Statewide Coordinating Board</u>	Colorado Commission on Higher Education	Oregon State System of Higher Education	Utah System of Higher Education
<u>Political Leadership</u>			
Governor	Democrat	Democrat	Republican
U.S. Senators	2 - Republican	1 - Republican 1 - Democrat	2 - Republican
U.S. Representatives	2 - Democrat 4 - Republican	2 - Democrat 2 - Republican 1 - Vacancy	1 - Democrat 2 - Republican
State Legislature			
House	24 - Democrat 41 - Republican	26 - Democrat 34 - Republican	20 - Democrat 55 - Republican
Senate	16 - Democrat 19 - Republican	11 - Democrat 19 - Republican	10 - Democrat 19 - Republican

SOURCE: The Chronicle of Higher Education Almanac Issue XLII, no.1 (1 September 1995).

APPENDIX D

DATA COLLECTION PROTOCOLS

**PROTOCOL FOR INTERVIEW DATA COLLECTION
EDUCATIONAL TELECOMMUNICATIONS GOVERNANCE STUDY**

1. Develop questions.
 - a. Site visits
 - b. Informal interviews
 - c. Review of documents and reports
2. Identify prospective interviewees.
 - a. Contact distance education director
 - b. Obtain mailing lists
 - c. Select individuals from Oregon, Colorado, and Utah
 - d. Sort names by institution and job title
3. Identify interviewees with E-Mail accounts:
 - a. Prepare E-Mail letter requesting participation
 - i. include questions
 - ii. include informed consent form
 - iii. give deadline of March 1, 1995 for answers
 - iv. provide telephone number for questions or if telephone interview is preferred
 - v. request any printed materials that may be helpful
4. Identify interviewees with mailing addresses:
 - a. Prepare letter requesting telephone interview
 - i. include questions
 - ii. include informed consent form
 - iii. ask that informed consent be returned before phone contact is made
 - iii. Nancy Carney will call during normal working hours before March 1, 1995, to set up interview time, or will conduct interview at that time, if consent form has been returned
 - iv. request any printed materials that may be helpful
5. Train Nancy Carney on telephone interview procedure, note taking, transcription
 - a. Discuss purpose of study
 - b. Discuss intent of questions
 - i. questions solicit impressions, experiences
 - ii. additional information beyond questions is desirable
 - c. Prompt subject to pursue additional information
 - d. Detailed notes of conversation

- i. note date, time, respondent name, institution, and title
 - ii. include verbatim quotations
 - iii. ask respondent to repeat if statement is unclear
 - e. Type transcription at completion of call
 - f. Review transcription
6. Send out letters and E-Mail week of March 15, 1995.
 7. Collect all data by May 15, 1995.
 8. Call respondents a second time if clarification or further information needed.
 9. Begin case study analysis of interview data.

APPENDIX E

INFORMED CONSENT FORMS

**Informed Consent Form
Educational Telecommunications Project**

I, _____, agree to take part in this research project on the governance, finance, and delivery of educational telecommunications services in my state.

I understand that the study involves a telephone interview, during which I will discuss processes of governance, finance, and delivery of educational telecommunications.

I understand that, because of this study, I will have to take time away from my other activities to be interviewed by the research team.

Kathi Ketcheson has told me that the purpose of this study is to analyze choices concerning the governance of educational telecommunications systems in three western states (Oregon, Colorado, and Utah).

I may not receive any direct benefit from taking part in this study. But the study may help to increase knowledge that will help others in the future.

Kathi Ketcheson has agreed to answer any questions I have about the study and what I am expected to do.

She has promised that all information I give will be kept confidential to the extent permitted by law, and that the names of all persons in the study will remain confidential.

I understand that I do not have to participate in this study, and that my willingness or unwillingness to participate will not affect my employment, or my relationship with Portland State University.

I have read and understood the above information and agree to take part in this study.

Date: _____ Signature: _____

If you have concerns or questions about this study, please contact the Chair of the Human Subject Research Review Committee, Office of Research and Sponsored Projects, 105 Neuberger Hall, Portland State University, 503/725-3417.

Informed Consent Form
Educational Telecommunications Project
Electronic Mail Respondents

I, _____, agree to take part in this research project on the governance, finance, and delivery of educational telecommunications services in my state.

I understand that the study involves providing answers to questions regarding the processes of governance, finance, and delivery of educational telecommunications, through electronic mail, or in a telephone interview, if I so choose.

I understand that, because of this study, I will have to take time away from my other activities to be answer these questions or to be interviewed by the research team.

Kathi Ketcheson has told me that the purpose of this study is to analyze choices regarding the governance of educational telecommunications systems in three western states (Oregon, Colorado, and Utah).

I may not receive any direct benefit from taking part in this study. But the study may help to increase knowledge that will help others in the future.

Kathi Ketcheson has agreed to answer any questions I have about the study and what I am expected to do.

She has promised that all information I give will be kept confidential to the extent permitted by law, and that the names of all persons in the study will remain confidential.

I understand that I do not have to participate in this study, and that my willingness or unwillingness to participate will not affect my employment, or my relationship with Portland State University.

I have read and understood the above information and agree to take part in this study.

Date: _____ Signature: _____

If you have concerns or questions about this study, please contact the Chair of the Human Subject Research Review Committee, Office of Research and Sponsored Projects, 105 Neuberger Hall, Portland State University, 503/725-3417.

APPENDIX F

LETTERS TO SUBJECTS

LETTER TO SUBJECTS

March 15, 1995

Dear :

As a faculty member in the Office of Institutional Research and Planning at Portland State University in Portland, Oregon, I am conducting a study of the way choices are made regarding the governance of educational telecommunications systems in three western states: Oregon, Colorado, and Utah. I obtained your name from a list of persons involved in distance learning and feel that you may have knowledge and experience critical to my research. Our Faculty Development Committee has awarded me a small grant to conduct this study, and I also plan to use the results in my doctoral dissertation, which I am completing through the School of Urban and Public Affairs at PSU.

I am hoping you will agree to a telephone interview to answer the questions I have attached to this letter. Please review the questions and the informed consent form I have included. If you are interested in being interviewed, please complete the form and return it to me within a week. I will assure you that your response to the questions will be kept in the strictest confidence: I will not use the name, title, or organizational affiliation of any person interviewed in the text of the report, dissertation document, or in any oral presentation I may make of the findings. When I receive your informed consent form, I will direct my graduate assistant, Nancy Carney, to contact you to arrange a time for the interview. If we have not heard from you within the next 10 days, Nancy will call to confirm whether or not you wish to respond to the questions.

Any information you can provide me on how your state governs its educational telecommunications programs will be appreciated. If you would like to add something you think I have missed in my questions, please do so. If you do not wish to be interviewed, but could provide me with written materials you think may be of interest to me, please let me know how I might order them from you.

Thank you for your time. I look forward to hearing from you soon.

Sincerely,

Kathi A. Ketcheson
Senior Research Assistant
E-Mail: bukk@psuorvm.cc.pdx.edu

LETTER SENT THROUGH ELECTRONIC MAIL

As a faculty member in the Office of Institutional Research and Planning at Portland State University in Portland, Oregon, I am conducting a study of the way choices are made regarding the governance of educational telecommunications systems in three western states: Oregon, Colorado, and Utah. I obtained your name from a list of persons involved in distance learning and feel that you may have knowledge and experience critical to my research. Our Faculty Development Committee has awarded me a small grant to conduct this study, and I also plan to use the results in my doctoral dissertation, which I am completing through the School of Urban and Public Affairs at PSU.

I am hoping you will agree to answer the questions I have listed below, using electronic mail. Please review the questions, and if you are interested in responding, please send your answers to me by **March 24, 1995**. If you prefer to answer the questions by telephone, please send me a note on e-mail and I will have my graduate assistant, Nancy Carney, call to arrange for an interview. You will receive an informed consent form in the mail, which you should sign and return to me once you have agreed to answer the questions; a postage paid envelope will be provided to you. Be assured that your response to the questions will be kept in the strictest confidence: I will not use the name, title, or organizational affiliation of any person interviewed in the text of the report, dissertation document, or in any oral presentation I may make of the findings.

Any information you can provide me on how your state governs its educational telecommunications programs will be appreciated. If you would like to add something you think I have missed in my questions, please do so. If you do not wish to answer the questions, but could provide me with written materials you think may be of interest to me, please let me know how I might order them from you.

Thank you for your time. I look forward to hearing from you soon.

Sincerely,

Kathi A. Ketcheson
Senior Research Assistant
Office of Institutional Research and Planning
(503) 725-3425
E-Mail: bukk@psuorvm.cc.pdx.edu

APPENDIX G

INTERVIEW QUESTIONS

INTERVIEW QUESTIONS

These questions are intended to gather information on how choices are made regarding the governance, finance, and delivery of educational telecommunications services within individual states, and on the implications of those choices for administrators and users. I am looking for your **perspective** on these issues; I have collected published information on activities in your state and have an idea of what has been happening there. I am hoping to gain a feel for the political and organizational aspects of the planning, development and implementation of educational telecommunications in each state. Please review the questions with this in mind, and add any additional information you feel is important.

1. What is your role with regard to educational telecommunications in your organization or agency?
2. How are educational telecommunications governed, managed or administered in your state?
3. How was this form of governance or administration chosen?
4. What do you feel are the implications of this form of governance for
 - a) service providers?
 - b) users of educational telecommunications services?
5. How are educational telecommunications services financed in your state?
6. How did this method of financing come about?
7. What do you feel are the implications of this method of financing for
 - a) service providers?
 - b) users of educational telecommunications services?
8. What do you see as the most important service delivery issues for
 - a) your state?
 - b) institutions or agencies, including your own?
 - c) students and other users?
9. How are the types of technology used in your state to deliver educational telecommunications related to
 - a) the choice of governance method?
 - b) the choice of financing method?
 - c) service delivery?

Thank you for taking the time to answer these questions.

APPENDIX H

DATA ANALYSIS PROTOCOL

DATA ANALYSIS PROTOCOL
EDUCATIONAL TELECOMMUNICATIONS PROJECT

- I. Develop case data base, by state
 - a. Review documentary evidence and printed reports
 - i. Code data by hypotheses |
 - b. Review Interview Transcripts
 - i. identify major themes |
 - ii. Kathi prepares summary |
 - iii. Nancy prepares summary |
 - iv. Meeting to compare summaries |
 - c. Code interviews by themes
 - d. Code themes by hypotheses

- II. Write case report
 - a. Organize by hypotheses
 - b. Summarize findings

- III. Develop cross-case data base
 - a. Code interviews by goals
 - i. code responses by institution type |
 - ii. code responses by organizational level |
 - b. Combine state responses by goal |
 - i. code combined responses by hypotheses

- IV. Write cross-case report
 - a. Organize by goal attributes
 - b. Summarize findings

- V. Write Conclusions
 - a. Summarize findings from case chapters |