Distance learning and higher education: a study in state-wide policy and coordination for continuing education in the 1980's

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Dedication

This report is dedicated to my family whose support throughout my educational pursuits has been appreciated.
ACKNOWLEDGEMENTS

Completing the requirements for the Doctor of Education has involved the direction, cooperation and help of special persons. To them I wish to express my thanks.

First, I express my appreciation to a unique educator, Dr. Don Herrmann, who as my mentor: inspired me with the concept of life-long learning, guided me with his teaching of continuing education, and encouraged me throughout the many years.

My gratitude is extended to Drs. Thelin, Herrmann, and Yankovich, my committee members, for their advice. I am grateful for the resources, both human and institutional, offered by The College of William and Mary through professors, classes, students, and libraries.

My deep thanks is also extended to Dr. Robert Grymes, Dean of Instructional and Student Services, at Tidewater Community College; to my colleagues in the Humanities Division at Frederick Campus; and to my personal friends, Eleanor Williamson and Virginia Friddell.

My thanks is offered to the study's participants for the time and talent each graciously shared.

Finally, my gratitude is given to my helpful husband, Hank, and to my caring children, Kirsten and John.
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CHAPTER I: INTRODUCTION

"Distance Learning" is more than just televised lectures; it is interactive. Students can speak with their professor and in some cases be seen by their professor even though located at distant sites.

The Purpose and Significance of the Study

This study is concerned with policy research for coordinating state higher education and telecommunication efforts. The research will provide an information base for a possible course of action by state agencies and institutions associated with higher education in Virginia. This study centers on graduate and nontraditional, continuing education. However, implications of this study may be helpful for other categories of higher education.

Specifically, this study has identified possible alternative coordinating policies for Virginia higher education (graduate and nontraditional continuing education) and telecommunications efforts in distance learning. Further, it analyzed and made suggestions (based on the research) as to which of these policies might best facilitate distance learning in Virginia. This is linked to how Virginia higher education can interact with business and
industry to facilitate academic and industrial cooperation in distance learning.

The research included study of a Virginia distance learning model, the Cooperative Graduate Engineering Project. In addition, the research evaluated policy options by seeking consensus of experienced persons as to what is likely and unlikely and desirable and undesirable for future development of distance learning in Virginia.

The Statement of the Problem

This study focused on the problem: what are the coordinating policy options for Virginia higher education (graduate and nontraditional, continuing education) and distance learning; also, which of these policy options will best facilitate distance learning in Virginia?

In answering this problem, the study addressed these specific questions:

- Is there a real need for graduate and continuing education in Virginia by way of distance learning?
- If so, what is the best way to coordinate and to fund a workable system?
- Is there a need for developing a coherent, state policy?
- If so, which coordinating policy options are both desirable and likely?
- Which of these options are best and why?
In Distance Learning

Distance learning has been used in higher education for years in American extension courses as well as through radio broadcasts in developing countries. Today in most programs, "systems of course delivery include a limited-range TV transmission known as Instructional Television Fixed Service; satellite for a visual component; telephone for audio; computer and electronic blackboard for graphics and data; cable, and microwave, as well as a combination of these technologies." ¹

However, despite the growth of distance learning opportunities, there are problems. According to Folks, superintendent of public instruction in Oklahoma, more problems will arise as distance classes increase. He believes that "if many students are going to get the courses they need, they are going to have to get them long distance."² Problems include: relatively high equipment costs, difficulties of students in adjusting to new teaching and learning styles, prevalence of "old guard" faculty and administrative attitudes, and lack of institutional incentives to use the newer educational technologies.


²Ibid.
technologies.\textsuperscript{3} Besides these problems, distance learning, according to Levinson's article, can result in a clash of state policies and regulations. Because courses delivered by technology can cross state lines, such regulations as state-established teacher certification, course accreditation, and curriculum adoption may be jeopardized.

Distance learning can be used at all educational levels. However, most attention is being focused on adult, continuing education and on graduate and professional continuing education.\textsuperscript{4} (These student categories can be overlapping; graduate education in this study will include professional continuing education.) In the past, graduate education saw its relationship to the economy primarily in training for professions and the work force. This focus will continue to be important in the future, but it will not be sufficient. New, expanded relationships will be required. Malcolm Moos, in his long range planning study for the University of Maryland to devise "Strategies for Excellence," urges universities and colleges to respond creatively to the emerging society. He recommends that "the university should expand its


\textsuperscript{4}Ibid., p.25.
graduate programs, while at the same time reshaping graduate education for the new conditions.\textsuperscript{5} For example, most graduate programs should construct quality, part-time programs alongside their traditional full-time study. Moos cites President Bowen of Princeton University as writing, "It seems to me essential that, individually and collectively, we begin to develop new attitudes toward graduate education."\textsuperscript{6}

In New Attitudes Toward Graduate Study in the United States

Now, because of the impact of a rapidly changing, world economic and technological environment, workers are requiring retraining or continued training. Structures should be established to permit smoother consultation and exchange as universities increasingly become the driving force for improved quality of life and economic development; a closer partnership between government, business, and the public university is essential.\textsuperscript{7}

This attitude will increase the need for graduate education. Many practicing professionals, who already have attained their degrees, will take graduate courses on a non-credit basis to maintain their professional


\textsuperscript{6}Ibid., p. 242.

\textsuperscript{7}Ibid., p. 13.
competency. This is especially characteristic of the engineering and high technology fields. Numerous studies have documented the educational needs of the 126 million post-college age Americans over 25 years of age, many of whom will require additional skills to confront their constantly changing political, economic, social and technological environment.\(^8\) Considering that approximately 90% of those employed today will continue as a part of the United States work force through the year 2000, the real need (identified by analysis of census data) is for the maintenance and upgrading of the skills of existing workers in their present jobs.\(^9\) Most of the existing workers will not be able to attend universities as full-time, traditional, graduate students. Family responsibilities as well as money and time constraints add to the complexities of their retraining or continuing education. Distance learning will better suit their needs. These needs are defined by presenter, J. Goldstein, as "instruction offered at a convenient location, in forms they are willing and able to digest, at times appropriate to their schedules, and at a cost they


\(^9\)Ibid., p.2.
In the Role of Business and Industry

Business and industry have been quicker than the higher education community to realize the need to educate and maintain the skill levels of workers. Currently, using expenditure as a measure of involvement, corporations are heavily involved in the process of post-secondary education, especially graduate education. The costs of corporate training programs, which are almost exclusively conceived and run "in-house" or by the business community, are estimated at over 30 billion dollars. (To observe this) is to recognize that between two-thirds and three-quarters of those persons partaking of postsecondary education are doing so under the auspices of an entity other than a college or university. This represents very real and very serious competition to the higher education community. Paradoxically, according to the American Society for Training and Development, the professional organization of the training community, American industry generally does not want to be in the business of educating its work force. The corporate world seeks support from colleges and universities to provide an educational

10Ibid., p.3.


process and system that will meet the needs of both industry and its employees.

In the Role of Colleges and Universities New, expanded relationships will be required. This educational process will require college and industry cooperation. Especially, it will require vision and action by educators. Vision is what Welling emphasized in his editorial, "Setting Communication Policy: Where Are the Colleges?" He says educators must find their vision and their voices to speak again with the kind of force that led forty years ago to a public policy that recognized the promise of their role in broadcasting. "What is needed is a new initiative on the part of university people both locally and nationally to insist upon educational applications of the new technologies."  

In Technology In anticipating new trends in instructional technology, Lewis says programs will continue to integrate interactive technologies (such as audio teleconferencing and personal computers) into delivery systems that previously relied on non-interactive technology. Audio teleconferencing has been extended into an interactive audio-video technology, especially appropriate for graduate education. (These programs are known as "distance learning.")) In addition, "The trend

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toward greater formal and informal cooperation among postsecondary organizations and between them and business and industry continues to characterize the postsecondary telecommunication field.  

Lewis says one of the ways the future is likely to be affected by these trends is collaborative arrangements among colleges and universities. These are likely to be based on shared academic concerns with much less regard for geographical proximity than is currently the case. Such arrangements might involve exchanges of courses via microwave links and satellite, cooperative development and distribution of course materials, and participation in state and national networks.

In Relevant Public Policy Educators (Moos and Welling) and educational telecommunications experts (Lewis and M. Goldstein) foresee a special need for development of coherent public policy to guide and foster the symbiosis of telecommunications and postsecondary education. Already, policy areas such as accreditation and technology are being developed. Accreditation was addressed by a two-year study named Project ALLTELL (Assessing Long Distance Learning Via TELEcommunications). It was initiated in 1982 to develop a set of common general standards and policies which would both encourage the

14 Lewis, p.67.
15 Lewis, p.68.
utilization of new technologies while maintaining adequate protection for the consumer. (It was initiated by The Council on Postsecondary Accreditation, COPA, and the State Higher Education Executive Officers Association, SHEEO.) The policy area of technology is being given attention through centers such as the Center for Learning and Telecommunication. (This is a program of the American Association for Higher Education and is supported by the Carnegie Corporation of New York.)

But an area that is in special need of research and analysis is in developing state policy for coordinating higher education and distance learning. Those who have expressed this need in Virginia include: Bruce Chaloux, former Coordinator of Institutional Approval and Academic Special Projects at State Council of Higher Education in Virginia (SCHEV); David Potter, former Coordinator of Academic Programs at SCHEV; Robert Grymes, Dean of Instructional and Student Services at Tidewater Community College; J.C. Phillips, Coordinator of Educational Technology in the Department of Information Technology (DIT); and Dorothy Boland, Education Applications Manager at DIT.

In Virginia's Graduate, Distance Learning System For insight and general conclusions regarding implications of state policy options, I researched and analyzed the Commonwealth of Virginia's graduate, distance learning
system.

In this context, the term "distance learning" is defined as an extension of the traditional classroom which utilizes some form of interactive video and audio technology. The professor's lectures are transmitted as they are taking place, and through the use of interactive technology, both students in the professor's own classroom and students in the receiving classrooms are able to respond with questions and criticisms. With this process, both the on-campus and off-campus students may receive credit toward a degree from the transmitting institution.

Virginia's system is new and unique; there is no other state system quite like this one. It began in 1983.\textsuperscript{16} It began with the recommendation of The Governor's Task Force on Science and Technology in Virginia (Volume 1 Report, July 1983). Members of the task force included leaders from education, business and industry, and state government. They were to seek solutions to merge economic development and education. They recommended a model program implemented in 1983, known as the Commonwealth of Virginia Cooperative Graduate Engineering Program. Governor Robb in a 1983 videotape expressed the challenge of the model program.

\textsuperscript{16}Interview with J.C. Phillips and D. Boland, DIT, 24 April 1985 and with D. Potter, SCHEV, 30 April 1985 in Richmond, Virginia.
Economic development and education are the two highest priorities that we are working on currently in state government today; it seems to me this program marries up these two in about as effective a way as they could possibly be brought together. This program gives the state the opportunity through the resources currently available at Blacksburg and Charlottesville the opportunity to use these faculty resources and engineering assets in an area that is critical here in the Commonwealth of Virginia--in Richmond and ultimately expansion into Tidewater and Northern Virginia. (It is an) opportunity to provide kinds of engineering required by high technology today.17

This study was especially significant in Virginia. It sought to identify and analyze appropriate state policies while the system was in its early, formative stage. Research of this project revealed the system's strengths and weaknesses to indicate realistic state policy options. It aided in projecting the best policy option for a state-coordinated system for future programs.

**Theoretical Rationale**

Developing a theoretical rationale is complicated by the nature of the two areas, telecommunications and Higher Education, and has made policy-making difficult. M. Goldstein says that "the public policies that guide and affect telecommunications and postsecondary education are

17Governor Robb in a videotape produced by DIT in Richmond, Virginia, 1983.
different in derivation and direction."\(^{18}\) He says telecommunications policy, historically federally regulated, is looking toward deregulation limited only by technical parameters of physical interference. In contrast, Higher education state policy, historically a local and state function, is moving toward increased regulation in order to guide the allocation of resources and availability of services. However, M. Goldstein contends that the confluence of telecommunications and Higher Education will result in a new set of policies that increasingly are based on a competitive, marketplace approach.\(^{19}\)

Taking Goldstein's contentions into account, this study will use Plude's theoretical model of telecommunications cooperatives.\(^{20}\) This theoretical model aggregates the low-volume, small-user market and is proposed as one way to study the value of telecommunications cooperatives.\(^{21}\)


\(^{19}\)Ibid.


\(^{21}\)The model is shown in Appendix A.
The Hypotheses

The research study hypothesis was as follows: there is consensus among influential people in Virginia as to the best coordinating policy for Virginia's Higher Education (graduate and nontraditional, continuing education) and distance learning. In addition, these sub-hypotheses were addressed.

1. There is consensus as to whether there is a real need for graduate and nontraditional continuing education in Virginia via distance learning.

2. There is consensus as to the best way to fund and coordinate a workable system.

3. There is consensus as to the need for developing a coherent state policy.

4. There is consensus as to which coordinating policy options are desirable and likely.

The study hypothesis and sub-hypotheses were linked to how Virginia's Higher Education can work with business and industry to facilitate academic and industrial cooperation in distance learning.

Definition of Terms

This study's definitions of critical terms are as follows.
1. POLICY: This is the determinative purpose, adopted by an organization such as a state council of higher education or the like, by which its subsequent actions are implemented and gauged. I agree with Brewer and deLeon in that policy tries to provide guidance for courses of action to persons in authority or with power to change circumstances.\(^{22}\) In addition, "policy decisions bind an organization to important courses of action."\(^{23}\)

2. PLANNING This is a detailed scheme, program or method worked out beforehand to accomplish a goal. In academia, strategic planning (as advocated by Cyert and Keller) is a modern management tool that deals with an array of factors such as changing external environment, competitive conditions and opportunities for growth.\(^{24}\) In strategic planning, an organization plans how to reach established goals (possibly within a five to ten year period) and the methods to be used in achieving these goals. (Planning is aided by the clear direction of a realistic policy.)

Simply stated, policy is "what" and planning is "how".

3. HIGHER EDUCATION This term refers strictly to


college and university education, whereas POSTSECONDARY EDUCATION refers to all types of education beyond high school whether provided by colleges, universities or other organizations in the community.

4. GRADUATE EDUCATION For this study graduate education included the category of professional continuing education. According to the Center for Learning and Telecommunications, there is some overlap between graduate and professional continuing education instruction. Many practicing professionals who have attained a graduate degree will take graduate courses on a non-credit basis to maintain their competency.25

5. NONTRADITIONAL CONTINUING EDUCATION In this study continuing education refers to higher education, administered by colleges and universities on an undergraduate level, generally on a part-time basis either on-campus or off-campus. The nontraditional method is "distance learning."

6. STATE-COORDINATED: The term in this study means the state provides the network and is thus the "provider of the pipeline." This includes doing cost analysis studies and requesting capital and operating money for sites that will be added or are now on the network. In Virginia the Department of Information Technology (DIT) coordinates this aspect. In addition, the state sets the initial

25 Lewis, p.25.
structure for making decisions on topics such as higher education program priorities and equity. The State Council of Higher Education in Virginia (SCHEV) handles this area.

7. TELECOMMUNICATIONS (TECHNOLOGY) This refers to communication over distance using various electronic means, either singly or in combination, such as television, radio, telephone and computers.

8. DISTANCE LEARNING This is an extension of the traditional classroom which utilizes some form of interactive video and audio technology. It is also referred to in some literature as the "Extended Classroom" or the "Electronic Classroom." (Refer to Appendix D.) Since distance Learning is interactive, students can speak with their professor and in some cases be seen by their professors and by students at distant sites.

LIMITATIONS OF THE STUDY

Limits of this study are summarized as follows: limiting the population of the study to the graduate and nontraditional continuing education categories; limited precedents of a unique technological system, the Virginian model program of graduate distance learning; and the limits involved in higher education policy analysis.

The last limitation is most complex due to the nature
of higher education policy. Although politics and higher education are interrelated, the process of exercising influence to affect political and policy decisions is informal, fluid, and issue-specific. In this sense, the political process is indeterminate and unstable. However, Hines and Hartmark say it is an emerging field of inquiry; it reflects the rich, multifaceted character of Higher Education and its varied connections with the political process. "While this diversity of focus and theoretical pluralism may be confusing, it also represents strength as it leaves the field open to identification of new ideas, concepts, and approaches."26

ETHICAL CONSIDERATIONS

In his book, Contemporary Public Analysis, Nagel suggests principles of ethics in policy analysis. In this context, "ethics" refers to a set of normative standards for resolving dilemmas that policy analysts often face with regard to performing their roles in the interest of societal desirability. Nagel mentions ethical dilemmas that relate to appropriate purposes, goals and effects. These include: the optimizing dilemma, the partisan dilemma, the unforeseen consequences dilemma, and the

The optimizing dilemma says policy evaluators, analysts, and researchers often present articles, reports, and findings that deal with the relationships between policies and goals. Mere statements of these relationships without comparison of the policy options in terms of the goals may cause policy makers, the general public or other researchers to reach false conclusions regarding the policies that should be adopted. Nagel's point is that policy evaluators may be misleading people by not discussing the policy implications of their findings. "This dilemma involves deciding whether we should be concerned solely with predication and causation or also with policy optimization. By 'policy optimization' I mean determining which policy will maximize given goals under various constraints and conditions. This contrasts with policy prediction, which merely projects the effects of alternative public policies."28

The next is termed the partisan dilemma. The policy evaluator sometimes may be called upon to aid in prescribing a policy that will maximize the interests of


28Ibid., p.128.
special interest groups. Under such circumstances, what should the ethical policy analyst do in light of what is good for society?29

The unforeseen consequences dilemma, according to Nagel, is the failure to identify some significant consequences in advance. He says that the fact that a consequence went unforeseen does not mean that it was unforeseeable. Nagel says that the ability to project the effects of alternative public policies can substantially improve when analysts have good predictive models of the behavior of the people in whom they are interested.30

The equity dilemma is the frequent conflict in policy evaluation between policy goals of efficiency and equity. Nagel says "efficiency" means choosing policies that will maximize benefits minus costs, but sometimes the term is used with reference to choosing policies that will provide the highest benefit/cost ratio. Nagel concludes.

We might possibly conclude that policy evaluators operating at a high level of professional responsibility should seek to develop optimum policies and do optimum research. Optimum policies are those that maximize societal benefits minus societal costs. Optimum research is that which maximizes beneficial knowledge minus the costs of obtaining it. These goals are high and often impossible to achieve. By pursuing them however, policy evaluation is likely to accomplish more than it would if it aimed for

29Ibid.
30Ibid., p.132.
These dilemmas and goals were kept in mind during this policy study.
CHAPTER II: REVIEW OF LITERATURE

To fully understand this research, a great amount of early reference to varied literature was necessary. First, the researcher sought an appropriate theoretical framework for the study. Then it was necessary to peruse literature of state higher educational policy as well as telecommunications policy. The researcher also delved into the non-traditional area called "distance learning." This included early significant, distance learning studies, especially the Virginia model program.

This review will include four sections:
1. Theoretical rationale and its relationship to the problem
2. Relevant literature in policy analysis
3. Relevant literature in distance learning for graduate and continuing education
4. Relevant literature concerning Virginia and distance learning
5. Summary

Theoretical Rationale

Development of Theory

Literature on the politics of higher education reflects a broad use of theoretical frameworks and perspectives that come from several disciplines. Hines and Hartmark say that much of this material is derived from disciplines such as political
science, sociology, public administration, and organizational and interorganizational theory. Interorganizational theory recently has begun to focus on the "space" between organizations and the specific relationships between organizations.¹ The authors contend that this diversity is a healthy state, that a consensus of theory is virtually impossible in the early development of a field.

Further, they cite "systems theory and related concepts of the policy-making process as significantly affecting research design in the politics of higher education."² They say systems theory has been extremely useful not only as a conceptual framework but as a device for suggesting appropriate research questions, organizing data, and providing focus for analysis.

Systems theory facilitates an examination of the antecedents and consequences of policy and policy decisions; specifically, it deals with context, input, throughput, output, outcome, and feedback.³

This study used a model that was developed by using interorganizational and systems theory. The model was


²Ibid., p.54.

³Ibid.
Plude's theoretical model of Telecommunications Cooperatives.⁴

**Plude's Theoretical Model of Telecommunications Cooperatives**

Plude's model was built upon the early work of Schon and Agris who proposed cooperative interaction as an organizational strategy. These authors developed a model, Model O-II Learning Systems, which if used correctly, leads to double-loop learning.

The end result should be increases in the effectiveness of decision making and policy making, in the monitoring of decisions and policies, and in the probability that errors and failures will be communicated openly and that actors (participants) will learn from the feedback.⁵

Plude developed her model for public service telecommunications in America to aggregate the low volume, small-user market, and she applied this model to the Public Service Satellite Consortium.⁶ (PSSC links together many educational, medical, library, state telecommunications and trade groups to work cooperatively

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⁶Plude, p. 28.
for satellite services.) Plude's theoretical model is presented in Appendix A.

It is an attempt to visualize and analyze some components of a map of cooperation which:
(a) grows out of shared needs and pressures;
(b) generates institutional and human links;
(c) specifies workable cooperative techniques; and
(d) produces new options which can develop from the needs, links and techniques.7

Plude says that her model, like any systematic plan, examines existing needs and pressures. In telecommunications these pressures include financial constraints, a changing marketplace, and the factor of the broadcast spectrum with its inherent limitations. In education and in business and industry these same pressures occur. Then, cooperative links are generated as institutions and industries attempt to ease pressures and meet their needs effectively. The outgrowth of cooperative action in Plude's model is identified as "new options", for possibilities tend to develop when cooperative programs are organized and implemented. New possibilities cited are increased organizational flexibility and greater user awareness and utilization. But most important in Plude's model is that new options are continually evaluated and renewed.

It bears repetition that once cooperative telecommunications needs, links, and techniques have led to creative new possibilities or options, the evaluative process must continue to operate so changes can be made in any part of

7Plude, pp. 30 and 31.
the model to permit renewed options and possibilities.8

This study used Plude's theoretical model and hypothesized that cooperative interaction among education, business and industry, and state government leaders would help to clarify the distance learning issues. This relates to the study's research to identify and analyze possible coordinating state policies that would best facilitate distance learning in Virginia.

Relevant Literature in Policy Analysis

Another area of literature reviewed was that of policy analysis, especially the newest ideas in policy analysis in telecommunications, in higher education, and in higher education and state government. Recent authors revealed the present thinking in these fields.

Brewer and deLeon answered the question of what is policy analysis. The authors have been involved in training "policy analysts" at the Rand Graduate Institute. (RGI is an accredited Ph.D.-granting, educational institute within the Rand Corporation.) The authors say that policy includes society's most important decisions, actions backed by widespread approval and/or threat of sanctions. Policy tries to provide suggestions and

8Plude, p. 33.
guidance for courses of action to persons in authority or with power to change circumstances. They stress that policy science is not a modification of a standard discipline; but it is fundamentally new in outlook, orientation methods, procedures and attitudes. This question was also addressed by Nagel.

Nagel says public policy analysis can be defined as evaluation of alternative governmental policies or decisions in light of given goals, constraints, and conditions. He reveals that it is relatively new as a course of study in university curricula. The 1970's saw the beginning of relevant textbooks, associations, and other networking elements; they are still undergoing considerable developments. Nagel writes that policy analysis displays four key elements, all of which have been undergoing change during the past ten years. These elements are (1) the goals which policy analysis addresses, (2) the means for achieving those goals, (3) the methods for determining the effects on goal achievement of alternative means, and (4) the nature of the policy professions applying those methods to relate

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means to goals.\textsuperscript{11} Currently there is a trend toward taking these goals as givens and attempting to determine what policies will maximize them, in contrast to taking policies as givens and attempting to determine their effects.\textsuperscript{12}

In addition, Nagel says the means are being examined for political and administrative feasibility, and analysts are drawing upon a variety of disciplines to suggest alternative policies.\textsuperscript{13} Methods have been building on business analysis while increasingly recognizing differences between the public and private sectors. And the validity of methods and simplicity of application and communication are being stressed.\textsuperscript{14}

Goodin, like Nagel, says the greatest danger in policy analysis is suboptimization. Another danger the author cites is that of planning too tightly; he claims it is wise to specify broad goals and leave the choice of means to those more directly concerned, this being preferable on practical and moral grounds.\textsuperscript{15}

\begin{itemize}
\item \textsuperscript{11} Ibid. p. 13.
\item \textsuperscript{12} Ibid. p. 14.
\item \textsuperscript{13} Ibid. p. 13.
\end{itemize}
Hogwood and Gunn write of policy analysis for the real world. The authors make the case that analysis is not simply something which would be nice to have in an ideal world but a way of thinking that is useful in the real world. They suggest a "real-world policy process" where analysts try to identify models (or sets) of related assumptions which influence different policy actors.16

Paris and Reynolds discuss the logic of policy inquiry. They define an analyst's role as that of a specialized citizen or expert who can "spend time on analysis and make the fruits of his labor available to fellow citizens."17 They stress that crucial questions of constitutional design must be answered by citizens within the polity and not by theorists observing it from some ideal vantage point.18

Policy Analysis in Telecommunications

Communications policy uses the newer trend of maximizing goals. In telecommunications, vested interests are not easily altered. Manheim reveals that communication is complex because it follows more than it directs technological development. Policy makers in this area tend to respond


18Ibid. p. 262.
to changed circumstances more than they guide change. Although this is expected in technology, it means that much communication policy is made only after interests have become vested, with the result that otherwise attractive options may be foreclosed."^19

Policy Analysis in Higher Education

Educational policy making, according to Combs, is laden with cultural, historical and legal precedents; finance and political arrangements; and its own jargon. Combs describes the nature of educational policy and its differences from other types of policy study.

Educational policy making is an extraordinarily complex subject with thousands of participants working in a staggering array of structural settings.

The educational process is marked by multiple objectives and ambiguity about goals in most settings. It has primitive knowledge of how to reach clearly stated goals; different evaluative outcomes has kept the study of education policy more descriptive, more historical and more normative than policy in areas such as health care and agriculture.

The educational system is relatively exposed... everyone is an "expert" about school policy.

Education, perhaps more than any other policy field, is marked by a dispersion of authority. Policy is not only formulated and implemented at multiple levels, but there is an intricate distribution of authority within levels. For example, policy system is different in higher

education than in elementary and secondary education.\textsuperscript{20}

Relevant to this study was Coombs' assertion that educational policy analysis means different things in different contexts. For example, in a state education agency or on the staff of a legislative committee, policy probably means analysis of a specific policy alternative that has been proposed identifying other viable alternatives and attempting to foresee the consequences of those alternatives.\textsuperscript{21}

**Policy Analysis in Higher Education and State Government**

Literature in this specialized area was difficult to find. Robert Berndal, Director of Maryland Institute for Research in Higher and Adult Education suggested Millet's book relating to state government's coordination in higher education.

Millet says that state government's interest in higher education is different from the campus and governing board's interest in higher education. He observed that state governments are beginning to perceive that some adjustments might well become necessary in the 1980's and 1990's to fit the missions of public institutions to the available resources, and he forecasts


\textsuperscript{21}Ibid. p. 594.
closer relationships of higher education and state 
government.22

Significant to this study is Millet's idea that the 
future of the American economy and the role of higher 
education in relation to economic expectations will 
continue to be the most important issue for states and 
higher education.23 He stresses that a major economic 
role of higher education is to prepare individuals for 
professional and other services in the economy.24 The 
author contends that if higher education can demonstrate a 
contribution to general economic growth, then it will be 
regarded politically and socially as deserving state 
government support.25

Relevant Literature in Distance Learning for Graduate and 
Continuing Education

In the book, The Expanding Role of Telecommunications 
in Higher Education, editors Tate and Kressel say that 
institutions should continue to base their decisions in 
telecommunications on the educational and societal

22John D. Millet, Conflict in Higher Education: State 
Government Coordination Versus Institutional Independence 

23Ibid., p. 236.

24Ibid., p. 237.

25Ibid., p. 238.
problems that they wish to solve and on the learner needs that they wish to meet. In the same sourcebook, an article by M. Goldstein says that the overriding public policy considerations for education during the remainder of the twentieth century are likely to revolve around workforce development, productivity, and retraining for the information society. He predicts

The confluence of telecommunications and postsecondary education will result in a new set of policies that increasingly are based on an evolving marketplace approach, which will be punctuated by the evolution of interstate agreements for the approval of delivery systems operating on regional and national (and perhaps international) bases. The outlines of such agreements are already becoming apparent as institutional, state and accrediting agency leaders seek to develop a framework for these programs while they are still in their infancy.

Acceptance of Telecommunications in Higher Education Instruction

It has taken four decades for telecommunication-based instruction to achieve widespread acceptance and adoption by the higher education


profession. However, Welling says too little is being done by colleges and universities to excite the imaginations of legislators, regulators, or government administrators about the potential of new technologies to support the goals of public education. He says a new initiative is needed on the part of university people to insist upon educational applications of the new technologies so that education won't end up as simply one of the paying customers of a nationwide electronic-communications system. This warning is echoed by other visionaries such as Allan Hershfield, director of the National University Consortium for Telecommunications in Teaching. He says if institutions of higher education do not move quickly to take advantage of this technology, private industry and new types of non-profit educational organizations will do so.

Also, university faculty and administrators tend to lack knowledge and vision to lead in this area. A study by Boland revealed reasons of rejection by faculty and

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administrators. Besides philosophical reasons such as misunderstanding, misinformation and the faculty feeling that the "only effective method of instruction is the conventional, on-campus, face-to-face classroom experience", there were strong economic reasons. One example was that faculty receive no consideration for developing distance learning courses so there is no incentive for doing them.31

Another reason telecommunications instruction has been taking so long to achieve acceptance and adoption is that the glamour of new technologies often prevents people from thinking clearly about them. Tate and Kressel note

> It is not the novelty of the new technologies that should prompt educational organizations to use them. Instead, institutions should consider organizational and academic concerns, such as the learner groups that they are trying to reach or the new administrative systems that they need, and then determine whether technology can help solve the problem.32

Effectiveness of Student Learning

There have been at least eleven studies that have compared college student learning via television with the same courses taught by live lectures. From 1957 to 1975 results of studies show no significant difference in overall test scores comparing college student performance in courses taught both live

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31Virginia Department of Telecommunications, "Telecourse Attitude Study" by Dorothy Boland, 22 February 1982, pp. 1-4.

32Tate and Kressel, p. 94.
and via television. These studies include Lofthouse in Education, 1957; Buckler in English, 1958; Davis et al. in Sociology, 1958; Dyer-Bennet et al. in Mathematics, 1958; Bailey in Physics, 1959; and Thorman and Amb in Psychology, 1974 and 1975.33

Despite the overall consistency of the results, there were methodological shortcomings. For this reason, a controlled experiment was done by Ellis and Mathis in 1983.

Students in two sections of sociology were exposed either to conventional classroom lectures or to the same lectures broadcast live in an adjacent room on a television monitor. Except for the first round of six lectures, when technical problems appeared to have lowered test performance by the experimental groups, learning under the two lecturing modes was statistically equivalent. Self-reported class attendance, also, seemed to have been unaffected by lecturing modes.34

This study confirms the general pattern of former research.

In Levinson's article she mentions, "research conducted among adult distance learners indicate that


34Ibid., p. 165.
students learning by distance do so as effectively as and for lower cost than classroom students."³⁵

Costs of Distance Learning Lewis in his survey of seventy postsecondary programs found that they were funded through a variety of mechanisms. Many are self-supporting based on tuition by students and by business and industry. Others are underwritten by institutions or state funds. Funding agencies have awarded grants, and consortia have been formed to share the costs and benefits of using telecommunications to reach learners.³⁶

Costs of instruction to the student, according to Tate and Kressel, relate to issues of equity and access. For example, the costs of telecourses broadcast into the learner's home are usually borne by the student. Costs may include cable or satellite hook-up, a video cassette machine, and telephone. In addition, full tuition is paid by the student, although the telecourse may cost the institution less than a classroom course.

If telecommunications are truly to increase access to education for disadvantaged learners, these financial obstacles must be overcome. If solutions are not found, telecommunications delivery systems will continue to offer primarily middle-class learners a much wider variety of educational options and thereby widen the gap between what many have called the


³⁶Lewis, p. 60.
information-rich and the information-poor.\textsuperscript{37}

The costs of distance learning (interactive) may be less for the student. Course sessions usually occur in a convenient community facility such as a local college or worksite. Here the student does not pay for the technical aspects of receiving and sending.

In both telecourse (one-way) and in distance learning (interactive), costs for an institution are frequently prohibitive unless the institution collaborates with other colleges or industry. Lewis says that the consortia he surveyed are specialized organizations created to share the costs and benefits of using telecommunications to reach learners. He says that "the incentives for cooperation can be very compelling, and in some cases collaboration begun only for the purpose of sharing telecommunications resources has led to the identification of other mutual interests among consortial members."\textsuperscript{38} For example, he cited the functions of providing reciprocal registration arrangements among consortium members and conducting faculty and staff development activities.

\textbf{Graduate and Continuing Education Students That Benefit From Distance Learning} Lewis, Research Director for the Center for Learning and Telecommunications, gives

\textsuperscript{37}Tate and Kressel, pp. 95-96.

\textsuperscript{38}Lewis, p. 22.
characteristics of the learners participating in the seventy programs he surveyed. He says the term "working adult" characterizes the majority of learners. "In general the characteristics of these working adults are consistent with those described by Patricia Cross and other researchers who have studied patterns of adult participation in education. The level of prior educational attainment is clearly the most critical variable."\footnote{Lewis, p. 25.} The more education a person has, the better use they make of distance learning opportunities. To be more specific, Lewis says that in the professional continuing education programs where prior education is a prerequisite, students are older and more likely to be male.

Programs offering graduate and professional continuing education serve a population that ranges from recent college graduates in their early twenties to midcareer professionals in their thirties, forties and fifties.\footnote{Lewis, p.26.}

Also, Lewis mentions that distance learning courses are especially attractive to those learners who find the college campus inaccessible or inconvenient. They appreciate being able to learn at remote learning centers in their community.
Evolution of Distance Learning: Significant Studies

Distance learning has evolved from early programs of primarily graduate education, especially in engineering.

The Stanford University Instructional Television Network was founded in 1968. By 1981 the Network provided interactive, live broadcasts of Stanford University graduate courses (150 courses by the 12 different departments of the School of Engineering) to employees of 118 businesses and industries. "It replicates the in-class experience for engineering professionals with a wide variety of learning needs."\textsuperscript{41}

The Network, besides the live interactive courses over four-channel ITFS (Instructional Television Fixed Service) system 12 hours a day, offers videotapes to engineers all over the country. They have observed that even these videotaped lectures are effective. "Engineers taking videotaped courses in small groups (3 to 12 persons) under the guidance of a peer tutor can perform as well as students in the campus classroom."\textsuperscript{42}

Association for Media-Based Continuing Education for Engineers, Inc. (AMCEE) is a consortium. It was started at the University of South Carolina in 1969, and presently it is being used by over 30 major engineering colleges in

\textsuperscript{41}Lewis, p. 188.

\textsuperscript{42}Lewis, p. 189.
this country. Most serve their nearby regions with graduate credit and continuing education courses. "Most of the students in these systems are fully employed engineers who participate either at their job sites or at selected locations..."\(^4^3\)

As an outgrowth of the AMCEE consortium, The National Technological University has been formed. The University will serve the needs for graduate education of the engineering community on a nationwide basis. This system will utilize satellite network delivery of graduate courses from member institutions of AMCEE.\(^4^4\)

In Kryczka's article, "Delivering Master's Programs to Business and Industry Via Live Interactive Television," she notes Americans will be changing their careers one or more times over a lifetime as new technology eliminates jobs and new jobs are created. Those whose jobs do not disappear may have obsolete knowledge as technology advances beyond the scope of their training. She cites Lindsay, Morrison and Kelley who stated that the "half-


\(^{4^4}\)Ibid.
life" of an engineering degree in 1974 was estimated to be five years.45

The Association for Higher Education of North Texas (AHE) was incorporated in 1980 through a merger of the Association for Graduate Education and Research in North Texas (TAGER) and the Interuniversity Council. The Association is a nonprofit organization controlled by a board of trustees. Two-thirds of the board members are from the lay community (drawn from the corporate vice-president level) and one-third are from its 17 participating educational institutions. Not all AHE institutions participate in the TAGER Television Network.46

The TAGER Television network serves as the equivalent of a telecommunications utility for a metropolitan area encompassing two large cities, Dallas and Fort Worth.

It offers graduate and undergraduate, credit and noncredit television courses to corporate employees ("outreach") students at their worksites and to students at their own campuses who receive televised courses from other campuses ("inter-institutional students"). Ninety percent of the TAGER courses are credit-bearing, and 85% are graduate-level engineering,


46Lewis, p. 88.
business, and computer science courses...; 90% of the courses are live and interactive.\textsuperscript{47}

In the Lewis survey, the administrators of TAGER Television Network note a relevant observation. They report that "both learners and faculty respond much more favorably to interactive than to one-way delivery technologies."\textsuperscript{48}

Relevant Literature Concerning Virginia and Distance Learning

This section will include literature relating to Virginia's technical aspects of distance learning, studies relating to the developing program, and documents concerning Virginia's distance learning model—Cooperative Graduate Engineering Program.

The Virginia Educational Technology Network

The Commonwealth of Virginia is using various telecommunication systems to provide specialized higher education instruction. The past four years the Virginia public television stations, which are owned and operated by private nonprofit corporations, have developed a two-wave microwave network to provide statewide educational and cultural programming. (Refer to Appendix B for map.) This network has the potential to electronically tie together all the major higher education institutions in

\textsuperscript{47}Ibid.

\textsuperscript{48}Lewis, p. 89.
Industries and businesses that provide downlinks are able to receive programs from institutional providers such as the University of Virginia and Virginia Polytechnic Institution and State University.

Presently, the technical aspects of distance learning are being coordinated by the Educational Technology Division of the Department of Information Technology (organized in January 1985). In December 1985 a proposal to utilize newer technology and increase the state's technological capabilities resulted in a document, *A Telecommunications Strategic Plan for the Commonwealth of Virginia*, commonly known as the VINE strategic plan. Implementation is contingent upon availability of funds and approvals of the Governor and General Assembly.50

In addition to the proposed VINE system, state universities are utilizing satellite technology for distance learning. (See Appendix B for maps.) George Mason University has facilities in place. University of Virginia has a new satellite dish which transmits class programming directly to a Hughes Corporation Galaxy II 49


50"Telecommunications Strategic Plan for the Commonwealth of Virginia," Proposal by Department of Information Technology, December 1985, p. i.
satellite, and through that satellite to any location equipped with a downlink dish.

Last semester our eight course offerings in graduate engineering were received at 25 locations in Virginia, Maryland and Pennsylvania. Now we are examining the possibility of targeting particular courses to interested firms and government agencies in California, and the satellite uplink gives us access to audiences throughout the Western Hemisphere," Cahen added.51

Development of Virginia's Distance Learning System

In 1982 a study was conducted under contract from the Department of Telecommunications who commissioned the study on behalf of the Virginia Public Telecommunications Board. The report titled Telecommunications and Learning: A Strategy for the Commonwealth of Virginia Based on Current Practice and Future Possibility suggested a formation of a holding company: "this might be called the Virginia Telecommunication Service Corporation."52 The Corporation would consist of five regional technical offices utilizing the regional public television stations and six centralized function offices. The authors recommended that leadership be provided by the Department of Education working in conjunction with the state


apparatus, a coordinating committee of representatives from the Regional Schools Contract Planning Committees, and the Department of Telecommunications. The report recommended that the Department of Education "coordinate the statewide instructional needs, acquire appropriate statewide statistical data, and coordinate the acquisition of purchases." The plan was never implemented.

This study did not seem to address the needs of graduate and continuing education and the needs of business and industry. However, another report did address these needs. The Report of the Governor's Task Force on Science and Technology in Virginia, Volume I, was published in July 1983.

The study group, "Education, Training and Research" proposed two recommendations relevant to graduate and continuing education and distance learning. In the section titled "Vocational Training and the Community College", recommendation 10 says to expand the use of non-commercial television for training as well as other business purposes.

In the section titled "Colleges and Universities" a high priority recommendation was made to


establish and enhance graduate programs in high technology disciplines which encourage part-time continuing education and participation by industry employees. These programs should address the need for such students to continue their full-time work, minimizing residency requirements for graduate degrees, and providing, where possible, course delivery systems which bring the programs to the student. The committee strongly endorses the Richmond Graduate Engineering Instructional Television project as a model for potential expansion into other geographical areas and subjects. The goal must be to establish graduate education delivery systems responsive to industry's needs throughout the state.55

Virginia's Cooperative Graduate Engineering Program

Dialogue for this program started in the summer of 1982. A letter was written from Gordon Davies, Director of SCHEV, to J.E. Gibson, Professor and Dean of the School of Engineering at the University of Virginia. Davies had answered Gibson's letter regarding the feasibility of an educational network. This network would link Virginia Polytechnic Institute and the University of Virginia with the state's three metropolitan centers. Davies wrote

(it is) certainly one (idea) that merits further discussion ... while it makes good educational sense to talk about networking engineering, computer science and certain other higher technical disciplines, I think it would be wise to focus on engineering and related disciplines in any discussion that might be forthcoming. I don't believe that anything that went beyond that would get off the ground right now. ... We

55Ibid.
would need to take account of Old Dominion University's place in such a scheme.56

Also, Davies wrote that he would call a September 1982 meeting of engineering deans, academic vice-presidents, and Richmond industrial representatives to talk informally about the idea.

The Cooperative Graduate Engineering Program was created during the 1983 Session of the General Assembly of Virginia in order to fill a void in graduate engineering in the Richmond area. Funds were appropriated for an initial one year phase of the project. During the first year of the Program, the 1983-1984 academic year, four engineering curricula (degree-programs) were offered by interactive technology, six courses by VPI & SU and four courses by UVA. "A total of 317 students completed these courses; 157 students at VCU (Virginia Commonwealth University)."57

Since September 1983, students in Richmond have been able to attend graduate engineering classes taught live from the campuses of Virginia Tech and the University of Virginia. The Richmond students view the classes on television and participate via a two-way telephone connection. The faculties of the two engineering schools prefer these courses to be taught "live" so that

56Gordon Davies to J.E. Gibson, 19 September 1982, filed at SCHEV, Richmond.

a distant student receives resident credit and ultimately a master's degree without a reference to a "TV degree program." 58

The First Year Evaluation Report, November 30, 1984, revealed findings that are consistent with those of similar programs across the country. Students, both on-campus and off-campus, were asked to complete evaluation surveys assessing their satisfaction with the course and program; faculty members teaching these courses completed similar surveys. In addition, the evaluation committee compiled a profile of academic performance as measured by final course grades. An analysis of the data supported three major conclusions.

(1) Although occasional technical problems were experienced, the communication system successfully delivered graduate engineering courses during the year.

(2) Off-campus students in televised classes performed at levels comparable to their on-campus counterparts in six of the ten courses, and less well on the average in four of the ten. More than 80% of the off-campus students performed satisfactorily, receiving grades of at least "B" throughout the academic year.

(3) Off-campus students on the whole were well satisfied with the televised instruction, rating positively both the technical and instructional quality of their courses. 59

58 Ober and Phillips, p. 263.
Since then, besides the Richmond area, receiving locations in Northern Virginia and Hampton Roads were added. Presently, receiving sites in the Richmond area include Virginia Commonwealth University, Reynolds Company, Phillip Morris Company, and American Telegraph and Telephone Company. In the Northern Virginia area sites include George Mason University (two campuses), Sperry Corporation-Systems Division, IBM-Manassas and Telestar Classroom (UVA and VPI Continuing Education site). The Hampton Roads area receiving sites are Old Dominion University at WHRO-TV Public Station, NASA at Langley, and the Newport News Shipbuilding Company. In Roanoke area there is ITT-Roanoke. Perhaps the most unique receiver of the Cooperative Graduate Engineering Program is a community cooperative, added to the network in April 1986. At the request of local industry a non-profit corporation, The Institute of Manufacturing Technology, Inc. (sponsored by the Greater Lynchburg Chamber of Commerce), established an educational organization. This organization, The Center for Advanced Engineering, is now using a satellite system. It is equipped to receive two video signals and to conduct two different classes simultaneously. Classrooms were soundproofed to avoid feedback and sound distortion on the two-way voice communication systems. Special lighting was installed to enhance the video image of engineering drawings and charts at each cluster viewing station. A
computer installation provides internal student support and external linkage to computers at the transmitting universities.\textsuperscript{60}

Students may apply to the graduate school at either UVA or VPI\&SU. Courses from both universities and possibly others can be included in a student's program. Individual schedules will be worked out between the student and the student's advisor. Master's degrees offered in the Cooperative Engineering Degree Program are: UVA (Chemical Engineering, Civil Engineering, Electrical Engineering, Material Science, Mechanical Engineering and Systems Engineering) and VPI\&SU (Aerospace and Ocean Engineering, Civil Engineering, Electrical Engineering, Industrial Engineering and Operations Research, Mechanical Engineering, and Systems Engineering).\textsuperscript{61}

Since 1983, University of Virginia and Virginia Tech jointly have provided engineering courses to distant Virginia sites and limited out-of-state locations. Blanchard, Assistant Dean of Engineering Extension at Virginia Tech, in a summer 1986 publication mentioned plans for both Virginia Tech and the University of Virginia to offer a greater number and variety of courses via satellite transmission "(i.e., 24 courses and 16


\textsuperscript{61}\textit{Ibid.}
courses respectively for 1986-1987, and 27 courses and 18 courses respectively for 1987-1988)."\textsuperscript{62}

Future plans for distance learning are being formed. Those mentioned in a recent news article are "for Clinch Valley College to receive a marketing course next semester, for courses to be beamed to school teachers who want to remain up to date in their subject areas, and for U-Va and Virginia Tech to exchange engineering courses."\textsuperscript{63}

Summary: Discussion of Previous Research

The significant literature in this review affirms the diverse areas needed to accomplish this study. Areas included literature on theory, policy analysis, distance learning and evolution of Virginia's distance learning.

After searching for an appropriate theory, the researcher decided on Plude's Telecommunications Cooperatives model. This model, proposing cooperative interaction as an organizing strategy, provides a practical framework for policy research. It is a fluid model where new options are continually evaluated and renewed.


\textsuperscript{63}"New Dish Lets U-Va Expand Via TV," Washington Post, 8 January 1987.
In another area, policy analysis literature was reviewed to focus on the newer thinking in the 1980s. Four key elements have been undergoing changes: (1) the goals which policy analysis addresses, (2) the means for achieving those goals, (3) the methods for determining the effects on goal achievement of alternative means, and (4) the nature of the policy professions applying those methods to relate means to goals. Currently there is a trend toward taking these goals as givens and attempting to determine what policies will maximize them, in contrast to taking policies as givens and attempting to determine their effects. This was taken into consideration in this study. The literature also wrote of problems in achieving this trend. A problem is that communication policy often is made only after interests have become vested, with the result that otherwise attractive options may be foreclosed. A problem in educational policy analysis is due to the nature of education; it is complex, has multiple objectives, is relatively exposed, and is marked by a dispersal of authority.

In addition, significant to this study is Millet's idea that the future of the American economy and the role of higher education in relation to economic expectations will

64 Nagel, p. 14.
continue to be the most important issue for states and higher education. He contends that if higher education can demonstrate a contribution to economic growth, then it will be regarded politically and socially as deserving state government support.67

Literature concerning distance learning depicts its growth, problems, and increasing role in higher education. M. Goldstein predicts that "the confluence of telecommunications and postsecondary education will result in a new set of policies that increasingly are based on an evolving marketplace approach, which will be punctuated by the evolution of interstate agreements for the approval of delivery systems operating on regional and national (and perhaps international) bases."68 This idea was helpful in understanding the urgency for academic and industrial coordination. Growth in distance learning has been slowed due to lack of vision and acceptance by the higher education profession. Warnings have been given by Welling and Hershfield that if institutions of higher education do not move quickly to take advantage of this technology, private industry and new types of non-profit educational institutions will do so.

Despite institutions' lack of vision, more than eleven studies from 1957 to 1983 show the effectiveness of student

67Millet, p. 238.

68M. Goldstein, p. 81.
learning; results show no significant difference in overall test scores comparing college student performance in courses taught both live and via television.\(^{69}\)

Other findings have significant importance in realizing state coordinating options. Research conducted among adult distance learners indicate that student learning is not only as effective but usually it is done by larger institutions for lower cost than on-campus students. In smaller institutions, in both telecourse (one-way) and in distance learning (interactive) costs are frequently prohibitive unless the institution collaborates with other colleges or industry. Lewis says that the consortia he surveyed are specialized organizations created to share the costs and benefits of using telecommunications to reach learners.\(^{70}\)

For the learners, in most cases, the tuition is the same as on-campus instruction. Additional costs can be assumed by the students if the courses are brought into their home.

Also of importance to this study is literature on the type of student and the type of programs that adapt especially well to distance learning. Lewis says the term "working adult" characterize the majority of learners, and courses are especially attractive to those learners who find the campus inaccessible or inconvenient. Also, the more education a person has, the better use they make of distance

\(^{69}\)Ellis and Mathis, pp. 165-166.

\(^{70}\)Lewis, p. 60.
learning opportunities. He says students are older (range from college graduates in their twenties to those in their fifties), and more likely to be male.\textsuperscript{71} Successful programs in distance learning include The Stanford University Instructional Television Network founded in 1968. By 1981 the Network provided interactive, live broadcasts of courses (150 courses by the 12 departments of the School of Engineering) to employees of 118 businesses and industries.\textsuperscript{72} Other programs discussed in the literature review are a consortium, Association for Media-Based Continuing Education for Engineers, Inc. started at the University of South Carolina in 1969 and The Association for Higher Education of North Texas (Tager). TAGER offers undergraduate and graduate, credit and noncredit courses to both corporate employees at their worksite and to "inter-institutional students." The courses (85\%) are graduate-level engineering, business, and computer science. TAGER administrators report that both learners and faculty respond much more favorably to interactive than to one-way delivery technologies.

Pertinent to this study was literature relating to Virginia's distance learning efforts and the model, Cooperative Graduate Engineering Program. The technical aspects have been coordinated by a state agency known

\textsuperscript{71}Lewis, p. 26.

\textsuperscript{72}Lewis, p. 188.
presently as the Virginia Department of Information Technology (previous to January 1985, the department was the Department of Technology). During the past six years, the public television stations have developed a two-way microwave network. This network has the potential to tie together all the major higher education institutions in Virginia as well as industries and businesses that provide downlinks. Satellite links have been added and since September 1986, students in and out of Virginia have been able to attend graduate engineering classes taught live from the campuses of Virginia Tech and University of Virginia. "The students view the classes sent to a satellite and received via downlink and then talk to professors and other students by using the State's teleconferencing bridges."73

In December 1985 a proposal to utilize newer technological capabilities resulted in a document, A Telecommunications Strategic Plan for the Commonwealth of Virginia, known as the VINE plan. Implementation is contingent upon availability of funds and approval of the Governor and General Assembly.

Development of a state coordinating mechanism for telecommunications and education began with a study commissioned on behalf of the Virginia Public

Telecommunications Board. The report, titled *Telecommunications and Learning: A Strategy for the Commonwealth of Virginia Based on Current Practice and Future Possibility*, suggested the formation of a holding company with leadership by the Department of Education. The plan was never implemented. Another report, *The Report of the Governor's Task Force on Science and Technology in Virginia, Volume I*, did address the needs of continuing education and business and industry. High priority recommendations were made "to establish programs in high technology disciplines which encourage part-time continuing education and participation by industry employees... and to establish graduate delivery systems responsive to industry's needs throughout the state." In addition, the study group strongly endorsed the Cooperative Graduate Engineering Program.74

Dialogue and correspondence for this model program started in the summer of 1982; The Cooperative Graduate Engineering Program was created and funding was received during the 1983 session of the General Assembly. During the first year of the Program, the 1983-1984 academic year, four engineering curricula (degree-programs) were offered by interactive technology, six courses by Virginia Tech and four courses by University of Virginia. Presently, using

satellite (commencing in September 1986) during the 1986-1987 academic year 24 courses from Virginia Tech and 16 courses from University of Virginia are being transmitted to universities and industries in Richmond, Northern Virginia, Hampton Roads and Lynchburg areas. The most unique receiver is a community cooperative (The Institute of Manufacturing Technology, Inc.) in Lynchburg. They established The Center for Advanced Engineering which presently via satellite is equipped to receive two video signals and to conduct two different classes simultaneously. A computer installation provides internal student support and external linkage to computers at the transmitting universities.75

Future applications of distance learning are being formed and include such plans as a marketing course for Clinch Valley College and for University of Virginia and Virginia Tech to exchange engineering courses.76

All these considerations mentioned in this discussion of research were applicable in developing a realistic study design.

75"Center for Advanced Engineering to Open April 1, 1986," Centerline (The Center for Advanced Engineering Newsletter), Issue 1 of 5, 1986.

CHAPTER III: DESIGN

The design of this study was the result of reviewing policy research literature and asking scholars involved in higher education policy analysis. Relevant policy literature already has been reviewed in Chapter Two. More helpful in deciding the "way to go" were personal discussions with higher education, telecommunications and government scholars. In addition to The College of William and Mary committee professors, they included: Dr. Robert Grymes and John Zwick from Tidewater Community College; Drs. Bruce Chaloux and Dave Potter from SCHEV; Dr. J.C. Phillips and Dorothy Boland from the state Department of Technology; and Dr. Robert Berdahl from the University of Maryland Institute for Research in Higher and Adult Education, Department of Policy, Planning and Administration.

This study's research was to identify and analyze possible coordinating state policies that would best facilitate distance learning in Virginia. To do this, a literature search was completed on distance learning and study of Virginia's distance learning efforts, especially its model--the Cooperative Graduate Engineering Program. The literature search and study of Virginia's model were summarized in Chapter Two. The research was guided by the
theoretical model of Plude as previously discussed. The methodology for this study used a design suited for policy research in the social sciences.

**Coleman's Design of Research in Social Policy**

The design of this study was based on a framework of policy research analysis developed by James Coleman in 1972. Coleman mentioned several points to recognize in developing methods for social policy research. First, in discussing foundations for policy design, he says there are a number of significant differences between research in an academic discipline and research for social policy. On a philosophical level, the goal of discipline research is to further development theory about an aim or activity. Social policy research, however, provides an information basis for social action. Coleman calls this policy research "decision-oriented research" as opposed to "conclusion-oriented research" in an academic field.¹ In social policy research, "the audience is a set of political actors, ranging from a single client to a whole populace, and the research is designed as a guide to action."²

²Ibid.
Another point Coleman recognizes in developing a design for social policy research is that it bridges two worlds with different properties; the world of the academic discipline and the world of policy and action. He cites the properties of the world of action: operates in real time; involves interests, control of resources, and conflict; and requires useful results rather than economy of information.³

Another necessity to understand in the design of the study is to examine consequences of the proposed policy for all interested parties, since it is likely that all interests will have some voice in determining subsequent policy. As a result, the researcher strives to gather data relevant to all parties. At the same time, the researcher needs to give special attention to those parties that will have the greatest voice in the policy, and to those parties that can directly exert pressure on the controlling parties.⁴

In addition, the researcher and analyst needs to have knowledge of the American concept of government. This is through a balance of competing and conflicting interests. (As a result) Coleman contends that research needs to

³Ibid.

⁴Coleman, p. 15.
include interests of all involved parties, no matter how far from the center of power.  

Specifically, Coleman's design of research in social policy examines a variety of interests from a variety of interested parties. It follows these steps:

1. Identify the parties interested in policy outcomes and with some power or potential power to affect policy.
2. Determine interests of these parties.
3. Find out what kinds of information are relevant to their interests.
4. Determine the best way to obtain this information.
5. Determine how to report the results.

Coleman points out that in actual research the design steps do not follow sequentially. The researcher used these steps as a guide in the design of this study.

**Methods of Research**

These methods and tools were used in accomplishing this design: a search of historical documents, a preview of a videotape presentation, and data gathered from influential people.

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5Ibid.
Historical Documents There are historical documents on Virginia's distance learning model, the Cooperative Graduate Engineering Program. The early documents are housed in Richmond, Virginia in an office file at the State Council of Higher Education. They include letters, memos, prospectae, needs surveys, proposals, position papers and reports. Fortunately, this Program is heavily documented. The more recent documents were obtained from the persons interviewed and from persons who knew the researcher was involved in a study of distance learning. These documents aided in identifying the groups (parties) and their interests in a state coordinating policy for higher education and in identifying persons with power to affect policy.

Videotape A fifteen minute videotape on the Cooperative Graduate Engineering Program was made by the State Department of Technology following the first year of the program, 1984. The telecast featured such influential people as Governor Robb, Richard Bagley (then, Chairman of the State Legislature Appropriations Committee), Stanley Huffman (VPI and SU), Tom Hutchinson (U.Va.), Rodney Hanneman (Reynolds Metals Company), and Donald Hearth (NASA). In addition, four faculty from the University of Virginia and Virginia Polytechnic Institute and State University demonstrated the interactive class lectures,
and seven students gave testimonials to the Program's merits.

Although a videotape could be classified as a historical document, its media form lends itself to special analysis. Viewing the videotape aided the researcher in identifying interested parties and determining their interests. Also, insights were gained by noting who commissioned the production, who wrote and produced it, and for what audience the videotape was intended. Most helpful for the design of the research, was that it identified influential people interested and knowledgeable about the Cooperative Graduate Engineering Program. Four of the influential people featured in the videotape were participants for this study.

Data from Influential People Data was obtained by first determining interested groups (parties); then identifying the participants; and finally, following a stated procedure. Influential people in this study were those persons, whose groups (parties) were interested in policy outcomes of distance learning, and those persons with some power or potential power to affect policy.

Groups with Interests in Distance Learning First, the researcher determined the interested groups in the study. These included:

- State Council of Higher Education in Virginia (SCHEV), and Virginia Community College System
- State higher education institutions and private colleges
- Virginia Governor, the Secretaries of Education and of Commerce and Resources, and the General Assembly
- Governor's Task Force on Science and Technology
- Virginia Department of Information Technology
- Virginia's businesses and industries including such groups as the Chamber of Commerce
- Center for Innovative Technology

Participants in the Study  Next, the researcher identified from these interested groups, possible influential people to participate in the study. The researcher, besides identifying possible participants based on the earlier study, asked the dissertation committee and key persons involved in distance learning for their suggestions. Sixteen influential persons were identified to be asked to participate in the study. It was with great pleasure to the researcher that all sixteen consented to participate in the study. (See Appendix C for the names and titles of the participants.)

Procedure for the Interviews and Gathering Data  The researcher worked with one of her committee members, Dr. Don Herrmann, to arrive at a data-gathering procedure suitable for educational policy research. The procedure for the interviews and gathering data was as follows.
1. Phone interviewees. If they agree to participate, send letters.
   a. Ask them to respond to a brief questionnaire
   b. Allow at least two weeks before beginning the interviews

2. During that time, evaluate the questionnaires returned and determine:
   a. What additional information is needed to develop the ideas posed in the questions
   b. What other ideas or concepts were uncovered in the responses to the questions (particularly the comments) that need to be investigated further in the interviews
   c. To what degree did the respondents agree in regard to the questions

3. Formulate an interview schedule for each participant
   a. List areas to be investigated with each of the participants
   b. Note questions and/or problems relating to the responses from his/her questionnaire. They may be for clarification, further development or more information

4. Interview each participant within a month or two at his/her convenience
   a. Use the semi-structured interview approach
   b. Keep the interview time to approximately one-half hour

5. Summarize and classify the data from the interviews in a systematic manner. They may be added to the summary from the questionnaires

At this point, analyze "Where do we go from here?"

Hopefully, any clarification can be obtained by a series of phone calls. If, after analyzing the results, the study needs more data, then further action may be necessary.

This procedure worked effectively. First, a brief questionnaire was carefully constructed and approved by the dissertation committee. (See Appendix C for the
questionnaire.) There were ten statements representing possible courses of action for state coordination of distance learning for graduate and continuing education. Participants were asked to indicate whether the action suggestion in each of the statements is desirable or undesirable, and whether it is likely or unlikely to happen in the foreseeable future. Following each statement was a space for the participants to write comments for clarification or for additional information.

The researcher phoned each of the sixteen influential persons and asked them to participate. All sixteen persons accepted! With some persons the interview time was designated at the time of the first phone call; other persons were scheduled after they received their letter.

Next, a personal letter was sent to each participant. The letter included the brief questionnaire. (Refer to Appendix C for the complete letter.) The researcher mentioned appreciation for his/her willingness to participate in facilitating academic/industrial cooperation. Also, the specific purpose was cited as assisting to identify alternative, coordinating policies for Virginia higher education (graduate and non-traditional continuing education) and telecommunication efforts in distance learning. Each participant was asked to return the questionnaire as soon as possible as the plan was to review the responses for additional
information before the interview in order that more in-depth questions may be formulated for the interview. (Refer to step 2 in the procedure listed above.) This technique would not only orient each participant about the study, but focus on more relevant information and ideas. Hopefully, this technique would result in more candor and varied, even conflicting, viewpoints. The researcher later found this to be true. The letter concluded with a statement that the interview would be limited to about a half-hour.

The second step of the procedure involved evaluating the questionnaires. All but two of the questionnaires were returned. Then the researcher met with committee member, Herrmann, to analyze and to form the primary questions that would be asked at the interviews. (See Appendix C for the primary questions asked.)

Third, an interview schedule was arranged according to the geography of the state and the availability of each participant. Fourteen participants were scheduled within a month's period; two participants, who were out of the country, were scheduled the following month. Each participant's questionnaire was reviewed, noting areas to be investigated and questions to be asked for clarification and more information.

The fourth step of the procedure was to interview each participant. The researcher previously had decided
to use the interview method instead of the Delphi technique. (The Delphi technique uses several rounds of mailed questionnaires to engage the respondents in an anonymous debate in order to arrive at consensus on issues or on predictions of future events.) According to Borg and Gall, serious questions have been raised concerning the value of the Delphi method primarily with respect to its low respondent rate after a third round of mailings. They describe one study where the respondent rate had shrunk to less than 4 percent after the third round.6

The semistructured interview method was used in interviewing each participant.

The semistructured interview is generally most appropriate for interview studies in education. It provides a desirable combination of objectivity and depth and often permits gathering valuable data that could not be successfully obtained by any other approach.7

The researcher was pleased with the reception and candor of each participant. The researcher asked the primary questions and the individual questions as earlier prepared, and follow-up questions. As answers were given, the researcher jotted quick notes in space allowed; just after the interview, a more complete record of answers was


7Borg and Gall, p. 442.
compiled. One participant spoke rapidly, and the researcher was granted permission to audiotape his comments. After a half-hour transpired, the researcher stated the time as promised in the letter; in most cases, the interview concluded shortly after the specified time limit. Two participants suggested further talk with knowledgeable persons.

The last procedural step was to summarize the data in a systematic manner. First, the questionnaires were tabulated to gain an overall view of the results of the options. Then, a summary was compiled for each participant including the following items: individual questionnaire and comments, the interview form and answers, and other relevant materials received. Finally the data from these items were summarized and classified into four categories.

1. Do you feel there is a real need for graduate and continuing education in Virginia via distance learning (electronic, interactive network)/ Is this the best way to go? If so, why? If not, why?

2. If so, what do you think would be the best way to set it up and fund a workable system?

3. Is there a need for developing a coherent state policy? If so, why? If not, why?

4. Which of these options is desirable and likely? Which option do you think is best and why?
These categories are similar to the sub-hypotheses of the study. This process was completed in order to ready the research data for analysis as well as to identify any patterns of results.

Summary

Deciding on the design of this study involved reading of policy research literature and asking scholars involved in higher education and telecommunication policy.

This research procedure is based upon a framework of social policy research analysis developed by James Coleman. He says that social policy research provides an information basis for social action and bridges two worlds with different properties—the world of the academic discipline and the world of policy and action. Specifically, Coleman's design follows five steps: identify the parties interested in policy outcomes and with some power or potential power to affect policy; determine interests of these parties; find out what kinds of information are relevant to their interests; determine the best way to obtain this information; and determine how to report the results. Coleman says in actual research the design steps do not follow sequentially.8

8Coleman, p. 2 and p. 15.
The methods and tools used to accomplish this design included searching historical documents, viewing a videotape and gathering data from influential people. Early historical documents on Virginia's Cooperative Graduate Engineering Program included letters, memos, prospectae, needs surveys, proposals, position papers and reports. More recent documents were acquired from the persons interviewed. A videotape, produced in 1984, about Virginia's model distance learning program aided the researcher in identifying the involved groups and determining their interests. Most helpful, it identified influential people who were involved and knowledgeable about the model program—of which four were participants in the study.

Data was gathered by first determining involved (interested) groups (parties), then identifying the participants, and following a stated procedure. Seven groups were identified as involved groups: SCHEV and VCCS, Virginia's higher education institutions; the Governor, state Secretary of Education and Secretary of Commerce and Resources, and the General Assembly; Governor's Task Force on Science and Technology; Virginia Department of Information Technology; Virginia's businesses and industries including such groups as the Chamber of Commerce; and the Center for Innovative Technology.
Sixteen participants were identified based on study of the literature and on suggestions by the dissertation committee and key persons involved in distance learning. All sixteen participants consented to participate in the study! (See Appendix C for names and titles of the participants.)

A data-gathering procedure was developed by the researcher and a committee member, Dr. Herrmann. (Refer to the stated procedure for the interviews and gathering data on page 73-74.) This process was formulated to ready the research for analysis as well as to see study pattern results.
ANALYSIS OF RESULTS

The analysis of data is the part of the study that may reveal patterns of results that produce realistic recommendations. Perhaps this part of the process is even more critical in a policy study where the participants are of varied professions and therefore may have differing perceptions of the options. Classifying and analyzing the data, despite the policy research limitations already mentioned in Chapter One, adds challenge as well as justification to approach this chapter in the most systematic and logical way possible.

The participants of this study were Virginia leaders from higher education, state government and business and industry who answered a brief questionnaire before being interviewed.

The purpose of this chapter is (1) to sort out key, distance learning, policy concerns and issues and (2) to come to a consensus as to the best policy option to coordinate higher education, distance learning in Virginia.

The results, written in descriptive form, will be presented in the same order as the sub-hypotheses in Chapter One. The summary of the results will relate not only to the study's theoretical model but to the study's research hypothesis.
The chapter sections will be organized according to these sub-hypotheses.

1. There is consensus as to whether there is a real need for graduate/continuing education in Virginia via distance learning.
2. There is consensus as to the best way to coordinate and fund a workable system.
3. There is consensus as to the need for developing a coherent state policy.
4. There is consensus as to which coordinating policy options are desirable and likely.

Each section will begin with the statement of the hypothesis under consideration. The questionnaire and interviews will be arranged in a systematic form—one that will aid the reader in determining worth and merit of the collected data. These classifications of data will be designated at the onset of the section. The summary of each section will indicate whether the hypothesis was supported or rejected.

A serious attempt was made during the interviews to obtain "expert" analysis. An additional criterion was that varied viewpoints were solicited. Names have been omitted from the analysis in order to encourage individuals to speak with openness without feeling concern that comments would have repercussions. However, general job designations have been written in the text to give the
study a somewhat "generic" perspective. Therefore, the interview comments and questionnaire results described below are discussed without identifying subjects by name.

**First Hypothesis: Real Need for Distance Learning**

The first hypothesis states there is consensus that there is a real need for graduate and continuing education in Virginia using distance learning. The evidence, data from the questionnaires and the interviews, supported this hypothesis.

**Results** All participants agreed there is a real need in Virginia for distance learning in graduate and continuing education. Not only did they all feel there was a real need, but they thought it crucial for these specific reasons: to maximize scarce resources, accelerate the training and re-training of industrial and business workers, update professionals, develop industry in the Commonwealth of Virginia, and meet the needs of state citizens.

The need most often mentioned by the participants was to maximize the use of scarce resources—those educational areas and programs that potential students have difficulty obtaining in their region and are expensive to fund. A state executive leader noted, "We can use it where we need it for gaps and coverage." An influential educator noted,
"in the use of scarce resources you can't get elsewhere." Another said, "It is important to share resources statewide." Educational areas enumerated by these and other participants were in health (for example, when there is only one dental school in the state), in pharmacy, in high technology and in advanced engineering. A state industrialist mentioned that distance learning already has been maximizing scarce resources and meeting a need. "The Cooperative Graduate Engineering Program is already underway with good results." Other areas specified were math courses and foreign language courses where qualified teachers tend to be scarce. A SCHEV administrator said there were graduate programs available in one or two state institutions such as Virginia Commonwealth University and Old Dominion University's Social Work Programs, and Old Dominion University and The College of William and Mary's (VIMS) Oceanography Programs. Such programs might be transmitted to state learners by distance learning.

Another reason participants gave for graduate and continuing education by distance learning was to accelerate the training and re-training of industrial and business workers. A state executive said, "In technological areas most skilled workers will need to be re-trained two or three times. Also I see it in management training like accounting and in humanities as tools for their jobs." Other areas that were cited were:
computer use, English and foreign language for technical communication, and training of sales people. One telecommunication agency leader noted it was especially important in business and industry to offer non-credit work as well as credit work. He added, "Industry seems to need short courses in a hurry."

A third reason the participants identified was to update professional workers. Three interviewees noted in this regard that the Commonwealth's Cooperative Graduate Engineering Program is in its fourth year with good results. Other areas mentioned for continuing professional education were medicine, education, dentistry, pharmacy, veterinary medicine, health and social work.

Another reason mentioned for the need for distance learning is to develop industry in Virginia. This includes attracting new industry and business to the state as well as keeping business and industry in the state. More specifically, state educational and industrial leaders observed:

- It is an incentive for industries to move to Virginia.
- It is especially essential for new business by giving employees opportunity to further their education.
- Another benefit of distance learning is in serving the needs of community business cooperatives.
Finally, some participants noted that distance learning could meet the needs of state citizens. One participant mentioned the possibility of using distance learning in combination with traditional modes. Two participants observed the state's thrust was in science and technology, but they hope that distance learning will expand to liberal arts and the humanities. Participants did not note specific programs within these general areas.

Citizens' future needs in distance learning may be proposed by strategic planners or by leaders of higher education. Both an industrialist and an educator realized that strategic planning is vital to projecting these future needs for state citizens.

The state needs to develop long-range strategic plans. First, project what kind of world might you have in the year 2000? Then, depict the world as accurately as you can to determine area needs.

In terms of education and economic development, I think the Commonwealth needs to predict change. They need to position themselves so they can respond to whatever happens as it changes. What is required to do this is an overall strategy. Then units are placed on their own in fulfilling that strategy. The key is that everyone has to understand the strategy!

Another participant, a representative of SCHEV, believes that higher education institutions could determine what key programs that distance learning might address. This could be based on strategy for the Commonwealth set forth by executive government (such as the Governor, Secretary
of Education, and Secretary of Commerce and Resources.

Even though there was consensus among the participants that there is a real need for distance learning, Virginian leaders mentioned that certain limitations need to be considered. An engineering professor noted, "Certain areas can be readily adapted to this medium while it may be undesirable for other subject areas." A state education leader commented on possible limitations in pedagogy. "I believe electric learning is more adapted to dialectic teaching."

Two participants mentioned limitations on receiving sites. One industry official stated, "Course limitations depend on who is receiving the courses; for example larger companies have lab facilities." Another government agency official also recognized that courses that depend on lab equipment would be limited by the available receiving sites. A possible limitation concerning the perception of television by students was mentioned by a government administrator. "Limitations include the way students may view distance learning since television's greatest use is as an image amplifier." For example, media consultants for politicians tend to use "images" instead of "ideas" to persuade the listener. Another limitation may be with the students' perception of learning. An education administrator reflected that there is a debate whether students involved in distance learning will miss the
physical presence of the teacher at their place of learning.

In spite of the fact that distance learning has limitations, the potential is still unexplored.

The reason distance learning is used in science and technology is that presently this is the thrust of the state. When these areas are effective, then try other areas.

In our institution we are experimenting in distance learning. We want to find out what works. We want to be positioned and to experiment in new formats and in new deliveries.

**Summary: First Hypothesis**  
Data supported the hypothesis that there is a real need for graduate and continuing education in Virginia. Participants mentioned a wide range of needs for programs and courses. Their needs were greater than for the necessity of maximizing scarce resources. Additional reasons were accelerating the training and re-training of industrial and business workers, updating professionals, attracting and keeping industry, and for meeting the needs of the state citizens.

Participants mentioned limitations in the type of courses, in pedagogy, in receiving site capabilities and in the perception of television by students. However, distance learning possibilities will be discovered by experimenting with courses, formats and new deliveries.
Second Hypothesis: Fund and Coordinate

The second hypothesis assumes there is consensus as to the best way to fund and coordinate a workable system. In analyzing this hypothesis, the evidence did not fully support the general assumption. In order to provide a descriptive data base for the readers, the material was divided into funding and coordinating ideas. Then, within each of these divisions, the findings were grouped according to the job categories of these participants: business and industry participants, state government and agency leaders, state and institutional higher educational administrators, and higher education faculty and deans. In the summary the data were analyzed by classifying both the funding and coordinating opinions into those about which the participants agreed and disagreed.

Results: Funding Coordinating a workable system for distance learning must incorporate the aspect of funding. Those who are involved in the funding are ultimately responsible for its use. Therefore, since the funders would be involved in developing a workable system, I asked the participants their ideas of who might best fund distance learning. The question asked was, "what are possible ways of funding it?"

All participants agreed that funding comes from those who are involved. These include the deliverers
(providers) and the customers (receivers). The deliverers, in the case of distance learning, would include higher educational institutions (both state and private). The customers are more complex to categorize. A state industrial leader gave this perspective.

A workable system in distance learning needs to think in terms of varying customers and of customizing programs according to their needs. Varied categories of customers include: technical industry, non-profit organizations, profit service firms, manufacturing groups, individuals who are seeking degrees, individuals who are seeking knowledge, and educational institutions. A subset to all of these is management and the professions (for example, lawyers).

... To fund distance learning, you explore monies from business and industry, from the state, and from individuals.

Business and Industry Participants The participants from business and industry realized the necessity of sharing costs with the involved parties. Their answers included the following:

- Business should pay their fair share.

- Regarding possible ways of funding it, the state would need to give funds if there is a real need. However, I believe people and groups who have educational needs will pay to get it rolling. Industries could possibly give an amount for a designated period (such as two years), pay for their student employees, and provide tutors.

- Funding for a workable system would include state, industry, and student funding. However, I am opposed to funds for the program becoming an undefined part of the state universities budgets. This seems to be the trend. This method of state funding poses problems to industry and business cooperatives.
One business leader and former member of the Virginia Public Telecommunications Board noted that presently the board is charged with assisting in the construction, establishment, operation, and use of public telecommunications facilities and services (2.1-563.23;1984,c746, effective January 1, 1985). This includes purchasing instructional television and radio services for the state's higher educational institutions on behalf of such institutions (2.1-563.26;1984,c746, effective January 1, 1985). He said that to make a system work would require not only interest but lots of cooperation. "Cooperation from the General Assembly seems to be only in spirit and not in funds. Governors from Dalton through Robb were sympathetic but did not get monies for public telecommunications."

State Government and Agency Leaders The participants from state government and state agencies also agreed that funds should come from the parties involved. Three participants seemed to feel that initial funds, which in telecommunications are expensive, need to come from the General Assembly, the state legislature.

Possible ways of funding it include the General Assembly and general funds, but I do not see the

1Administration of the Government (Commonwealth of Virginia Generally, Chapter 35.2 "Information Technology," Article 6.

2Ibid.
need for large amounts of money. Also, tuition with industry and business might be higher if brought into their sites.

I believe the front-end cost of establishing a state network is the problem of the Governor and the General Assembly. Under study now is the Department of Information Technology Telecommunications Strategic Plan for the Commonwealth of Virginia. This plan is to establish a statewide integrated network (VINE) - "one that will provide a state-managed telecommunication system, reduce and stabilize costs, and provide advanced technical capabilities, e.g., digital network switches and fiber optics transmission facilities."1, 3

One state agency participant suggested that industry and business contribute. "I believe there are untapped sources in the industrial and business areas; possibly, industries could pay an upfront fee to participate and more tuition could be charged if delivered on-site."

However, one state government leader feels that the deliverers and customers should contract for delivery services with the lowest bidder, either state or private group. "Use the most inexpensive way."

State and Institutional Higher Educational Administrators

Higher educational administrators felt that funds needed to come from varied sources. A State Council academic coordinator thought that the General Assembly should supply the up-front costs of technology, and general funds be allocated for the on-going, distance

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learning expenses.

The best way to fund a workable system, I believe, is for the legislature to be willing to make up-front monies (especially technology expenses) available but not continue to support distance learning. Also, with this type of learning, I think student enrollments should not regulate the funding process but be supported by general funds.

An administrator from the Center for Innovative Technology suggested that initially the State Council appropriate funds for a staff that works full-time coordinating ways to fund and to establish links. "You need staff that spends full-time to develop communication links, to keep current, and to build cooperation."

A state university president felt that funding needed to be initiated by the local, institutional level; possible to operate from a college foundation that could better customize distance learning for the receivers.

We must have resources to do a first-rate job. Presently (in our institution) we do have in place sophisticated and successful television operation and it is run primarily out of our college foundation.

Higher Education Faculty/Deans Three participants in this category were involved in the model, the Cooperative Graduate Engineering Project. The other participant serves on two state task forces that are studying distance learning, one task force by the State Council of Higher Education and the other by the Virginia Community College System. As a result, all these participants have been and
will be decision-makers in Virginia's learning projects. Like the other participants, the faculty thought funds needed to come from a variety of sources. In addition, they added these ideas.

An associate dean of graduate programs in engineering at a state university has had close involvement with the model program since its inception. This led him to make these specific observations. "In the area of funding (on the state level) the FTE (Full Time Enrollment) method is a perceived problem." He mentioned that funds need to be allocated for teachers involved in distance learning. For example, funds may be needed for additional teachers if faculty has released time to develop programs and to work on distance learning problems—problems such as those concerning advisory and teaching personnel and evaluation logistics. In addition, he suggested that industry provide classroom space and technology at receiving sites.

A faculty member and administrator from another state university gave these ideas regarding funding.

Regarding the funding of a workable system, I believe the General Assembly should provide the funds but stay out of the operation. Possibly the General Assembly could fund distance learning for a time frame (such as five years) and then it could be absorbed into institutional budgets. Industry might contribute with front-end charges and tuition.

A professor and assistant dean for extension engineering at a state university suggested, "perhaps a committee
could formulate an annual operating plan to use as justification for funds." Also, "perhaps industry and business would take a more active approach in providing funding and other needs."

A dean of students and instruction from a state community college summarized the possibilities of funding.

Regarding the funding of a system, I think in the early stages you need a combination of state and private funding. Perhaps there are grants available that would be worth investigating for possible funds.

Summary: Funding. All participants agreed funds for distance learning should come from those who are involved—the deliverers (providers) and the customers (receivers). Participants mentioned a variety of possible sources for funding. In addition, they suggested in what ways these sources might contribute.

The possible funding sources and the ways these sources might contribute toward financing distance learning are outlined on the following page.
OUTLINE

FUNDING SOURCES FOR DISTANCE LEARNING
AS SUGGESTED BY THE PARTICIPANTS

I. STATE

A. Directly from Governor/General Assembly
   1. Provide initial funds for a time frame (5 yrs.)
   2. Allocate funds for state-managed system
   3. Designate up-front costs for technology
   4. Give designated or general funds to SCHEV

B. Through the Virginia Public Telecommunications Board (Department of Information Technology)
   1. Use in constructing a public telecommunication facility
   2. Provide monies to operate the public facility

C. Through SCHEV from designated or general funds
   1. Give general funds to state universities and colleges
   2. Allocate designated funds to providers

II. PRIVATE

A. Business and industry (individual and cooperatives)
   1. Pay tuition for workers, possibly higher tuition if on-site
   2. Pay up-front, initial fee
   3. Give funds for a designated period
   4. Provide technology at receiving site
   5. Provide classroom and equipment at own site
   6. Provide on-site tutors

B. Local College Foundations
   1. Build and operate own system
   2. Promote distance learning business

C. Grants
Results: Coordinating a Workable System  

The "how" ideas were proposed with the question to the participants, "What is the best way to coordinate a workable distance learning system for continuing and graduate education in Virginia?" Surprisingly, there was consensus among the participants in two general opinions: that higher education and industry and business cooperate in developing a workable system, and that a state level cooperative be formed to coordinate and facilitate distance learning experiences. (This differs from the regional system of consortiums that is presently working in Virginia for continuing education and telecommunications in higher education.) However, consensus was not reached as to what role SCHEV would take in a workable system.

Business and Industry Participants  

These participants, thinking in terms of distance learning, advocate business and industrial involvement on a local, regional and state basis. In addition, they state a need for strategic planning to assess needs.

A vice-president of a large Virginia company was cited by a cohort as a champion for distance learning. The vice-president's efforts were most instrumental in obtaining the initial funding and development of the Cooperative Graduate Engineering Program. The vice-president noted the need for a strong local commitment.
To establish a workable system, you need to work locally from needs. Then, success requires a critical mass of students for a given discipline or program who are regionally interested. In any given discipline or program, you need a "champion", one who takes time and effort to promote it. Also, you need a regional coordinator to understand problems and to communicate them, to recruit, and to promote distance learning. A regional coordinator would develop a business base, get endorsement of major independent companies, and be on advisory boards of business/industry and of member universities and colleges. In addition, attention by local and state leaders needs to be given to publicity.

Then, this state industrial leader continued with his ideas on state involvement.

A state-wide system needs to deal with the big obstacles of politics and turf problems. This requires building a gradual consensus of cooperation to deal with key legislators and universities. Elements that need to be involved are the Secretary of Education; Secretary of Commerce and Resources; key legislators; the State Council of Higher Education (SCHEV); and state committees such as the Joint Engineering Council, Economic and Development groups and the Chamber of Commerce. (He further noted) SCHEV is better suited for programatic management than the General Assembly or its committees. SCHEV is well-qualified and so far has provided good support.

A retired president of a major Virginia business, also chairman of former Governor Robb's Task Force on Science and Technology, recognized the benefit of thinking in terms of need-seeking customers. In addition, he realized the importance of future strategic planning- to meet future distance educational needs.
Directions of learning, especially graduate and continuing education, are changing radically. For example, effective transmission of information knows no boundaries; it is not regional. Microprocessing will be everywhere; it will determine the performance of every device and determine the format of receiving learning. Every home will have a computer; it will no longer be an innovation but a commodity. For this reason you need long-range, higher education strategic planning—what kind of world do you have and what kind of world will you have in 15 years, the year of 2001.

This business executive mentioned that educational and business planners need to be aware of the radically changing areas such as robotics, biotechnology and new materials. They need to be aware of future situations that will affect learning. For example, industry and business growth will be out of the United States and be in Europe, Japan and the People's Republic of China. Further, he discussed who the customers of distance learning might be.

A workable system depends on the needs—who are the "customers" as well as the "deliverers". To understand who are the customers, you need to approach it from different perspectives. There are two types of business and industry organizations: manufacturing-oriented which has the product and seeks a market, and the marketing-oriented which identifies the needs and then the products are created. (Succinctly, you have the need-seeking and the need-meeting.)

Also, he suggested that the "deliverers" (providers) of distance learning must devote thought to the following.
1. Customizing learning programs according to the needs of the customers

2. Definitive policies and rules for delivery and use of educational products

3. Definitive standards which include credits and quality

4. Continuing research of needs and meeting these needs; this research needs to be fluid

5. How to pay the bills

A Virginian business leader and former member of the Virginia Public Telecommunications Board also agreed a workable system needs planning that fits the needs of business and industry.

Using this concept of customer-oriented, distance learning, a unique project is in progress in Lynchburg, Virginia. At the request of local industry a non-profit corporation, The Institute of Manufacturing Technology, Inc. (sponsored by the Greater Lynchburg Chamber of Commerce), established an educational organization. This organization, The Center for Advanced Engineering, began with transmission on April 1, 1986. Now using a satellite system, it is equipped to receive two video signals and to conduct two different classes simultaneously. This is live video with two-way voice communications between professors and students. An engineer and Director of the Center for Advanced Engineering describes how this community cooperative works.

In the absence of a local state university,
Lynchburg College, which is a private college, has made the bottom floor of Freer Hall available as the site for the Center and acts as the host institution on a contract basis. The Center has library privileges, and the Center's director is a member of the adjunct faculty. The director operates the Center in accordance with a contract between the University of Virginia and the Center's parent organization, the Institute of Manufacturing Technology, Inc.

A computer installation provides internal student support and external linkage to computers at the transmitting university.

Presently, funding comes from state, industry and student tuition monies. Initially, SCHEV provided a grant of $165,000 to bring the television signals from the University of Virginia and Virginia Tech (VPI & SU) into Lynchburg and to provide a portion of the downlink costs. Then, SCHEV authorized the University of Virginia to contract with The Institute of Manufacturing Technology, Inc. to operate the Center. This action provided start-up operating funds for the Center for a five-month period.

Tuition fees for the courses are set by the transmitting institution. Operating funds for the next fiscal year are included in the state university's budget. The Center's director says this state funding system poses problems for an industrial cooperative.

I am opposed to funds for the program becoming an undefined part of the state universities' budgets. This seems to be the trend.

State Government and Agency Leaders These leaders not only stressed planning that fits with customer needs but
realized the importance of industry-academic cooperation. The Secretary of Commerce and Resources thinks a workable system needs to be a matter of cooperation.

I feel it is not necessary to regulate distance learning, but have it more a matter of coordination. For example, SCHEV and the Department of Information Technology (DIT), could decide what disciplines overlap and work toward extending scarce resources.

The Director of Educational Technology also believes SCHEV can provide coordination on a state-wide basis. He says that presently SCHEV has task forces working on the best way to continue. He thinks that with distance learning in higher education, it would be better to coordinate state-wide instead of regionally as was done with the model Cooperative Graduate Engineering Program. He indicated, "It is the nature of the electronic signal that it does not go geographically." The Director proposed this process.

First, identify the needs; then, determine the discipline or program that best meets the needs. Finally, set up distance learning for those who want it. With this process perhaps each institution would have something to gain. The Secretary of Education agreed with the need-oriented approach, but he advised to use the most inexpensive way to do it. "Do it without 'bricks and mortar' (not create new agencies or new buildings)." Also, he suggested to formally involve the Chamber of Commerce in the distance learning process.
The Educational Applications Manager with the Division of Educational Technology and also involved with the Cooperative Graduate Engineering Program, thought the best way to go is to build on what we've done with graduate engineering. She makes these suggestions.

In Virginia a governing body that oversees distance learning is not viable. With the graduate engineering program, if the private sector had not pushed for money from the General Assembly and for cooperation with SCHEV, it would not have made the progress it has.

In addition, the Manager contends that higher education needs to cooperate more by sharing their ideas and resources. "If higher education would share ideas it has to offer or unique programs you can't get elsewhere, then distance learning would be beneficial to most of the state's universities and colleges."

State and Institutional Higher Education Administrators

These participants include state higher education administrators (an administrator for the Center for Innovative Technology, representatives from SCHEV and a president of a state university).

The Center for Innovative Technology (CIT) ties together industry, government, and state higher education. The Center was established in 1984 by the Virginia General Assembly (Innovative Technology Act of 1984) as a private, non-profit corporation.
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The mission of the Center for Innovative Technology is to enhance the economic well-being of the Commonwealth of Virginia by marshalling the scientific and technical resources of its universities to meet the needs of industry as well as helping industry make the most effective use of these resources.4

An administrator at the Center for Innovative Technology was formerly a director of graduate studies at a Virginia state university. He concurred with industry, business, and government leaders that a workable system needed to be a matter of cooperation and not regulation.

A workable system needs to operate somewhat independently— to come together and to cooperate.

In addition, he believed a workable system needs wholehearted support from SCHEV, and he viewed SCHEV's role as a coordinating agency. "You need staff that spends full-time to develop communication links, to keep current, and to build cooperation." He suggested that perhaps this support, especially staff support, may avoid political and organizational problems that have been apparent in the present Cooperative Graduate Engineering Program. He cited examples. "In the initial planning of the graduate engineering program, it was a political mistake to ignore Old Dominion University."

Also, in distance learning the Community Colleges need to be made partners. They are community-based and located within fifty miles of each other.

Another issue to consider, the administrator feels, is that the host educational institutions need a reward system for their time and efforts.

The vice-president for the Center for Innovative Technology was asked the question, "How do you view the role of the Center in distance learning?" He replied.

Its role is to enhance technological-based industry with improved technology. It acts as a catalyst. It is not in the business of providing educational credit but of marketing the capabilities of industry and academics. Also, it could act as a "a node in the network" and bring highly technical information to learners; for example, distinguished lecturers.

He mentioned, that since the Center was located near Dulles Airport (Washington, DC), the possibility of being in a position to obtain experts coming to DC or even "stop-over" experts.

The state higher education administrators viewed the coordinating of distance learning from a more traditional view. Presently, the state higher education agencies, SCHEV and VCCS, have task forces discussing distance learning. The SCHEV task force is divided into financing, academic quality and state-wide issues. An administrator of SCHEV, like industry and government leaders, realized "the consumers are where we start." However, he thinks
higher education is in a better position to determine the educational needs of consumers than what industry is. "Industry tends to not know what they want." He favored a more controlled approach for a workable system.

A workable system, I believe, would follow this format.

1. Determine what are the key programs. This would be based on strategy for the Commonwealth set forth by executive government (for example, the Governor, Secretary of Education, and Secretary of Commerce and Industry).

2. Accept requests from brokers of varied segments (for example, industry and businesses, industrial consortiums, CIT, SCHEV, and state and private higher educational institutions).

3. Ask universities and colleges for proposals for evaluation. Be careful to include private institutions which tend to be disadvantaged by major delivery systems.

4. Evaluate (a consortium of institutions and outsiders) the requests and proposals.

5. Select and award contracts for a specified time frame.

6. (SCHEV) coordinate and adjudicate, if need be. Continue accepting "broker" requests.

After proposing this format, the administrator was asked whether a change in SCHEV state code would be necessary. "If distance learning, which is a part of continuing education, is coordinated on a program basis (as opposed to a regional basis), would this change the regional higher educational consortiums as well as SCHEV state code?" He replied that the state code would need to be
The SCHEV administrator was asked a final question, "what do you see as CIT's role with SCHEV?"

CIT's role is not what it started out as; it is being redefined. As I see it, CIT's role is scouting and reflecting needs, and SCHEV's role is responding to the needs. CIT is our antenna; it puts out its feelers into Virginia's businesses and industries.

Another SCHEV higher education administrator thought a workable system of distance learning is possible and likely to happen due to the efforts and pressure from business and industry and government officials. Also, he thought.

There is the possibility that an institutionally-based body with policy guidelines will be set up to handle distance learning. If this happens, SCHEV would need to coordinate this body (a type of consortium) and adjudicate differences if necessary.

He suggested that a consortium of this type might be voluntary. Also, if this happens, SCHEV would need to assess and possibly change policies and practices. Several he noted are as follows.

- State Code 23-9.10 regarding the duties of Council as to continuing education (Presently, the Council has established within each region in the state a consortium for continuing education)

- Distinction between credit and non-credit courses regarding staffing and funding guidelines (for example, presently non-credit courses "pay their own way" plus 30%)
- Institutional funding (for example, if there is distance learning between two institutions, who bears the cost and how does it pass on to the learner)

A higher education institutional administrator, a state university president, disagreed with the representative of SCHEV about the role of SCHEV in coordinating distance learning. The state university president opposes SCHEV's uniform, rigid approach.

Instructional television in SCHEV's view is to create a monolithic approach. It seems there is a grasp for control and what worries me is that it may "poison the well" for future technological delivery. It seems all effort is to maintain the flagship institutions and that's wrong. Their riches are improperly used.

The university president contends that distance learning ought to be customized—not centralized. He suggests that to do this the Commonwealth needs to predict change by developing an overall strategy.

What is required to do this is a strong, central corporate culture so to speak... something that guides the individual units—an overall strategy. Then units should be placed on their own in fulfilling that strategy.

However, he recognizes that it is difficult for a government body to predict change and develop an overall strategy. "I feel the executive and legislative leaders need to do this." He suggests that strategy, as borrowed from a military situation, is fluid. "They control
critical dominant high hills, but don't tell the squad leader how to take the hill or manage the riverhead. However, there has to be a command leader like the president of the university, and there has to be local initiatives."

I am not opposed to a central program; if it can meet regional needs, fine. But why don't we learn in our own backyard and look for opportunities on how to do it. It requires real creativity and vision or possibly it will come in little increments. SCHEV does not seem interested in experimenting. I want a clear, honest strategy that we can buy into or not buy into.

Finally, the university president offered a critical forecast; he believes that in the future, learning will be dispersed from the universities to businesses, industries, and homes. If so, then distance learning would be an integral part of it. When asked if his university is contributing to distance learning in Virginia, the president said, "We aren't yet; however, we do have in place a sophisticated and successful television operation, and it is run primarily out of our Foundation."

Higher Education Faculty and Deans Each of these participants has been involved in distance learning; three participants have been actively involved in the Cooperative Graduate Engineering Program. Currently, they are in positions to influence decisions, and they view distance learning primarily from the "deliverers" perspective.
A professor and dean of graduate programs at the University of Virginia is referred to by his colleagues as the "grandfather" of the model Cooperative Graduate Engineering Program. He has been involved since its inception. At the university, the Program is also described as the state's "Extended Classroom for Engineering Education." Presently, the University of Virginia classes originate from a Thorton Hall classroom outfitted with the latest in audio-visual gadgetry, and they are transmitted via microwave with the help of the state's public television stations. The dean made these suggestions.

The best way to set it up would be to use the technologists and faculty at the originating and receiving sites; do not have the Department of Information Technology (DIT) or the public televisions involved. On a state level, obstacles such as institutional competition and turf problems need dialogue.

Also working with the engineering program is a director of Academic Outreach and Extended Engineering. He added that institutional leaders need to interact with the faculty and develop other types of academic programs. These programs may complement undergraduate programs or be topical short courses needed by industry. He notes these ideas.

Faculty need enough released time to develop programs and to work out distance learning problems such as teaching and advisory and evaluation logistics. Also, better understanding of distance learning by faculty and on-campus students is needed.

At another university, Virginia Polytechnic Institute and State University (VPI & SU), a professor and dean of engineering for extension is actively involved in the model Program. He also noted the option of setting up a workable system by using technologists and faculty at the originating and receiving sites. "We are already using satellite, and this is not regionally bound (as opposed to the micro-wave system and state public television station system). This needs to be considered." On a state level he summarized these concerns.

In developing a workable system, you need some form of a coordinative approach to help promote transferability, minimize unnecessary redundancies and competition. I believe SCHEV (or other responsible state agency) needs to become involved in order to keep abreast of the needs and understand the problems. There is need for an overall "system manager"—someone who is responsible to ensure the appropriate integration and interface relationships with the universities and industry and business.

In addition, he gave these examples of issues to address: greater commonality in academic schedules, tuition policies, registration procedures, and credit versus non-credit areas. From the same university (VPI & SU) a professor of education and an administrator of the
Learning Resources Center has been involved with the model Program and moderated an early videotape presentation. He said we need to do a survey of what the market potential is for the various work areas. "Without a needs assessment, it is difficult to plot a strategy and implement a plan." This educator believes, as do the other faculty who have been involved with Virginia's model Program, that the best way to set up the system is to go satellite.

But this would precipitate possible changes of state academic policies and practices. It would raise questions such as these:

- For credit and non-credit courses, how do these fit together with graduate programs versus continuing education programs?
- How do you treat in-state and out-of-state students?
- If distributed by satellite, what do you do to collect fees, distribute materials and give credit?

To make these things happen, he thinks SCHEV could act as a catalyst (one who precipitates a process without being involved in it).

Another dean, the Dean of Instructional and Student Services, at a multi-campus Community College also suggested setting up a workable system from the point of view of technology which is not geographically bound.

The best way is through a state-wide consortium of institutions using consensus and cooperation.
Originally, I believe the state institutions need to take the initiative, then whoever wishes may participate. Let it evolve, and we'll see. Perhaps interested industry and business groups want to cooperate, but get together those who are interested and do it!

To accomplish this, the dean says we need someone to take leadership— to establish a good atmosphere of cooperation. "SCHEV needs an astute facilitator dedicated to work with distance learning; I don't see how else it will work." The table on the following page shows a compilation of the part SCHEV could play in distance learning.
<table>
<thead>
<tr>
<th>PARTICIPANTS</th>
<th>DESCRIPTION, ROLE OF SCHEV</th>
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<tbody>
<tr>
<td>BUSINESS &amp; INDUSTRY LEADERS</td>
<td>Build cooperation among educators, government leaders, &amp; business and industry leaders</td>
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<tr>
<td></td>
<td>Manage programs</td>
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<td></td>
<td>Research needs and means for meeting those needs</td>
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<td></td>
<td>Encourage regional, professional groups to participate</td>
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<tr>
<td>STATE/AGENCY LEADERS</td>
<td>Implement a state strategy</td>
</tr>
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<td></td>
<td>Coordinate the involved parties (not regulate them)</td>
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<td></td>
<td>Facilitate cooperation and the sharing of ideas among colleges and universities</td>
</tr>
<tr>
<td>HIGHER EDUCATION ADMINISTRATORS</td>
<td>Develop communication links between higher education and business and industry</td>
</tr>
<tr>
<td></td>
<td>Keep current on what is going on in distance learning</td>
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<tr>
<td></td>
<td>Build cooperation among business and industry &amp; higher education (inc. private &amp; community colleges)</td>
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<tr>
<td></td>
<td>Provide incentive system for faculty &amp; those who participate</td>
</tr>
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<td></td>
<td>Experiment with varied distance learning programs</td>
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<tr>
<td>SCHEV'S ADMINISTRATORS</td>
<td>Determine key programs and accept requests for service</td>
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<td></td>
<td>Process proposals from brokers and evaluate them</td>
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<td></td>
<td>Award contracts</td>
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<td></td>
<td>Adjudicate state institutional differences, if necessary</td>
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<td></td>
<td>Assess present policies and practices &amp; change if necessary</td>
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<tr>
<td>HIGHER EDUCATION FACULTY &amp; DEANS</td>
<td>Develop cooperation among state universities and colleges</td>
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<td>Promote understanding of distance learning among institutional administrators, faculty &amp; students</td>
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<tr>
<td></td>
<td>Do an assessment of future needs</td>
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<td></td>
<td>Address continuing education discrepancies such as changing academic policies and practices</td>
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</table>
Summary- Second Hypothesis The second hypothesis stated "there is consensus as to the best way to fund and coordinate a workable system." The opinions of the participants did not result in overall agreement with the hypothesis; however, there was agreement regarding specific aspects. In summarizing the second hypothesis, a different approach was utilized. In analyzing both funding and coordinating, the data were classified according to opinions where the participants agreed and to those opinions where the participants disagreed.

Agreement: There was agreement among the participants in three general areas: that higher education consult business and industry in developing a workable system; that a state level cooperative be formed to coordinate and facilitate distance learning experiences; and funds for distance learning come from those who are involved, the deliverers and the customers.

All the participants thought business and industry needed to play an active role with higher educational institutions to determine the educational needs and to aid in funding the distance learning projects. One state official suggested formally involving the Chamber of Commerce. Another official commented that Governor Baliles is making industrial-academic cooperation a state aim. A participant, knowledgeable about the Graduate Cooperative Engineering Program, said a workable system
depends on industry cooperation. With the model Program, she said, "if the industrial community had not pushed for money from the General Assembly and for cooperation with SCHEV, it would not have made the progress it has." An industrialist indicated that industrial, advisory committees be formed to suggest needs for distance learning. He said that it would encourage industry and business to take a more active role in providing funding and other needs. A state educator felt that the state higher educational institutions need to take the initiative in planning a workable system; then interested industry and business groups who want to cooperate might get together with higher education for a state-wide consortium.

Participants also agreed that a cooperative should be formed on a state level to facilitate distance learning. They felt SCHEV needed to initiate a state-wide effort to study these problems. (Presently, there are task forces discussing distance learning, a SCHEV task force and a VCCS task force.) The SCHEV task force is divided into financing, academic quality and state issues.) Surprisingly, all participants recognized and agreed that a regional approach to distance learning was not workable. (Currently, a five-region system of consortia is in place in Virginia for continuing education and telecommunications in higher education.)
Third, there was agreement that funds for distance learning were to come from those who are involved—the deliverers (providers) and the customers (receivers). Participants mentioned a variety of possible sources for funding and suggested ways in which these sources might contribute. Major sources suggested were state and private funds. (Refer to the outline on p. 96.)

**Disagreement:** What were the areas where participants did not reach consensus? The major differences of opinion involved what role the state would take in distance learning. More specifically, it seemed to narrow to what role SCHEV would take in distance learning.

Industrial and business leaders thought a state-wide system must deal with the big obstacles of politics and turf problems. One industrialist mentioned developing a consensus of cooperation. Also, he felt SCHEV was well qualified for program management. A businessman thought the state's role was to foresee the needs of the customers by future strategic planning. SCHEV's role would include research on needs and meeting these needs, on definitive standards relating to credits and on policy adoption for "customizing" distance learning according to the needs of the customers. A business leader and former member of the Public Telecommunications Board thought the state executives and the General Assembly needed to act by allocating substantial working monies, not by cooperating
only in spirit. The director of a community cooperative contended the present method of funding distance learning poses problems to an industrial cooperative. He was opposed to funds for distance learning becoming an undefined part of the state universities' budget.

State government officials and agency leaders realized the importance of industrial and academic cooperation. The Secretary of Industry and Resources contended a workable system needed to be a matter of cooperation and not regulation. He thought SCHEV could decide what disciplines overlap and work toward extending scarce resources. A director of Educational Technology believed SCHEV could provide coordination between those who want it (customers) and those higher educational institutions which can best deliver it. An Education Applications Manager thought SCHEV could foster cooperation among higher educational institutions; then, distance learning could be beneficial to most of the state universities and colleges.

Disagreement about the role of SCHEV was greatest among two of the higher education administrators. A director of SCHEV favored a controlled, "broker-type" approach to distance learning. However, the president of a state university said he opposed SCHEV's monolithic, controlled approach to distance learning. He favored a customized (not centralized) approach. He thought SCHEV
could experiment with programs that are customized to meet the needs of the specific customers. Another administrator at SCHEV thought there was a strong possibility of a state-level consortium; he suggested it might be voluntary. He felt SCHEV would need to coordinate this body and adjudicate differences if necessary. Also, SCHEV would need to assess and possibly change policies and practices not compatible with distance learning. A vice-president at the Center for Innovative Technology viewed SCHEV's role as a coordinative agency. He stressed the need for SCHEV to give whole-hearted support with a staff that spends full-time to develop communication links, to keep current, and to build cooperation.

All of the higher education faculty and deans included in the study are also actively involved either in the model Cooperative Graduate Engineering program or in distance learning task groups. An engineering faculty member and dean viewed SCHEV's role as a forum for discussion; obstacles such as institutional competition and turf problems, for example, need dialogue. Also, funding problems such as the FTE (Full Time Equivalent) method need to be addressed. At the same university a faculty member, who directs the academic outreach program, thought faculty issues need both state and institutional attention. At another university, an engineering
professor and dean viewed SCHEV's role as an overall "system manager"—someone who is responsible to insure the appropriate integration and interface relationships with the universities and industry/business. An education professor and Director of Learning Resources thought SCHEV could act as a catalyst. A dean of instruction and student services at a multi-campus, community college and member of task forces thought SCHEV needs an astute facilitator dedicated to work with distance learning. SCHEV can establish a good atmosphere of cooperation between higher education and industry and business.

Third Hypothesis: Need for State Policy

The third hypothesis presumes "there is consensus as to the need for developing a coherent state policy in Virginia."

Results This hypothesis was not totally supported by the data from questionnaires and interviews. The questionnaire results indicated consensus for the hypothesis with one person not completing that section of the instrument. When questioned in the interview, the participant said he does not see a need for a state coordinating policy. Instead, he says there is need for a clearly, enunciated state strategy.

A strategy is an executive function (Governor
and State Secretaries) - something that guides the individual units; then the individuals decide how to do it using local initiatives.

Another, a government participant, indicated in his questionnaire that a coordinating agency was desirable and likely, but in the interview stated "not especially; if there is a need for distance learning, then the groups can seek out the best institution to suit their needs and contract with whomever will deliver what they want."

However, taking into consideration the interview results as well as the questionnaire, seven of eight (88%) strongly agreed there was need for developing a coherent state policy in Virginia. Interestingly, about one-third (33.3%) of the participants cited this was unlikely to happen. One commented this was "desirable philosophically but unworkable due to provincialism and political reality." Another participant agreed that it was unlikely.

    At least, not in the near future. I know of nothing, not even discussion, which is going on which will lead to a constructive, coordinated, statewide policy-- unfortunately.

Participants were specific in recognizing reasons for a need to develop a coherent state policy in Virginia.

1. To establish priorities, rewards and an evaluation system

2. To aid in cooperation and acceptance among institutions and pressure groups

3. To discuss scarce resource limits such as regulation of air waves and broadcasting capabilities
4. To share scarce, statewide, academic programs

5. To maintain academic quality

6. To give special thought to the needs of distance learners in a rapidly changing, informational society

7. To address issues such as:
   - How do credit versus noncredit courses fit with graduate versus continuing education courses?
   - If distributed by satellite, what do you do to collect fees, distribute materials, and give credit?
   - How do you treat in-state and out-of-state students?

8. To do a needs assessment/market potential survey

9. To provide integration of programs at a state level

10. To consider issues involved when contracting with out-of-state institutions

11. To solve these political issues: turf problems, "spoil sport" situations, parochial leanings, tendencies of major universities to dominate, self-interest of groups, and pragmatism of politics.

12. To address the needs of community cooperatives and private colleges as well as state colleges

13. To develop a reward system for faculty, students and universities

14. To include community colleges with state and private colleges in distance learning planning.

Of the participants that stated there was a need for a coherent state policy, all participants stressed that any policy developed must be fluid. Comments from a government official and an engineering dean that affirmed
this included: "any policy needs to be fluid and elastic" and "it should not be too restrictive." An administrator of SCHEV qualified his opinion. "There is need for a coordinating policy that is more of a direction, a philosophy rather than a law; it needs to be fluid with direction."

Summary: Third Hypothesis Participants gave strong support (88%) to the hypothesis that there is need for developing a coherent, state policy. There was consensus with those who answered the questionnaire. One participant in the interview spoke of a need for a clearly, enunciated strategy rather than a policy; something that guides the individual units. About one third of the participants concluded that a coherent, coordinating policy in Virginia was unlikely to happen; three participants suggested political reasons. Participants stated fourteen definitive reasons for a coordinating policy; of these, the most reiterated reasons were to solve political issues, and to aid in cooperation and acceptance among institutions and pressure groups. Participants emphasized this policy needed to be fluid and non-restrictive.
Fourth Hypothesis: Which Policy Options are Desirable and Likely

The fourth hypothesis stated: there is consensus as to which coordinating policy options are desirable and likely. Using this hypothesis, the researcher identified the options. The participants also specified which of the options were, in their opinion, desirable and likely and which of the options were undesirable and unlikely. On the brief questionnaire sent to the participants, there were seven options stated. (See Questionnaire in Appendix C.) The questionnaire allowed space for writing other options, but none were cited. Likewise, no other options were suggested in the interviews. This analysis will include seven options.

All participants (100%) reached consensus that two options were undesirable and unlikely. The first policy option was that an agency of the General Assembly assume responsibility for the development and provision of graduate-level, non-traditional programs. All participants indicated that this option was undesirable and unlikely. Four comments were made about it.

- It is a matter for educators to develop
- The General Assembly can provide funds but should stay out of the operation
- As long as budgetary support and control is provided by SCHEV, I see no need for the General Assembly to get involved
- SCHEV is better suited for programatic management than the General Assembly

The second policy option cited by the participants as undesirable and unlikely (100%) was the option that distance learning be coordinated by a private agency but within the parameters developed by SCHEV. Interestingly, a 1982 study under contract from the Virginia Department of Telecommunications (now titled the Department of Information Technology-DIT) recommended such an organizational plan. This plan proposed in *Telecommunications and Learning: A Strategy for the Commonwealth of Virginia Based on Current Practice and Future Possibility, 1982* was not implemented. For this policy option there were only a couple of brief remarks: "need to know more," and "depends on the parameters."

Two other policy options attracted a near consensus as being undesirable and unlikely. Of the participants that answered, 90% felt the concept that a private agency coordinate distance learning was undesirable and unlikely. Only one participant thought this policy option desirable but unlikely; he felt this might lessen the politics of universities and the General Assembly.

The other policy option that had near consensus (92%) as undesirable and unlikely was the possibility that a new state regulatory agency be empowered to develop policies and procedures. One participant, underscoring its
undesirability, responded that the Department of Information Technology (DIT) is bad enough for one state! Others commented on its undesirability.

- It would add unnecessary bureaucracy
- There are appropriate agencies to do this
- Issues should remain in educators' hands

Only one participant, a business leader, thought this option desirable, maybe long term, but not likely.

One policy option provoked contrasting and stronger responses, the laissez-faire approach where providers and receivers seek out their own arrangements to meet individual needs. About 80% of the respondents stated it was undesirable and unlikely. Respondents noted these comments.

- It wastes resources by duplicating existing telecommunications capacities and educational progress
- It contributes to inefficient competition that adversely impacts the quality and stability of educational offerings
- SCHEV legislation prohibits this from happening
- The costs and stakes are too high to allow this to happen; if this occurs, it will be the result of neglect and not laissez faire

One industrialist commented that this option is undesirable, but the possibility of the receiver seeking to make arrangements to participate is desirable.

However, three of the participants felt the lassiz-faire policy option to be desirable, but only one
participant thought it was likely. Two businessmen decided it was desirable, but that this option was unlikely to happen. A university president endorsed this policy option as the best for distance learning.

The best policy option is a policy of non-coordination, a laissiz faire approach where providers and receivers seek out their own arrangements to meet individual needs.

Of the seven policy options, there were two options that were deemed more desirable and likely. About 79% of the participants thought it desirable for SCHEV to assume responsibility for developing a policy. However, only 64% of the respondents indicated this policy was likely. These comments indicated that SCHEV already has given thought to it.

- It probably won't happen in any other way; SCHEV is already giving attention to it
- SCHEV currently has task forces working on it
- I assume SCHEV will take responsibility for this policy since already they have created a task force to discuss it
- If anyone should do it, SCHEV should, but limitations of staff and politicians clout may prevent it
- SCHEV should develop and implement policy, but it should not be too restrictive
- It seems this is the way it is going

An administrator of SCHEV stated that SCHEV has primary responsibility for determining direction and policy. He
said this would be based on strategy for Virginia (strategy to be made by the executive branch of state government) which would determine key programs.

However, three participants believed this policy option—that SCHEV assume responsibility for developing a policy—is both undesirable and unlikely. A business man and a professor indicated that this policy option was undesirable since a better option was that of a telecommunications cooperative. The third participant, a university president, believed this policy option undesirable and unlikely due to SCHEV's handling of the model engineering program. He posed the question of what is "driving" distance learning in Virginia. In the instance of the model engineering program, he questioned whether it was to "head-off" competing engineering schools, or was it in response to the needs of students and business. He claims to distrust central agencies; he feels they are real impediments especially in telecommunications. He surmised SCHEV is not interested in experimentation. In response to the question of why he wants to develop distance learning at his institution, he replied that he believes we are on the threshold of the dispersal of the university. The university president concluded he didn't think any policy was needed. "What is needed is a strategy we can buy into or not ... a strategy that is honest, forthright, articulate, elaborated, and
compatible." The seventh policy option considered by the participants was the possibility of a state higher education policy based upon the development of a telecommunications cooperative to promote interaction and coordination among those who provide and utilize distance learning. At least 87% of the participants considered this policy option to be the best option for Virginia to pursue. Several participants, although indicating it was the best policy option, didn't know what it specifically meant. Two participants cited this policy option to be undesirable. The representative of the State Council of Higher Education says it is SCHEV's responsibility to determine direction and policy. The director of the Center for Advanced Engineering recognized this telecommunications option to be somewhat like the current situation; he said, "this is ok, but it has some warts." He commented that, "it is best for those presently involved in distance learning to write policy."

The other participants (87%) felt this policy option to be the best and made the following comments.

A telecommunications cooperative is the best option. It has been evolving as the Cooperative Graduate Engineering Program expands.

A telecommunications cooperative is the best option. In the case of the Cooperative Graduate Engineering Program, it was the private sector (the engineering leaders) that initiated it and pushed for funds. A telecommunications cooperative is desirable; however there are forced cooperatives versus voluntary cooperatives.
Possibly SCHEV could be a titular head, a catalyst to make things happen, but policy and direction could be developed by a telecommunications cooperative.

I believe some type of telecommunication cooperative is the best policy option including industry advisory committees. However, I believe SCHEV needs to become involved in order to keep abreast of the needs and understand the problems.

The telecommunication cooperative is the best option; the building of cooperation is needed to deal with varied universities and along with industry/business to develop gradual consensus.

The telecommunications cooperative is the best option; however, a laissez faire approach resulting from thinking in terms of the deliverers and the customers may be workable.

The telecommunications cooperative is the best option; I don't see how else it will work. Initially, the state institutions need to take the initiative and include all who wish to participate; then, let it evolve. The important thing is to get it together and do it.

Summary - Fourth Hypothesis  The results indicated the participants did not fully support this hypothesis. Respondents did not suggest other policy options than the seven options indicated on the questionnaire. However, in analyzing each policy option, there were patterns of agreement and disagreement.

Participants considered five policy options to be undesirable and unlikely. (Refer to the following table.) They deemed two policy options to be desirable and likely with the telecommunications cooperative option having the most support (87%). (Refer to the following table.)
TABLE 2

Best Coordinating Policy for Virginia Higher Education
The Percent (%) of Agreement and Disagreement

<table>
<thead>
<tr>
<th>POLICY OPTION</th>
<th>DESIRABLE</th>
<th>UNDESIRABLE</th>
<th>LIKELY</th>
<th>UNLIKELY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telecommunications Cooperative Involving Those Who Provide and Utilize It</td>
<td>87%</td>
<td>13%</td>
<td>78%</td>
<td>22%</td>
</tr>
<tr>
<td>SCHEV Assume Primary Responsibility</td>
<td>79%</td>
<td>21%</td>
<td>64%</td>
<td>36%</td>
</tr>
<tr>
<td>Non-Coordination Providers &amp; Receivers Seek Own Arrangements</td>
<td>20%</td>
<td>80%</td>
<td>11%</td>
<td>89%</td>
</tr>
<tr>
<td>Private Agency Be Contracted</td>
<td>10%</td>
<td>90%</td>
<td>0%</td>
<td>100%</td>
</tr>
<tr>
<td>New State Regulatory Agency Be Empowered</td>
<td>8%</td>
<td>92%</td>
<td>0%</td>
<td>100%</td>
</tr>
<tr>
<td>Agency of General Assembly Assume Responsibility</td>
<td>0%</td>
<td>100%</td>
<td>0%</td>
<td>100%</td>
</tr>
<tr>
<td>SCHEV Contract with a Private Agency</td>
<td>0%</td>
<td>100%</td>
<td>0%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Summary: Analysis of Results

The results of the study indicated the research hypothesis was not fully supported. The hypothesis was stated as follows:

There is consensus among influential people in Virginia as to the best coordinating policy for Virginia's higher education and distance learning.
However, one of the policy options, the telecommunication cooperative, revealed near consensus (87%) among the participants. Of the seven policy options which the participants considered, the telecommunication's cooperative was considered to be the best option to facilitate distance learning in Virginia. The participants in this study seemed to be aware of the special need for fluid, cooperative interaction among the involved providers and receivers. When the researcher showed the participants (at the end of the interview) a model of Plude's theoretical model "Telecommunications Cooperatives", the participants felt it had relevancy for developing a coordinating policy in Virginia. Several participants thought the model had similarities to the way the Cooperative Graduate Engineering Program has evolved.

The results of the data fit in with the study's theoretical model, Plude's Telecommunications Cooperative Model. (See Appendix A.) The major components of the framework are those which Plude includes:

It is an attempt to visualize and analyze some components of a map of cooperation which:
(a) grows out of shared needs and pressures;
(b) generates institutional and human links;
(c) specifies workable cooperative techniques; and
(d) produces new options which can develop from the needs, links and technologies.6

The major strength of this model is that options are continually evaluated and renewed. Once cooperative telecommunications needs, links, and techniques have led to creative new possibilities or options, the evaluative process continues to operate so changes can be made in any part of the model to permit renewed options and possibilities.\textsuperscript{7}

\textsuperscript{7}Plude, p. 33.
CHAPTER V: SUMMARY AND CONCLUSIONS


In the future, such round-the-clock, open-to-all-ages schools will be the norm. But the most striking difference in tomorrow’s schools will be the pervasiveness of electronic delivery systems. And this change, too, has begun.  

The present research study represented an early attempt to contribute creative insights into state policy options for higher education and distance learning. Specifically, this study identified the alternative coordinating policies for Virginia higher education (graduate and continuing education) and telecommunications efforts in distance learning. Further, it analyzed and made suggestions (based on the research) as to which of these policies will best facilitate distance learning in Virginia. This is linked to how Virginia higher education can cooperate with business and industry to facilitate academic and industrial cooperation in distance learning.

This concluding chapter summarizes the key policy issues of the study, cites specific conclusions, discusses theoretical implications, and makes recommendations for

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Key Policy Issues (Summary)

Key policy issues were classified according to the four sub-hypotheses. Data supported the first hypothesis that there is a real need for graduate and continuing education in Virginia. Participants mentioned a wide range of program and course needs. They expressed needs beyond the mere maximizing of scarce resources. Additional reasons cited were: accelerating the training and re-training of industrial and business workers, updating professionals, attracting and keeping industry within the state, and for meeting the needs of the state citizens. Participants recognized that in the future additional needs using distance learning will be discovered by experimenting with courses, formats and new deliveries.

The second key policy issue was concerned with the best way to fund and coordinate a workable system. The opinions of the participants did not result in overall agreement with the hypothesis. However, there was agreement among the participants in these three, specific aspects: that higher education consult with business and industry in developing a workable system; that a state level cooperative be formed to coordinate and facilitate
distance learning experiences; and that funds for distance learning come from those who are involved—the deliverers and the customers. Disagreement between two of the participants was primarily in the role SCHEV should take in distance learning. One higher education administrator favored a controlled, "broker-type" approach, and the other administrator favored a customized (not centralized) approach. Other participants described their opinions of SCHEV's role by actions such as: (1) coordinate the involved parties; (2) build cooperation among educators, government leaders, and business and industry leaders; (3) identify needs and then meet those needs; (4) facilitate cooperation and the sharing of ideas among colleges and universities; (5) provide a reward system for faculty and administrators; (6) address policy discrepancies and distance learning issues; and (7) experiment with varied distance learning programs. (See Table on page 113 for the complete suggestions.)

A third key issue gave strong support (88%) to the need for developing a coherent state policy in Virginia. There was a consensus among those who answered the questionnaire. However, in the interviews one participant spoke for a clearly enunciated strategy instead of a policy. Participants recognized fourteen reasons for a coherent policy in Virginia; of those the most reiterated reasons were to solve political issues and to build
cooperation and acceptance among interested groups. Pessimistically, the data revealed that 33% of the participants thought a coherent, coordinating policy was unlikely to happen. In more positive opinions, participants recognized that a coordinating policy not only should be coherent but also should be fluid and non-restrictive.

The prime issue involved which coordinating policy options are desirable and likely. The researcher proposed seven policy options for participants to consider; no other options were suggested by the respondents. In analyzing each policy option, there were patterns of disagreement and agreement. Participants considered five policy options to be undesirable and unlikely. (Refer to Table 2 on page 132.) They deemed two policy options to be desirable and likely with the telecommunications cooperative option having the most support (87%).

Although the option of a telecommunication cooperative—one which would promote interaction and coordination among those who provide and use it—revealed near consensus (87%) by the participants, the research hypothesis was not fully supported.  

However, of the seven policy options which the participants considered, the telecommunication cooperative

\footnote{There is consensus among influential people in Virginia as to the best coordinating policy for Virginia's higher education and distance learning.}
appears to be the most favorably considered policy option to facilitate distance learning in Virginia.

Conclusions

Influential Virginian leaders in higher education, government, industry and business have contributed their opinions and expertise. Their responses seem to support the following conclusions.

1. First and foremost, all of the participants confirmed that there was a real and urgent need for distance learning in Virginia higher education (graduate and continuing education). Reasons stated by the participants besides the maximizing of scarce resources were: accelerating the training and re-training of industrial and business workers, updating professionals, attracting and keeping industry, and for meeting the needs of state citizens.

2. Participants realized that future needs would be discovered by experimenting with courses, formats and new deliveries. Not only can large universities experiment with distance learning, but smaller state and private colleges can aggregate their resources with telecommunications cooperatives that provide services for businesses and industries.
3. Participant opinions concerning the best way to fund and to coordinate a workable system did not result in overall agreement. However, they agreed in three areas:
   a. Higher education must include business and industry in developing a workable system.
   b. A state-level cooperative (as opposed to the present five-region system of consortiums) be formed to coordinate and facilitate a workable system.
   c. Funds for distance learning come from those who are involved--the customers and providers. These funds would include both state and private monies.

4. Participants differed in their concept of what the role of SCHEV should be in distance learning. One higher education administrator favored a controlled, "broker-type" approach, and another favored a customized (not centralized) approach. Other participants described their opinions of SCHEV's role by actions such as:
   a. Coordinate the involved parties
   b. Build cooperation among educators
   c. Research the needs and then find ways to meet those needs
   d. Facilitate cooperation and the sharing of ideas
among colleges and universities

e. Provide a reward system for faculty and administrators

f. Address policy discrepancies and other distance learning issues among institutions of higher education

g. Experiment with distance learning programs in order to optimize their contribution to the needs of potential students

5. Participants gave strong support to the need for developing a coherent state policy in Virginia. One participant spoke for a clearly, enunciated strategy instead of a policy. Participants recognized fourteen reasons for a coherent policy; of those the most mentioned reason was to build cooperation among the involved groups.

6. Although there was strong support for a coordinating policy, one-third of the participants indicated a coordinating policy was unlikely to be developed. Some respondents felt, despite task forces being formed, there was low priority in actuating distance learning, both in state government and in administrative higher education councils (SCHEV and VCCS).

7. The participants recognized that a coordinating policy should not only be coherent but should be fluid and non-
restrictive. This is complicated by the diverse nature of the two areas, telecommunications and higher education. As mentioned in the introduction chapter, telecommunications policy, historically federally regulated, is looking toward deregulation limited only by technical parameters of physical interference. In contrast, higher education policy, historically a local and state function, is moving toward increased regulation. Some of the participants recognized this diversity and seemed to recognize M. Goldstein's idea that the confluence of telecommunications and higher education will result in a new set of policies that increasingly are based on a competitive marketplace approach.3

8. Of the seven policy options considered, the participants considered the telecommunications cooperative policy to be the best option to facilitate distance learning in Virginia. (Refer to Table 2 on p. 132.)

9. Some participants voiced concern that a distance learning cooperative include all types of higher education institutions that wish to participate. Those especially cited, in addition to the major state institutions, were Virginia's community colleges, small state colleges and

private colleges.

10. Most participants, in discussing a possible telecommunications cooperative option, thought a voluntary cooperative with a laissez faire approach in terms of the deliverers and customers is workable. Besides institutions of higher education, members of this group might include representatives of such groups as Public Telecommunications Board, Chamber of Commerce, Center for Innovative Technology, community industrial cooperatives, businesses and industries, professional organizations, and economic development councils. One industrial administrator noted (regarding a state-level telecommunications cooperative) that this does not remove the need for local advocates of distance learning, persons who are regionally located to recruit, understand needs and problems, and promote distance learning. This concept would appear to be worthy of further investigation.

Theoretical Implications

The study's findings tend to fit with Plude's theoretical model "Telecommunications Cooperatives."4 When shown Plude's model at the end of the interviews, several participants remarked that the model had similarities to

the way the Cooperative Graduate Engineering Program has evolved. In Virginia, it was not until the needs of industry were pressed by the engineering community that distance learning began to develop. These needs were formally addressed by the Commonwealth in 1983 with recommendations in *The Report of the Governor's Task Force on Science and Technology in Virginia*. The "Colleges and Universities" committee recommended that high priority be given to establishing and enhancing graduate programs in high technology disciplines. They stated, "that programs should address the need for such students to continue their full-time work, minimizing residency requirements for graduate degrees and providing, where possible, course delivery systems which bring the programs to the prospective students." In addition, the committee strongly endorsed the Cooperative Graduate Engineering Program as a model for potential expansion into other geographical areas and subjects.

In this study, Plude's model was more than just revealing similarities to the cooperative engineering model. Though none of the participants were aware of Plude's model, the findings indicated most participants felt a telecommunications cooperative to be the best

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6Ibid.
policy option. Also, participants agreed that a state level cooperative be formed of those with shared needs and pressures. In distance learning these needs and pressures generate cooperative links not only with industry, business and government, but with the providers—the higher educational institutions. Plude describes her model.

It is an attempt to visualize and analyze some components of a map of cooperation which:
(a) grows out of shared needs and pressures;
(b) generates institutional and human links;
(c) specifies workable cooperative techniques
(d) and produces new options which can develop from the needs, links and techniques.\(^7\)

The strength of this model, as Plude points out, is that options are continually evaluated and renewed. Once cooperative telecommunications needs, links, and techniques have led to creative new possibilities or options, the evaluative process continues to operate so changes can be made in any part of the model to permit renewed options and possibilities.\(^8\) This model is adapted to the telecommunications field which itself is dynamic and change-oriented. In addition, the clarity and the flexibility of Plude's Telecommunications Cooperatives' model seems to fit the study's finding that Virginia's state coordinating policy should be coherent, fluid and

\(^7\)Ibid. pp. 30-31.

\(^8\)Ibid. p. 33.
non-restrictive.

**Recommendations for Future Research**

This study established that there is a real and urgent need for distance learning in the Commonwealth of Virginia. It has been initiated with the model program, the Cooperative Graduate Engineering Program.

This study has involved policy research for coordinating state higher education and telecommunications efforts. It is research that provides an information base for a course of action for institutions of higher education in distance learning for graduate and continuing education. It is connected to how Virginia higher education can cooperate with business and industry to facilitate academic and industrial cooperation in distance learning.

The study identified a state-level, telecommunications cooperative option as the best policy to facilitate distance learning for graduate and continuing education.

Further research should help to identify the optimum courses of action for implementing distance learning. It seems there are several directions that distance learning research and action might take. One is action and research by the higher education community to initiate a telecommunications cooperative. If this is not
forthcoming soon, research and actions for implementation by agencies of state government may prove to be necessary. It is also possible that in order for business and industry to meet the educational needs of their employees and staff, it will be necessary for them to take the initiative in order to meet their identified needs in the area.

Further research by the higher education community might be accelerated by a "call" for action. The higher education councils, SCHEV and VCCS, might make an open "call" to form a voluntary telecommunications cooperative. Invitations might be to any higher educational and industrial/business groups and individuals in Virginia who wish to be involved in distance learning efforts. From those who are interested, voluntary groups might be formed for both research and action. Research questions to explore might include the following.

- What are Virginia's present, specific needs in distance learning?

- What might Virginia's future needs be in the 1990's and in the year 2000?

- What in-state educational institutions are presently giving distance courses to out-of-state customers?

- What out-of-state educational providers are giving courses to Virginia businesses and industries?

- What state education policies/rules need to be changed to facilitate distance learning for graduate and continuing education?
- What telecommunication methods (satellites, interactive video, computers, teleconferencing) could be used to best inform those involved, as well as state citizens, about distance learning activities?

In the future, research will need to involve thinking in terms of international education. Even now, technical capabilities are so advanced that it is possible for "master teachers to address thousands of students scattered on several continents simultaneously." A recent news article mentions a new satellite dish at the University of Virginia which transmitted their engineering courses to 25 locations in Virginia, Maryland, and Pennsylvania last semester. Now, according to George Cahen, Director of Academic Outreach for Engineering

we are examining the possibility of targeting particular courses to interested firms and government agencies in California, and the satellite uplink gives us access to audiences throughout the Western Hemisphere.

In the near future, research will need to address issues relating to education as a life-long pursuit. Policy research in graduate and continuing education will need to think of students who will attend school throughout their lives, either for recreational learning or required learning for training and retraining.

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9Clarke, p. 83.

Distance learning, now in its infancy, is projected to become a common method of learning in a citizen's daily life—one not too far from the scenario Clarke describes.

On the evening of July 20, 2019, John Stanton is taking yet another teleclass. His classroom is actually a room in his home that is outfitted for teleconferencing. At the moment he is posing a question to his teacher. Sitting in a university video studio 1,400 miles away, the teacher appears in the room as a life-size three dimensional holographic image.\textsuperscript{11}

\textsuperscript{11}Clarke, p. 75.
APPENDIX A

Frances F. Plude, 1984

TELECOMMUNICATIONS COOPERATIVES: A Model

A. SHARED NEEDS/PRESSURES

financial constraints
R & D requirements
planning needs - long and short range
government regulation/ deregulation
rapid pace of technological change
limited resources
- broadcast spectrum
- human resources
varied client/consumer groups
programming (software) development
equity/justice issues
cultural differences
sovereignty efforts
organizational rigidities
political pressures

B. COOPERATIVE LINKS

Institutional/Individual

International associations
National governments
Service agencies
Equipment group-buys
User/Consumer Cooperatives
Corporate consortia
Manufacturing processes
Multilateral agreements
Planning and policy analysis
Program developers

C. SPECIFIC TECHNIQUES

Professional associations and lobbyists
Inter-agency committees
Task force groups and consultants
Joint research projects
Conferences/workshops
Technical interconnections (cable/satellite/computer and telephone links)

D. NEW OPTIONS

Sharing research, development, manufacturing costs
more efficient, current, policy initiatives
improved programming because costs and creative talents are coordinated cooperatively
greater consumer awareness and utilization
ability to handle increasing information requirements by individuals and society at large
COMMONWEALTH OF VIRGINIA

SATellite downLink LOCATIONS
Division of Educational Technology
Department of Information Technology

Abingdon: UVA's Continuing Ed. Center
Va. Highlands Community College

Albermarle: Southside Va. Community College

Annandale: Northern Va. Community College
(Extended Learning Institute)

Big Stone Gap: Mountain Empire Community College

Blacksburg: Virginia Tech

Charlottesville: University of Virginia*

Danville: Danville Community College

Dublin: New River Community College

Fairfax County: George Mason University
(Main and Metro campuses)

Falls Church: Telestar Center*
WNVC-TV

Farmville: Longwood College (proposed)

Franklin: Paul D. Camp Community College

Fredericksburg: Mary Washington College

Glenns: Rappahannock Community College

Hampton: ODU's Hampton Center

Harrisonburg: WVP-TV

Keysville: Southside Va. Community College

Lexington: Va. Military Institute (proposed)

Martinsville: Patrick Henry Community College

Norfolk: WHRO-TV

Old Dominion University (at WHRO)

Radford: Radford University

Richlands: Southwest Va. Community College

Richmond: Dept. of Information Technology*
WCVE-TV

Roanoke: Va. Commonwealth University (proposed)
WBRA-TV

South Boston: Halifax Co. Continuing Ed. Center (proposed)

Staunton: School for the Deaf and Blind

Virginia Beach: UVA's Continuing Ed. Center (proposed)

Tidewater Community College*

Warsaw: Rappahannock Community College

Weyers Cave: Blue Ridge Community College

Wise: Clinch Valley College

Woodbridge: Northern Va. Community College

* Denotes both C and Ku reception

Revised 1/9/87
Influential people interviewed were as follows.

1. Mr. Richard Bagley, Secretary of Commerce and Resources for the Commonwealth of Virginia. Formerly he was a State legislator, Chairman of the House of Delegates Appropriations Committee (when monies were appropriated for the Cooperative Graduate Engineering Project), and appeared on a videotape about the Project.

2. Dr. Benjamin S. Blanchard, Professor and Assistant Dean of Engineering for Extension, College of Engineering at Virginia Polytechnic Institute and State University.

3. Dorothy S. Boland, Education Applications Manager with the Division of Educational Technology; Department of Information Technology, Commonwealth of Virginia.

4. Mr. Harrol Brauer, Former member and Chairman of Virginia Public Telecommunication Board, businessman and owner of commercial television/radio stations; he was ex-officio member of boards such as the following: SCHEV, and Virginia Community College System. He was first rector of the Board of Christopher Newport College, and former Chairman of Hampton School Board (till 1970) and WHRO-TV & FM (public station).

5. Mr. Francis A Butler, Director of the Center for Advanced Engineering in Lynchburg. Formerly he was a manager and training coordinator at Babcock & Wilcox Company and a retired Navy Captain.


7. Dr. Donald Finley, Secretary of Education for the Commonwealth of Virginia.

8. Mr. Stanley Freedman, Retired Division President of Litton Industries. He was Committee Chairman of the Governor's Task Force on Science and Technology. He is an adjunct professor at Old Dominion University; also, head of new Center for Entrepreneurship and Private Enterprise.
9. Dr. Robert J. Grymes, Dean of Instructional and Student Services at Tidewater Community College. He is a member of a SCHEV state task force to develop a coordinated plan for telecommunications-based instruction. Also, he is a member of the steering committee of The College Telecommunications Access Program, Virginia Community College System.

10. Dr. Rodney E. Hanneman, Vice President & Chief Technical Officer, Reynolds Metals Company, Cooperate Quality Assurance & Technology Operations. He has been referred to as a "champion" for industry/academic cooperation and helpful in promoting the model Project. Also, I talked with Arthur L. Girard, a lawyer and now Manager of Planning Administration Corporate Quality Assurance & Technology Operations.

11. Dr. Stanley A. Huffman, Director of Learning Resources Center and Professor of Education at VPI & SU. He was involved with the Cooperative Graduate Engineering Project and was the moderator of the Project videotape.

12. Dr. Thomas E. Hutchinson, Associate Dean of Graduate Programs at the University of Virginia, School of Engineering. He was referred to as the "grandfather" of the Cooperative Graduate Engineering Project.

13. Dr. George W. Johnson, President of George Mason University.

14. Dr. J.C. Phillips, Director of Educational Technology with the State Department of Information Technology. Formerly, he was Deputy Director of Research & Planning with the Department of Telecommunications, Commonwealth of Virginia. Also he was employed by the State Council of Higher Education.


16. Dr. John J. Salley, Vice-president for Administration and Continuing Education at Center for Innovative Technology. Formerly, he was Director of Graduate Studies at Virginia Commonwealth University.
12 Grayson Street  
Portsmouth, VA 23707  
March 15, 1986

J.C. Phillips, Director  
Division of Educational Technology  
Richmond Plaza Building  
110 South Seventh Street, First Floor  
Richmond, Virginia 23219

Dear Dr. Phillips:

I appreciate your willingness to assist me in identifying alternative, coordinating policies for Virginia higher education (graduate and non-traditional continuing education) and telecommunication efforts in distance learning.

As an expert in these areas, your input will be valuable to this project. I plan to use these data, along with a study of the Cooperative Graduate Engineering Program, to analyze how each of these policies might be expected to:

- serve the needs of state learners, especially the graduate and non-traditional distance learner
- utilize the state educational resources in a cost-effective, productive way and
- facilitate academic/industrial cooperation.

Based on the results, I plan to make recommendations as to which of these coordinating policies will best facilitate distance learning in Virginia.

As discussed during our recent conversation, would you please respond and mail the enclosed brief questionnaire as soon as possible? I plan to review the responses for additional information in order that they may be considered further in the interview. Using this method, I think the interview will focus on relevant information and ideas. I hope to limit the interview time to about a half-hour.

I look forward to meeting with you on ( ).

Sincerely yours,
Barbara Hund (Telephone 804-397-0626)
Enclosure: Brief questionnaire and return envelope
APPENDIX C
QUESTIONNAIRE

The College of William and Mary

INSTRUCTIONS: Following is a series of statements representing possible courses of action for the development of programs of graduate distance learning—basically, classes where the provider (teacher in classroom) utilizes interactive video and audio technology to reach potential learners at a distant site—in Virginia. You are asked to indicate with a check mark whether the action suggested in each of the statements is desirable or undesirable, and whether it is likely or unlikely to happen in the foreseeable future. Following the statements is a space for your comments—which may be for clarification or additional information. After completing your responses, please return these sheets in the envelop provided.

1. It has been proposed (Governor's Task Force on Science and Technology in Va., 1983) that continuing education at the professional and technical level be provided to students throughout the Commonwealth via the electronic media (distance learning). Would such a development be...

   ....a. Desirable   ....b. Undesirable
   ....c. Likely      ....d. Unlikely
Comments:

2. Development of a statewide policy for constructing and coordinating the programs of agencies and academic/industrial organizations in Virginia, in order to provide educational opportunities at the graduate level is...

   ....a. Desirable   ....b. Undesirable
   ....c. Likely      ....d. Unlikely
Comments:

3. The possibility that the State Council of Higher Education in Virginia (SCHEV) might assume the primary responsibility for developing a policy for coordinating graduate-level, nontraditional educational opportunities for employed adults should be considered...

   ....a. Desirable   ....b. Undesirable
   ....c. Likely      ....d. Unlikely
Comments:
4. Assumption of responsibility for the development and provision of graduate-level, non-traditional programs by an agency of the General Assembly of Virginia should be considered...
   ....a. Desirable  ....b. Undesirable
   ....c. Likely  ....d. Unlikely
Comments:

5. A state higher education policy of non-coordination of graduate-level, distance learning (a laissez faire approach where providers and receivers seek out their own arrangements to meet individual needs) in Virginia is...
   ....a. Desirable  ....b. Undesirable
   ....c. Likely  ....d. Unlikely
Comments:

6. A state higher education policy involving a contract with a private agency to coordinate all "distance education" activities is...
   ....a. Desirable  ....b. Undesirable
   ....c. Likely  ....d. Unlikely
Comments:

7. A state higher education policy involving a contract with a private agency but within the parameters developed by SCVEV is ...
   ....a. Desirable  ....b. Undesirable
   ....c. Likely  ....d. Unlikely
Comments:

8. A new State Regulatory Agency empowered specifically to develop policies and procedures to be followed by both potential providers and possible receivers of graduate level distance learning is...
   ....a. Desirable  ....b. Undesirable
   ....c. Likely  ....d. Unlikely
Comments:

9. A state higher education policy based upon the development of a telecommunications cooperative to promote interaction and coordination among those who provide and utilize distance learning opportunities is...
   ....a. Desirable  ....b. Undesirable
   ....c. Likely  ....d. Unlikely
Comments:

10. ADDITIONAL COMMENTS: Are there any issues or potential problems that you feel must be resolved before a "distance education" policy can be developed? (Respond, if you desire, on reverse side of paper).
APPENDIX C

Hund. April-June 1986

PRIMARY INTERVIEW QUESTIONS

1. Do you feel there is a real need for graduate and continuing education training in VA via distance learning (electronic, interactive network)? Is this the best way to go? If not, why?

2. If so, what might the limitations be? e.g. do you see it primarily in science and technology training? What areas might be desirable?

3. If you feel it is the way to go, what do you think the chances are in developing a workable system in VA?

4. What might be major obstacles in developing a workable system in VA?

5. What people do you feel have specific interests in distance learning (what parties are involved)?

6. What do you think would be the best way to set it up to make it work?

7. What are possible ways (options) of funding it?
   A. Which do you feel is the best way?
   B. Should this be self-supporting or should the state subsidize it?
   C. What financing mechanisms may work?
8. Is there a need for developing VA state policy? If not, why? If so, what are the the options?

9. What have you seen that would make state policy (coordination) possible and likely?

10. What have you seen that may make state policy (coordination) difficult to achieve?

11. Do you feel a state higher education policy based on development of a telecommunications cooperative to promote interaction and coordination among those who provide and utilize distance learning opportunities is desirable? (Refer to Plude's theoretical model)

   A. Is it likely?
   B. If it is likely, how might it be able to work in VA?
   C. If desirable and unlikely, what might prevent it from happening?
   D. If it is unlikely and undesirable, why?

12. Which option do you think is best and why?
Electronic Classroom / MEDIA CENTER

Legend:
- TV CONTROL
- MEDIA CENTER
- 28' x 11'-5"
- DRAPES ON TRACK
- STORAGE
- ANNOUNCEMENT
- TV CONTROL
- STORAGE
- DISTRIBUTION EQUIPMENT
- STUDENTS' TABLES & CHAIRS
- DRAPES
- CLASSROOM—23' x 28'
- CAPACITY—21
- CHAIR OR STOOL
- CEILING OR WALL MOUNTED TV SET
- VCR
- VIDEO CAMERA
- CAM
- 160

APPENDIX D
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Vita
Barbara Maurer Hund

Birthdate: December 11, 1930
Birthplace: Wilkes Barre, Pennsylvania

Education:

1979-1987 The College of William and Mary in Williamsburg, Virginia
Certificate of Advanced Graduate Study in Higher Education
Doctor of Education

1956-1957 The University of Wisconsin Madison, Wisconsin
Master of Arts Degree in Speech and Broadcasting

1948-1952 Hofstra University Hempstead, New York
Bachelor of Arts in English and Elementary Education

Additional Education

1965-1966 Yale University, Institute of Far Eastern Languages in Chinese New Haven, Connecticut

1955 (Summer) University of London, England

1953 (Summer) University of Edinburgh, Scotland

Experience in Higher Education and Television

1976-present Tidewater Community College
Associate Professor in English, Speech and Broadcasting

1979-1980 Old Dominion University
Adjunct Lecturer in Speech

1956-1970 Educational Television Producer, Writer and Broadcaster:
Chinese Broadcasting Company, Taiwan, Republic of China
WMHT-TV Public Television in Schenectady, New York
Washington County TV School Project in Hagerstown, Maryland
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Abstract

DISTANCE LEARNING AND HIGHER EDUCATION: A STUDY IN STATE­WIDE POLICY AND COORDINATION FOR CONTINUING EDUCATION IN THE 1980s.

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The College of William and Mary in Virginia, May 1987

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This study was concerned with policy research for coordinating state higher education and telecommunication efforts. It focused on graduate and continuing education and on distance learning. (Distance learning is an extension of the classroom which utilizes interactive television. It is more than televised lectures; students can speak with their professor and in some cases be seen by their professor and by students even though located at distant sites.)

This study's research was to identify and analyze possible coordinating state policies that would best facilitate distance learning in Virginia. This is linked to how Virginia higher education can interact with business and industry to encourage academic and industrial cooperation in distance learning.

It was hypothesized that there is consensus among influential people in Virginia as to the best coordinating policy for Virginia's graduate and continuing education and distance learning. The results of the study indicated the research hypothesis was not fully supported. However, one of the policy options, the telecommunications cooperative, revealed near consensus (87%) among participants. Of the seven policy options which the participants considered, the telecommunications cooperative was considered to be the best option to facilitate distance learning in Virginia. The results of the data fit with the study's theoretical model, Plude's Telecommunications Cooperatives Model.

The responses of influential Virginia leaders in higher education, government, business and industry seem to support the following conclusions:

1. The participants confirmed that there was a real and urgent need for distance learning in Virginia's graduate and continuing education. Reasons stated by the participants besides the maximizing of scarce resources were: accelerating the training and re-training of industrial and business workers, updating professionals,
attracting and keeping industry, and for meeting the needs of state citizens.

2. Participants realized that future needs would be discovered by experimenting with courses, formats and new deliveries.

3. Participant opinions concerning the best way to fund and to coordinate a workable system did not result in overall agreement. However, they agreed in three areas: higher education must include business and industry, a state-level cooperative be formed to coordinate and facilitate a workable system, and funds for distance learning come from those who are involved--the customers and providers and these funds would include both state and private monies.

4. Participants differed in their concept of what the role of SCHEV should be in distance learning.

5. Participants gave strong support to the need for developing a coherent state policy in Virginia; although, one-third of the participants indicated a coordinating policy was unlikely to be developed.

6. The participants recognized that a coordinating policy should not only be coherent but should be fluid and non-restrictive.

7. Of the seven policy options considered, the participants considered the telecommunications cooperative policy to be the best option. In considering this option, most participants thought a voluntary cooperative with a laissez faire approach in terms of the deliverers and customers is workable.

8. Some participants voiced concern that a distance learning cooperative include all types of higher education institutions that wish to participate.

In the future, policy research will need to focus on interstate and international education and in issues relating to education as a life-long pursuit.