THE ROLES OF THE SCHOOL LIBRARY MEDIA SPECIALIST IN THE FUTURE: A DELPHI STUDY

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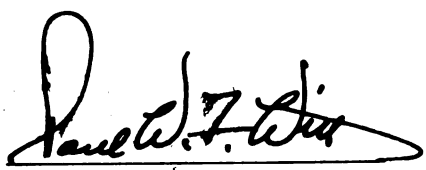

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ABSTRACT

THE ROLES OF THE SCHOOL LIBRARY MEDIA SPECIALIST IN THE FUTURE: A DELPHI STUDY

By

Margaret Ann Jetter

Purpose of the Study

The purpose of the study was to identify viable roles for the school library media specialist of the future. Through the use of a futurist research method, the Delphi Technique, experts in the allied fields of library/media services, library/media education, curriculum and instruction, and educational research were asked to consider together what the roles of the school library media specialist should be in the future.

Procedures of the Study

Fifty-three leaders in the four professional specializations, nominated by their colleagues as being uniquely qualified to provide significant input to the study, participated in the study.

The study consisted of three successive rounds of questionnaires, interspersed with appropriate feedback of information and opinion.

In round one, participants were asked to suggest roles which they believed the school library media specialist should perform in the future. In round two, the participants were provided a list of fifty-eight role statements grouped under seven function categories (Research, Evaluation, Design and Production, Utilization, Instruction, Communication, and Management), comprising the total recommendations of the respondents, and were asked to rate each statement on a Likert-type 5-point scale to indicate their perception of the importance of the role for the work of the school library media specialist in the future. In round three, the participants were provided a report of the group rating, expressed as a modal score, for each identified role and were asked to re-rate the item in light of the group opinion, i.e., to indicate their agreement or disagreement with the majority opinion.

Conclusions

The study resulted in two kinds of conclusions: those dealing with role recommendations and those dealing with the methodology of the study. The major conclusions were:

1. The school library media specialist of the future will function as an instructional development specialist.

2. The participants tended to approach consensus regarding the relative importance of the recommended roles in successive rounds of the study.

3. The members of the four professional specialization groups who participated in the study tended to be more alike than different in their perception and rating of the relative importance of the recommended roles.

Implications

The following implications were derived from the findings of the study:

1. Different role expectations for the school library media specialist of the future require changes in programs of professional preparation.

2. Expressed agreement about role expectations among participants in the study should facilitate an interdisciplinary approach in programs for preparing the school library media specialist.

3. Different role expectations for the school library media specialist of the future require changes in work environments.

Recommendations

The findings of this study indicate an urgent need for future-planning activities focused on:

1. Designing new programs for the professional education of the school library media specialist which

prepare students to perform the roles recommended by participants in this study, and

2. Designing innovative educational environments in which the school library media specialist is both enabled and encouraged to perform the recommended roles.

It is recommended that programs for preparing the school library media specialist of the future be made interdisciplinary in order that the student will acquire the competencies he needs to perform the roles identified through this study.

It is further recommended that the practicing school library media specialist be permitted opportunity to work with teachers and students in non-traditional ways as suggested by the roles identified through this study.

THE ROLES OF THE SCHOOL LIBRARY MEDIA SPECIALIST IN THE FUTURE: A DELPHI STUDY

By

Margaret Ann Jetter

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DEDICATION

To my mother and father, to my sisters, Jayne, Martha, and Judy, and to my brother Chuck. Their encouragement, understanding, and faith helped me to complete this thesis and the doctoral program.

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I wish to express sincere appreciation to Dr. Paul W. F. Witt, chairman of my Doctoral Guidance Committee, a mentor and friend throughout my doctoral program, for his constant support and encouragement.

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I should like to thank Dr. Jo Lynn Cunningham for her help with the design and implementation of the statistical analyses.

Lastly, I wish to express my deepest appreciation to those fifty-three persons who made the study possible, the participants. I am grateful for their interest in the study and for their perseverance in completing the three questionnaires.

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CHAPTER I

INTRODUCTION

A new attitude toward future-planning is emerging in many sectors of contemporary society. This attitude, reflected in the work of several private and public future-planning agencies, indicates that future-planning based on informed judgments about the future may enable man to exert considerable influence over his future, to give it direction, rather than to let it happen.

In discussing the credibility of future-planning, Kahn and Wiener state that: "This kind of study of the long-range future has, after some decades of disrepute, become once again a matter of scholarly interest."[1]

Rescher agrees that: "Since the early 1960's, the future has blossomed forth into a topic of increasingly widespread concern and interest . . . the future has come into its own."[2]

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[1]Herman Kahn and Anthony J. Wiener, The Year 2000 (New York: The Macmillan Company, 1967), p. 4.

[2]Kurt Baier and Nicholas Rescher, eds., Values and the Future (New York: The Free Press, 1969), p. 102.

Adding another dimension to the role of future-planning, Jouvenel states that: "The future is our only field of power, for we can act only on the future."[3]

Gabor introduces another point of view when he asserts that: "The future cannot be predicted, but futures can be invented. It was man's ability to invent which has made human society what it is."[4]

R. Buckminister Fuller and Harrison Brown have made similar statements in a McGraw-Hill film entitled THE FUTURISTS.[5] They consider the invention of the future to be a process of determination; and they perceive a merit of the future to be the fact that it is not set, i.e., that man can determine and create a viable future for himself and his fellow men.

In a discussion of the post-industrial society, Daniel Bell explains that:

> Perhaps the most important social change of our time is the emergence of a process of direct and deliberate contrivance of change itself. Men now seek to anticipate change, measure the course of its direction and its impact, and even shape it for predetermined ends.[6]

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[3]Bertrand de Jouvenel, The Art of Conjecture, translated from the French by Nikita Lary (New York: Basic Books, 1967), p. 5.

[4]Dennis Gabor, Inventing the Future (New York: Alfred A. Knopf, 1964), p. 207.

[5]The Futurists, 16 mm film, 25 minutes, color, sound (New York: McGraw-Hill, 1967).

[6]Daniel Bell, "Notes on the Post-industrial Society, I," The Public Interest (Winter, 1967), p. 25.

Bennis has said that: "Controlling the anticipated future is, in addition, a social invention that legitimizes the process of forward planning."[7]

A leading advocate of scientifically-oriented future-planning, Olaf Helmer believes that:

> The change in attitude toward the future is manifesting itself in several ways: Philosophically, in that there is a new understanding of what it means to talk about the future; pragmatically, in that there is a growing recognition that it is important to do something about the future; and methodologically, in that there are new and more effective ways of, in fact, doing something about the future.[8]

These men, all of whom have devoted considerable time, thought, and study to the matter of future-planning, seem to be saying that the exploration of the future is no longer to be equated with crystal-ball gazing or science-fiction writing. Rather, Helmer affirms: "There is a growing awareness that a great deal can be said about future trends in terms of probability, and moreover that through proper planning we can exert considerable influence over these probabilities."[9]

Jouvenel has said: "Nowadays our positive value is change."[10] Therefore, Helmer agrees: "It is becoming

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[7]Warren G. Bennis, "A Funny Thing Happened on the Way to the Future," American Psychologist XXV (July, 1970), 596.

[8]Olaf Helmer, Analysis of the Future: the Delphi Method (Santa Monica, California: The Rand Corporation, 1967), p. 1.

[9]Ibid., p. 2.

[10]Jouvenel, Conjecture, p. 10.

mandatory for us to strive to anticipate changes in our environment rather than to attempt to deal with them belatedly and inadequately after it has become obvious that they are upon us."[11]

Another futurist, Brownlee Haydon believes that: "The future has become so much a part of our present that it has become respectable to speculate on almost any trend. Scholars of great eminence, supported both by the foundations and by the Government [sic], are seriously engaged in attempts to foresee the future."[12]

The Commission on the Year 2000, one of several future-oriented study groups,[13] under the chairmanship of Daniel Bell, indicates that its object "has not been so much to predict or prophesy as to suggest 'alternative futures,' among which choice is possible."[14]

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[11]Helmer, Analysis, p. 2.

[12]Brownlee Haydon, The Year 2000 (Santa Monica, California: The Rand Corporation, 1967), p. 4.

[13]Future-oriented study groups include: the FUTURIBLES project in France, directed by Bertrand de Jouvenel; the Hudson Institute, headed by Herman Kahn; the Commission on the Year 2000, sponsored by the American Academy of Arts and Sciences, under the chairmanship of Daniel Bell; the Institute for the Future and its subagencies, the Educational Policy Research Center at Syracuse University and the Stanford University Research Center; the Rand Corporation; TEMPO, the future-planning agency of the General Electric Company; and the Committee on the Future, sponsored by the New York Times.

[14]Daniel Bell, ed., Toward the Year 2000: Work in Progress (Boston: Houghton Mifflin Company, 1968), p. vi.

Bell asserts: "The real need in American society, as I saw it, was for some systematic efforts to anticipate social problems, to design new institutions, and to propose alternative programs for choice."[15]

So, in business and industry, in the social sciences, and in government and the military, the attention of influential leaders is being directed to long-range considerations of the future, i.e., to anticipating and shaping the various possible futures which lie before mankind.

Several methods and techniques have been devised to assist in future-planning activities, e.g., the construction of mathematical models, simulation procedures, systematic approaches to the utilization of expert opinion. By using one or a combination of several of these techniques, it is possible for future-planners not only to anticipate changes in the future, but also to make preparations to deal adequately with the changes.

Unfortunately, the futurists, in planning for a post-industrial society, are giving relatively little attention to the role of education and schools in this future.

In the final volume of papers reporting the Designing Education for the Future project, Lonsdale said:

> Despite the prominence given education nationally in the sixties, it is disappointing to see how

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[15] Ibid., p. 10.

> little attention is given to education in the general futuristic literature. It may therefore be necessary for educational futurists to synthesize for education the products of the futurists from other fields.[16]

In several future-oriented studies, however, the importance of education has been cited. Hirsh terms education "an industry of gigantic proportions, an industry that is unique in the history of nations."[17]

R. Buckminister Fuller believes that education is, in fact, the upcoming major world industry. In addressing a committee of distinguished educators who were working together to plan a new campus for Southern Illinois University, he said: "You are faced with a future in which education is going to be number one among the great world industries."[18] Fuller charged the assembled group of scholars to plan wisely for that future.

These statements which support the importance of education now and in the future indicate a need for future-planning as great as that in other arenas of contemporary life. The responsibility of education to prepare the child

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[16]Richard C. Lonsdale, "Some Implications for Education and the Preparation of Educators," in Designing Education for the Future, No. 7: Preparing Educators to Meet Emerging Needs, ed. by Edgar L. Morphet and David L. Jesser (New York: Citation Press, 1969), p. 21.

[17]Werner Z. Hirsch, Inventing Education for the Future (San Francisco: Chandler Publishing Co., 1967), p. 3.

[18]R. Buckminister Fuller, Education Automation (Carbondale, Illinois: Southern Illinois University Press, 1962), p. 47.

now in school to function effectively as an adult demands the same sort of long-range, systematic planning for the future as that which other sectors of society are currently undertaking.

Shane believes that, although the concept of future-planning[19] is little known in educational circles: "The times now seem right for educators to consider applying these challenging methodologies in the identification of acceptable educational alternatives."[20] He asserts that the techniques of the futurists can be employed: " . . . to create the educational future that our beliefs recommend from among the many less desirable alternative futures in which education, by default, may find itself."[21]

Bennis concurs that: "A scientific study of the future should identify preferred alternatives."[22]

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[19]Shane distinguishes between future-planning and future-planning. He believes the latter has been commonplace in education and consists of a passive, linear process in which educators endeavor to determine what current circumstances and trends suggest for the future. However, the former is an active process for it conceives of the future as a fan-like spread of many "possibles", and it assumes that the nature of our tomorrows can be mediated, even to some extent determined, though systematic conjecture based on analysis and projection of data.

[20]Harold G. Shane and June Grant Shane, "Future Planning and the Curriculum," Phi Delta Kappan (March, 1968), p. 372.

[21]Ibid.

[22]Bennis, Funny Thing, p. 598.

Daniel Bell states that: "The problem of the future consists in defining one's priorities and making the necessary commitments."[23]

In the final chapter of his book on forecasting, Jouvenel says: "It is not a matter of forseeing the future once and for all, but of discussing the future continuously."[24]

It is especially important for educational futurists to attend to the status of teachers in the future. Anticipated changes in the educational environment will necessitate changes in the roles and activities of teachers.

This study is designed to relate the concepts of future-planning in education to a consideration of the roles of the school library media specialist of the future.

Purpose of the Study

The purpose of this study is to identify viable roles for the school library media specialist of the future. The study is designed to use one of the futurist research methods, the Delphi Technique, to call upon experts in the allied fields of library/media services, library/media education, curriculum and instruction, and educational research to consider together what the roles of the school library media specialist should be in the future.

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[23]Bell, Toward, p. 8.

[24]Jouvenel, Conjecture, p. 277.

Need for the Study

"Specialization of occupation is a growing social factor in modern life."[25] This fact is as pertinent in education as in any other field. Many groups of educational "specialists" are emerging, e.g., curriculum consultants, counselors, psychologists. "Educators whose main responsibility lies in the preparation, distribution, and use of audio-visual materials represent another group of specialized personnel newly developed and integrated into the field of education."[26]

"The new demands which are being made, however, call for the education of new types of media generalists who are capable of managing the broad range of communication forms utilized in education today."[27]

Moreover, "when systems of instructional materials are developed and recorded which radically change the conventional roles of teachers and students . . . corresponding

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[25]James D. Finn, "Professionalizing the Audio-visual Field," AV Communication Review, I (Winter, 1953), 6.

[26]Ibid.

[27]Wesley C. Meierhenry, "Programs for the Preparation of Media Specialists," in The Professional Education of Media Service Personnel, ed. by C. Walter Stone (Pittsburgh: The University of Pittsburgh, 1964), p. 7.

changes should occur in the roles of librarians and in library operations."[28]

Finn, Meierhenry, and Carpenter point up the need not only for a new kind of educational specialist[29] who is responsible for the information services of the school but also for a careful examination of the roles and functions of this specialist.

During the 1967 Curriculum Conference sponsored by the Teachers College Department of Curriculum and Teaching, Witt presented a paper which focused on "The Instructional Materials Specialist and His Contribution to the Development of Educational Technology."[30] In this paper, he says:

> In our efforts to develop instructional materials specialists we need to continue our studies of their roles and functions. Our present conceptions of what they should do are largely the result of arm-chair speculation and subjective reflection on experience. We need to describe, analyze, and appraise the work materials specialists actually

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[28]C. R. Carpenter, "Strategies of Learning and Learning Resources," in Proceedings of the National Conference on the Implications of the New Media for the Teaching of Library Science, ed. by Harold Goldstein (Champaign, Illinois: University of Illinois, 1963), p. 18.

[29]References in the literature to the educational specialist with whom this study deals include such terms as: librarian, instructional materials specialist, audio-visual specialist, media specialist, media generalist. In the study, the term "school library media specialist" is used.

[30]Paul W. F. Witt, ed., Technology and the Curriculum (New York: Teachers College Press, 1968), pp. 63-67.

> do. We need to explore with teachers and supervisors their perceptions of the work of media specialists, the values they attach to this work, and what they would like media specialists to do.[31]

This study will attempt to deal with some of the concerns raised by Witt by determining what leaders in the field of education think will be important roles for the school library media specialist to perform in the future. Participants in the study will both identify viable roles for the school library media specialist of the future and evaluate each role according to their perceptions of the importance of the role for the effective performance of the school library media specialist in the future.

Theory and Rationale

In his critique of the Delphi method, Weaver says: "The value of a forecast for educational policies lies in convincing people to act."[32]

Jouvenel agrees that: "We want to forecast in order to act."[33] He believes that forecasting and decision-making should be brought into a meaningful relationship. "Our need to take decisions and our ability to make them are the chief practical justification of forecasting."[34]

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[31] Ibid., p. 66.

[32] Timothy W. Weaver, The Delphi Method: Background and Critique, Report I (Syracuse, New York: Educational Policy Research Center, Syracuse University Research Corporation, 1970), p. 38.

[33] Jouvenel, Conjecture, p. 113.

[34] Ibid., p. 128.

Data from several future-oriented studies suggest that meaningful future-planning can result when experts in a discipline determine together what should happen to that discipline in the future and then determine how to achieve the desired future status.

Helmer has said: "In the absence of a theoretically convincing reason for selecting a particular action or a particular policy for action, we turn for advice to experts."[35]

The focus of this study is on what the expert/forecaster would like to see happen, rather than on what is likely to happen. The research method used in the study, the Delphi Technique, encourages the participants to share their thinking about the future, to expand their awareness of alternative future options, and to examine the assumptions they hold about such options. With this information, sound future-planning should result.

Essentially, the theory underlying this study is that the use of the Delphi process to structure the participants' thinking about the future roles of the school library media specialist also provides (a) a method for studying the process of thinking about the future, (b) a method for teaching people to think about the future in a more complex

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[35]Olaf Helmer, Social Technology (New York: Basic Books, 1966), p. 11.

way than they ordinarily would, and (c) a planning tool which may aid in probing priorities and choosing among alternatives.

To paraphrase Daniel Bell's charge to the Commission on the Year 2000: The real need in American education is for some systematic efforts to anticipate educational problems, to design new techniques for accommodating these problems, and thereby to propose alternative programs for choice.

The investigator has attempted in this chapter to show that the concept of future-planning has credibility; that there is a need to use the methodology of future-planning to examine the roles of the school library media specialist of the future in order to determine necessary changes in these roles; and that the purpose of the study is a viable one, i.e., to utilize the informed judgments of educational experts to identify new roles for the school library media specialist of the future.

Assumptions

Assumptions underlying this study are:

1. The school library media specialist of the future will need to assume a different role from that of the traditional school librarian.

2. Personal expectations of influential individuals in a given discipline have significant effect on the direction of future development in that discipline.

3. A forecasting activity, such as the Delphi Technique, by calling to the attention of the participants many alternatives for the future, can assist the participants to make better choices in planning for the future.

4. Experts engaging in the Delphi Technique will tend in successive rounds of the process to approach a consensus as to the relative importance of the items under consideration.

5. The procedure of the Delphi Technique, i.e., the successive rounds of questionnaires, will enable the panel of experts to focus on matters of general concern to the group; extreme views held without strong conviction will tend to lose focus in successive rounds of evaluation and rating.

6. Members of the four professional specialization groups who participate in the study will tend to have different opinions about the relative importance of roles for the school library media specialist of the future.

It is recognized that certain of these assumptions (items 1, 4, 5, and 6) might be considered hypotheses. It is anticipated that the study will produce data which will enable judgments to be made about the validity of the assumptions, especially items 1, 4, 5, and 6.

Limitations

The following limitations are acknowledged to be inherent to this study:

1. The role expectations are limited to those which were identified by those persons who participated in the study.
2. The ratings of identified role expectations are limited to the perceptions of those persons who participated in the study.

Definition of Terms

Following are definitions of terms pertinent to the study. For each term, a definition is provided, followed by a citation to the source of the definition. Additional discussion of each term indicates its specific relationship to the study.

Delphi Technique

"A process for the controlled elicitation of group opinion by an iterative use of questionnaires with a selective feedback of earlier group responses as an informational input for later reference by group members" (Nicholas Rescher, Delphi and Values, p. 1).

The Delphi Technique is a research method which attempts to make effective use of informed intuitive judgments by identified experts in a given field of inquiry about the future condition of that field. Application of the technique derives from the realization that the personal expectations of influential individuals in a given

field of inquiry have significant effect on the direction of future development in the field.

The Delphi Technique employs a series of questionnaires interspersed with information and/or opinion feedback derived from previous questionnaires. The basic characteristics of the technique are anonymity, iteration with controlled feedback, and statistical group response.

Expert

"A person who is able to bring to bear his background information in a way that is not systematized in a predefined analytical model but involves informed judgment based on inarticulated data. He is thus able to base his assessment not only upon overt trends, but also upon underlying regularities and a general, informed appraisal of the phenomenology at issue" (Nicholas Rescher, Values and the Future, p. 106).

The following guidelines were established for the identification of experts to participate in the study:

> Direct experience in, or sufficient knowledge about, public school operation in order to make viable predictions about education in 1985 and about the roles of the school library media specialist in the future.
>
> An objective and disciplined outlook on education which will permit intuitive and rational judgments about its future.

Sufficient experience in positions of authority and responsibility so that their opinions will be acceptable to other educators.

A sensitivity for the creative utilization of resources, human and material, in the educative process in order to suggest viable new roles for the school library media specialist of the future.

Orientation to the future.

School Library Media Specialist

"The first level of professional responsibility on the school library media center staff; the incumbent participates as a specialist in instructional media, applying the knowledge of media categories to the development and implementation of curriculum."(Robert N. Case and Anna Mary Lowrey, School Library Manpower Project, Phase I--Final Report, p. 18).

For purposes of this study, the term "school library media specialist" represents the professionally-prepared person who provides direct media services to teachers and students at the building level. The term does not represent a person who has broader responsibility, e.g., district media coordinator.

Future

The future is identified as being some fifteen years hence, i.e., 1985.

Organization of the Study

A frame of reference for the study is developed in Chapter I. Included are an introduction, the purpose of the study, the need for the study, the theory and rationale which support the study, assumptions which underlie the study, limitations of the study, and the definition of terms used in the study.

In Chapter II, a review of related research literature is presented. This review includes two major areas: personnel studies in the library and media fields and studies related to future-planning.

The design of the study and the procedures followed in the research are reported in Chapter III. Information in this chapter explains the research method, the selection of participants, the nature of participation in the study, procedure of the study through three rounds of questionnaires, treatment of data derived from the study, and a summary.

In Chapter IV, data derived from the study are reported and discussed.

A summary of the study, conclusions and implications derived from the study, and recommendations for the future are presented in Chapter V.

CHAPTER II

REVIEW OF RELATED LITERATURE

Preparation for this study required a review of literature in two major areas: research dealing with personnel in the library/media field and research dealing with future-planning. Many of the studies reviewed in the second area incorporated the Delphi Technique in the research methodology.

Literature from each of these areas will be reviewed in separate sections of this chapter.

Personnel Studies

A review of current literature supported the fact that there is increasing interest in manpower and personnel in the media field. Several major national studies, as well as many of lesser scope, have focused on the roles and preparation of media specialists.

Although in the past, personnel studies were usually sponsored by, or dealt with, either librarians or audio-visual specialists, there is evidence in the current literature of a reconciling of some differences between the two groups.

In an editorial in the May 1963 Audiovisual Instruction, Hyer pointed out that: "If and when a merger of media interests occurs, AV will become only one of several media specialty fields; that is, on a par with each of the others."[1] She referred to two of the other specialty fields as TV specialists and librarians.

Writing more recently for the same periodical, Oglesby analyzed and compared four contemporary personnel studies in the library and audiovisual fields (1969 Standards for School Media Programs, 1970 Media Guidelines, 1970 Jobs in Instructional Media Study, and 1970 School Library Manpower Project). He concluded that: "It seems rather clear . . . that our fields are converging, if not becoming one and the same."[2] He continued his analysis by noting that there will always be need for the librarian (software expert) and for the audiovisualist (hardware/production/design expert) but that at the grass roots level--in the media center--one person will usually perform both functions.

During a 1964 conference dealing with the professional preparation of media personnel, Meierhenry indicated that:

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[1]Anna L. Hyer,"In Search of an Umbrella," Audiovisual Instruction (May, 1963), p. 362.

[2]William Oglesby, "A Reason for Peace," Audiovisual Instruction (June/July, 1971), p. 72.

> The new type of media specialist being projected is one who is familiar with the rapidly changing society. He should have considerable familiarity with the various forces that shape and mold the way in which people act and behave. . . . This is part of the reason for the heavy emphasis . . . in the area of the social sciences.[3]

This statement suggests that the new media specialist will need to have broader interests and preparation than either the traditional audiovisual specialist or the traditional librarian. (Data collected in the present study support Meierhenry's beliefs; roles identified for the school library media specialist of the future incorporate learning theory, behavioral sciences, principles of curriculum design, instructional development, and technology, as well as the more traditional library/audiovisual components.)

The remainder of this section of Chapter II will review a representative number of the personnel studies which have contributed to the emergence of the professional media specialist.

Nearly twenty years ago, two pioneer researchers, James D. Finn and Irving Lieberman, turned their attention to the matter of personnel. In 1953, Finn, a leader in the audio-visual field, prepared for the first issue of AV Communication Review a paper in which he presented a

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[3]Wesley C. Meierhenry, "Programs for the Preparation of Media Specialists," in The Professional Education of Media Service Personnel, ed. by C. Walter Stone (Pittsburgh: The University of Pittsburgh, 1964), p. 21.

frame-work within which audio-visual specialists could work toward professionalization.[4] He compared the status of the audio-visual field at that time with the following six characteristics of a profession:

1. an intellectual technique
2. application of that technique to the practical affairs of man
3. a period of long training necessary before entering into the profession
4. an association of the members of the profession into a closely knit group with a high quality of communication between members
5. a series of standards and a statement of ethics which is enforced
6. an organized body of intellectual theory constantly expanding by research

After careful analysis, Finn determined that audio-visual personnel satisfied only the first two of the six criteria, i.e., they possessed an intellectual technique and they applied that technique to resolve classroom problems in a practical and effective manner. While he concluded that the audio-visual field was not yet a profession, he offered sound suggestions for moving in that direction.

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[4]James D. Finn, "Professionalizing the Audio-visual Field," AV Communication Review, I (Winter, 1953), 6-17.

The focus of Lieberman's 1955 study, Audio-Visual Instruction in Library Education,[5] was on the integration of audio-visual instruction with programs of traditional library education. He determined that librarians were assuming responsibility for audio-visual materials in their jobs; therefore, library schools must assume responsibility for teaching "by precept as well as by example" the integration of all materials of communication.

The "start of serious consideration of the matter of role identification for individuals associated with the audio-visual field" occurred, according to Brown,[6] when the Department of Audio-Visual Instruction sponsored a Seminar on the Education of AV Communication Specialists in Cincinnati in 1960.[7]

That same year, the American Association of School Librarians published Standards for School Library Programs,[8] which, according to Darling, were the "most influential

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[5]Irving Lieberman, Audio-visual Instruction in Library Education (New York: School of Library Service, Columbia University, 1955).

[6]James W. Brown, Recent Manpower Studies: Some Implications for AECT. Media Manpower Supplement No. 2 (Washington, D.C.: Media Manpower, 1971), p. 1.

[7]Fred F. Harcleroad, ed., "The Education of the AV Communication Specialist," AV Communication Review, VIII (September-October, 1960), 1-96.

[8]American Association of School Librarians, Standards for School Library Programs (Chicago: American Library Association, 1960).

school library standards to date."[9] He believes the Standards for School Media Programs[10] published nine years later "did not depart radically from the philosophy of the 1960 standards."[11]

In 1962 an audiovisual task force of twenty-one persons was called together by the Department of Audiovisual Instruction to consider the application of modern technology to education. The conclusions of the participants at that conference, reported in a position paper edited by Morris,[12] continue to exert influence in the media field. The paper stated that "a technological leap forward is required in education."[13] However, the report cautioned that "education is a matter of individual human growth and development; therefore technological methodology must be introduced with care."[14]

The 1962 position paper identified two media functions:

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[9]Richard L. Darling, "School Libraries and Curriculum Reform," American Libraries (July-August, 1972), p. 756.

[10]American Association of School Librarians and Department of Audiovisual Instruction, Standards for School Media Programs (Chicago: American Library Association and Washington, D.C.: National Education Association, 1969).

[11]Darling, School Libraries, p. 757.

[12]Barry Morris, ed., "The Function of Media in the Public Schools," Audiovisual Instruction (January, 1963), pp. 9-14.

[13]Ibid., p. 11.

[14]Ibid., p. 10.

> The first function of technological media is to supplement the teacher through enhancing his effectiveness in the classroom. Educational media are both tools for teaching and avenues for learning, and their function is to serve these two processes by enhancing clarity in communication, diversity in method, and forcefulness in appeal.
>
> Function No. 2 is to enhance overall productivity through instructional media and systems which do not depend upon the teacher for routine execution of many instructional processes or for clerical-mechanical chores.[15]

Perhaps the most important concept contained in the position paper was:

> A new kind of professional will be required to provide leadership in design, implementation, and evaluation of programs of education which make the fullest use of new media. The functions performed by this leader and the resources he brings will be among the essential determinants of success or failure in tomorrow's schools.[16]

The charge implicit in the report, to define roles, functions, and preparation for the professional media specialist, led to numerous studies, reports, and papers which attempted to sort out specific tasks inherent in the identified media functions, to group the tasks into job clusters, to determine what level of staff member should perform the job, and to recommend programs of training for each job level.

During the years 1961-1966, Godfrey conducted a nationwide survey to investigate the status of audio-visual

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[15] Ibid., pp. 11-12.

[16] Ibid., p. 11.

technology in schools of all sizes.[17] While she documented a distinct increase in the utilization of audio-visual equipment and materials during the years of her study and a tendency toward additional demands for technology in the future, she discovered that the staffing patterns in all but the largest schools were inadequate. Very few schools had fulltime audio-visual directors; most schools relied on a principal or teacher to perform audio-visual coordination in addition to his regular assignment.

At about this same time, Martin and Stone conducted a study of media manpower utilization and requirements.[18] They used functional job analysis and critical incidents techniques to determine both quantitative indicators for grouping media jobs and qualitative dimensions for classifying educational requirements for the job groups described.

They determined that as more and more technological changes occur in instructional services, cross-media job relationships became more essential. They identified fourteen functional job areas inherent in the media field, but found that these areas were clustered in a variety of

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[17]Eleanor Godfrey, The State of Audiovisual Technology, 1961-1966 (Washington, D.C.: Department of Audio-visual Instruction, 1967).

[18]Ann M. Martin and C. Walter Stone, A Study of Regional Instruction Media Resources: Phase I--Manpower (Pittsburgh: The University of Pittsburgh, 1965).

job patterns depending on the size of the organization and the availability of qualified personnel.

Martin and Stone concluded that previous assessments of instructional media manpower were "generally unreliable as well as unrealistic"[19] in calling for job qualifications rarely found in one person. (Some participants in the present study made similar observations about the all-encompassing scope of roles recommended for the school library media specialist of the future.) They recommended three basic job responsibilities--educational managers, educational specialists, and educational technicians--about which the functional tasks should be grouped.

The United States Office of Education attempted to help improve the supply and capabilities of educational media specialists for local schools by establishing in 1965, under the National Defense Education Act, a number of professional institutes at various colleges and universities throughout the country. James W. Brown directed an evaluative project, the Educational Media Institutes Evaluation (EMIE), to determine the immediate and long-range effects of the institutes for participants.[20] While the

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[19] Ibid., p. 73.

[20] James W. Brown, et al., Evaluations of Summer 1966 NDEA Institutes for Educational Media Specialists and School Library Personnel (San Jose, California: Educational Media Institute Evaluation Project, 1966).

findings of EMIE revealed that generally the institutes changed and improved the participants' abilities and insights with respect to educational media, the ability of participants to achieve improved educational media milieu for their local schools over a long-term application was not so successful. Recent USOE professional institutes have focused on the preparation of doctoral-level media specialists whose influence will be more widespread than the local school.

The publication in 1969 of Standards for School Media Programs, sponsored jointly by the Department of Audiovisual Instruction and the American Association of School Librarians,[21] was a major force in the movement toward a reconciliation of differences between librarians and audiovisualists. The appearance of the Standards stimulated much discussion, publication in professional journals, and joint meetings between the affected professional organizations.

Basically the 1969 Standards recommended a unified media program for the school, a recommendation similar to that expressed in 1960 in the American Association of School Librarians' Standards for School Library Programs.[22]

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[21] American Association of School Librarians and Department of Audiovisual Instruction, Standards for School Media Programs (Chicago: American Library Association and Washington, D.C.: National Education Association, 1969).

[22] American Association of School Librarians, Standards for School Library Programs (Chicago: American Library Association, 1960).

However, the 1969 publication was more definitive in recommendations about the size and variety of the materials collection and in its recommendations for differentiated staffing patterns. The joint Standards clearly stated that the "head of the (unified) media program may be either the former head of the audiovisual department or the former head of the school library . . . if neither has the combined background . . . that media person who has superior qualifications of leadership, public relations, and administrative abilities . . . should be appointed head."[23]

In discussing the implementation of the 1969 Standards, Henry Brickell emphasized the critical responsibility of the media specialist in effecting the changes implicit in the Standards.[24] He stated that a new kind of relationship must develop between the media specialist and students and between the media specialist and faculty in order that intervention--change in the system--can occur.

The 1969 Standards identified three levels of positions in the media field:

1. Professional specialists (directors of unified media programs, library, audiovisual or

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[23]American Association of School Librarians and Department of Audiovisual Instruction, Standards for School Media Programs (Chicago: American Library Association and Washington, D.C.: National Education Association, 1969), p. 10.

[24]Henry M. Brickell, "Implementing Educational Change," School Libraries (Summer, 1970), pp. 17-23.

television specialists, subject area cross-media specialists, age/school level specialists).

2. Media technicians (graphics, photography, equipment operation and maintenance, information and materials processing).
3. Media aides (secretarial, clerical).

According to the authors of the joint standards, increased numbers of employees in the media field, increasing complexity of media-oriented tasks, and the consequent need to achieve efficient management required more refined scaling of media jobs and more differentiation of work assignments.

Emanating from the 1969 Standards, four contemporary studies have attempted to deal with the media personnel requirements identified in the publication, i.e., Jobs in Instructional Media Study, Media Guidelines, School Library Manpower Project, Library Education and Manpower.

The Jobs in Instructional Media Study (JIMS) focused on "the need for trained support personnel to perform tasks which do not require an advanced academic credential."[25] The main objective of the study was to "analyze jobs in more precise terms in order to establish a pool of data which could be used to restructure jobs and to suggest

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[25]C. James Wallington, et al., Jobs in Instructional Media (Washington, D.C.: Department of Audiovisual Instruction, n.d.), p. 1.

training for those jobs."[26] JIMS adapted the technique of functional job analysis to determine what media workers do, to classify systematically the tasks involved, to regroup tasks according to skills involved, and finally to establish levels of education necessary to perform the identified tasks.

The researchers used a two-dimensional matrix to report their data on non-professional media jobs. One scale recorded direct observations of what the worker does, derived from the functional job analysis; the other scale recorded what gets done in terms of the media functions contained in the Domain of Instructional Technology.

Essentially, JIMS showed that jobs are collections of tasks. These tasks can be analyzed and classified according to what the worker does (functional job analysis) or according to what gets done (Domain of Instructional Technology). The tasks can then be re-grouped in a variety of ways to meet the specific needs of any employer, educator, organization, or client. The skills required for the tasks and the education necessary to achieve the identified skills are also analyzed in the JIMS Final Report.[27]

The JIMS investigators tried, by their study, to "convince people in our field that there is a new way of

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[26]Freda D. Bernotavicz and C. James Wallington, "Act I of JIMS," Audiovisual Instruction (May, 1970), p. 26.

[27]Wallington, Jobs.

looking at things and new ways to reach objectives, especially in staffing."[28]

A paper by Wallington in the January, 1972, Audio-visual Instruction, entitled "Act II of JIMS," presented some specific ways of using data from the study to design new media jobs, to satisfy specific and unique media needs, and to develop curricula for training media employees.[29]

The Media Guidelines Project "employed intensive job analysis and 'clustering' techniques aimed at determining competencies currently being performed in managing, developing, and utilizing media in instruction. The purpose of the project was to produce guidelines and other information for planning media training programs and evaluating media-related training proposals and training program outputs. The ultimate purpose is to help insure that present and prospective training programs produce the competencies that will be required five or more years from now."[30]

Data derived from this project were reported on a three-dimensional model which conceptualized the media domain as consisting of institutional settings (elementary

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[28]Bernotavicz, Act I, p. 30.

[29]C. James Wallington, "Act II of JIMS," Audiovisual Instruction (January, 1972), pp. 29-32.

[30]Dale G. Hamreus, ed., Media Guidelines: Development and Validation of Criteria for Evaluating Media Training, Volume II (Monmouth, Oregon: Division of Teaching Research, Oregon State System for Higher Education, June, 1970), p. i.

and secondary schools, county-district school agencies, state education agencies, colleges and universities, business and industry, military organizations, various government agencies), responsibility groupings (directive-administrative, professional, artistic-production, technical, clerical, manual), and functions (divided into two groups: operations--research and development, evaluation, design, production, logistics, utilization; management--organization management, information management, personnel management).

Hamreus concluded from his analysis of the status of training in each of the nine function areas that the area of logistics appears to be receiving the greatest training emphasis, that training for production, utilization, and organization management appears to be minimally adequate, and that training for the five remaining areas is inadequate, with evaluation being the weakest.[31]

Part III of the Media Guidelines report provided a detailed analysis of job responsibilities and functions, in essence, a grouping of tasks for the professional media specialist similar to that of the JIMS analysis of supportive personnel tasks.

The Hamreus study also incorporated a projection of training requirements into the near future. Recognizing

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[31] Ibid., pp. II--9-11.

that societal changes will influence education in general and training programs for media personnel in particular, the investigators identified significant future trends through a search of literature and through interviews with sociologists, planners, and technologists. Using a modified Delphi Technique to synthesize and validate the data, the investigators reported eight broad future projections which they felt should be considered carefully in planning new programs to prepare media specialists:

> Change and challenge will be the dominant societal characteristics of the 1970's.
>
> Computers will be increasingly used to manage information, facilitate research, and provide instruction.
>
> The systems approach will be a significant methodology employed in identifying problems and organizing resources for their resolution.
>
> Educational programs will be reconceptualized, expanded, and developed at all levels.
>
> Educational coalitions and collaborations will increasingly form to promote common goals of two or more groups, agencies, or institutions.
>
> Those who are affected by a given program will increasingly be represented by judgments regarding its direction and process.
>
> Individualized instructional programs will increasingly emerge to meet the needs of learners at all levels.
>
> Technology will be increasingly used to transmit messages to specific learner populations.[32]

A special report prepared for the School Library Manpower Project established the rationale for the study in this way:

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[32] Ibid., pp. IV--3-17.

> One of the most pressing problems in the field of school librarianship today is the preparation of professional and nonprofessional library staff members. Traditionally, graduate programs in library science have offered a common core of training for librarians serving in all types of libraries, including school libraries. However, as innovations in education have emerged, the functions of school library personnel have been subject to continuing change. Today the school librarian's responsibilities comprise administration, staff supervision, educational planning, audiovisual services, and a variety of other services, including in-service training for several types of auxiliary personnel. Thus, a new approach to education for school librarianship is needed.[33]

The School Library Manpower Project, funded by the Knapp Foundation of North Carolina, Inc. and conducted by the American Association of School Librarians, was designed to "study the roles and job functions of school library personnel in order to support the development of new occupational definitions."[34] A second purpose for Phase I of the project was to develop recommendations for implementing six experimental school library media educational programs which would be funded in Phase II.

Phase I of the School Library Manpower Project required several steps: a task analysis of media positions as they exist now, a definition of new media positions, and

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[33]School Library Manpower Project, School Library Personnel Task Analysis Survey (Chicago: American Library Association, 1969), p. 7.

[34]Robert N. Case and Anna Mary Lowrey, School Library Manpower Project, Phase I--Final Report (Chicago: American Library Association, 1970), p. 7.

recommendations for competency-based programs of education to prepare persons to assume the newly identified positions.

Data for the task and job analyses were obtained from responses to a task analysis instrument comprising 300 items;[35] the instrument was sent to a purposive sample of public and private schools nominated by state school library supervisors as meeting specially developed evaluative criteria. The established criteria were consistent with the Standards for School Media Programs.

A task analysis committee studied the results of the questionnaire survey to determine which tasks should be performed by educational media personnel and by what member of a differentiated staff. Four specific media positions were identified from the task-classification:

School Library Media Specialist

Head of the School Library Media Center

District School Library Media Director

School Library Media Technician[36]

Separate committees of educators representing several professional specializations prepared a detailed description for each of the four positions which included the nature and scope of the position, major duties, required knowledge, and abilities. These descriptions

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[35]School Library Manpower Project, Task Analysis Survey Instrument (Chicago: American Library Association, 1969).

[36]Case, Phase I, p. 18.

provided a data base for other committees to use in designing curriculum content for innovative programs to prepare school library media personnel to assume the newly identified positions. The curriculum programs were based on competencies needed by the school library media specialist to satisfy job requirements.[37]

Development of the competency-based curriculum programs completed Phase I of the School Library Manpower Project and served as the foundation for Phase II. Colleges desiring to apply for funding under the experimental educational program portion of the Project used the recommended curriculum programs to develop their own innovative programs to prepare school library media personnel.

While the task analysis survey reflected the role of the school library media specialist as the position functioned at that time (respondents were not directed to project role functions into the future), the translation of job descriptions into curriculum recommendations did incorporate some elements of future planning. Published reports of the six experimental programs funded in Phase II also indicate that the educational programs are accommodating future needs of the school library media specialist.[38]

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[37] Ibid., pp. 53-69.

[38] Robert N. Case, "Report from the Manpower Project," School Libraries (Spring, 1972), p. 53.

Asheim developed a model of library personnel assignment, in terms of levels of responsibility, which was adopted in 1970 by the American Library Association.[39] His model reflects a "career lattice" which permits vertical and lateral movement toward increased responsibility along two professional paths, one library-related and the other non-library-related. Asheim's model incorporated three supportive and two professional categories within the career lattice. Some school librarians objected to his classification of the bachelor degree as supportive; however, the nature and scope of the school library media specialist position, as defined by such studies as the School Library Manpower Project, appear to demand professional preparation beyond the B. A.

Clark and Hopkins surveyed the media field to determine projected personnel needs.[40] They perceived a need for a new kind of professional, the instructional developer; they concluded that, by 1974, nearly 10,000 instructional developers would be needed in education to bridge the growing gap between research-based educational theory and actual classroom practice.

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[39]Lester Asheim, Library Education and Manpower (Chicago: American Library Association, 1970).

[40]David J. Clark and J. E. Hopkins, Preliminary Estimates of Research, Development, and Diffusion Personnel Required in Education, 1971-72 (Bloomington, Indiana: Indiana University, 1966).

The Commission on Instructional Technology included in its report, To Improve Learning, several recommendations that bear on media personnel.[41] The Commission concluded that the United States should invest more heavily in instructional technology for education than it has to date and that a priority investment should be to educate increased numbers of instructional technology specialists. The instructional technology specialist was described as crucial for the successful integration of technology with instruction.

Stone conducted a survey in 1969 to determine for the American Library Association the impact of new media on professional library personnel.[42] He concluded that all librarians, not just those associated with schools, are affected by the newer media. He suggested several ways that the professional organization could assist librarians, on an in-service basis, to become more efficient in dealing with media. The findings of his study also suggested changes in existing programs to prepare librarians.

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[41]Sidney G. Tickton, ed., To Improve Learning, Volume I (New York: R. R. Bowker Company, 1970).

[42]C. Walter Stone, "AV Task Force Survey Report," American Libraries (January, 1970), pp. 40-45.

Earlier Stone had proposed a model for "A Graduate Library School of Tomorrow" which anticipated many of the recommendations derived from the 1969 study.[43]

Stone also edited the papers for another study, The Professional Education of Media Service Personnel.[44] This study reviewed major career paths in the educational media field (audio-visual specialists, school librarians, educational broadcasters, instructional technologists) in terms of specific curricular needs, pointing out commonalities in the learning requirements of the several professional specializations. Meierhenry summarized the study by stating:

> The above discussions would indicate that there is a new developing area for preparation of specialists relating to the development and management of the whole broad spectrum of the communication and information sciences, including the full range of media and materials. When media are looked at from this perspective, the lines which divide the various media fields disappear under the demands for the most effective ways of changing human behavior and new media specialists emerge.[45]

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[43]C. Walter Stone, "A Design for Tomorrow," in Proceedings of the National Conference on the Implications of the New Media for the Teaching of Library Science, ed. by Harold Goldstein (Champaign, Illinois: University of Illinois, 1963), pp. 37-39.

[44]C. Walter Stone, ed., The Professional Education of Media Service Personnel (Pittsburgh: The University of Pittsburgh, 1964).

[45]Wesley C. Meierhenry, "Programs for the Preparation of Media Specialists," in The Professional Education of Media Service Personnel, ed. by C. Walter Stone (Pittsburgh: The University of Pittsburgh, 1964), p. 32.

Future Studies

Relatively little attention is given to education in the general futuristic literature. However, "just as nearly all aspects of . . . society have impact on and implications for education, so nearly all prospective changes in society will have potential influence on education in the future."[46] Lonsdale concluded that educational futurists will need to synthesize for education the products of the futurists from other disciplines.

In this section of the review of literature, several future-oriented studies which have relevance for education will be discussed as well as several which are directly oriented to education.

The American Academy of Arts and Sciences in establishing the Commission on the Year 2000 stimulated the most extensive study of the future to date.[47] Daniel Bell, chairman for the Commission, perceived that society is approaching a post-industrial stage which will be characterized by a move away from being predominately engaged in the production of goods to one of being

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[46]Richard C. Lonsdale, "Some Implications for Education and the Preparation of Educators," in Designing Education for the Future, No. 7: Preparing Educators to Meet Emerging Needs, ed. by Edgar L. Morphet and David L. Jesser (New York: Citation Press, 1969), p. 21.

[47]Daniel Bell, ed., Toward the Year 2000: Work in Progress (Boston: Houghton Mifflin Company, 1968).

preoccupied with services, research, and education. He charged the Commission members:

> Innovation in this society depends on theoretical knowledge . . . intellectual organizations will become the primary institutions of the society.[48]
>
> The sources of innovation are becoming lodged in the intellectual institutions, primarily the universities and research organizations, rather than in the older, industrial corporations.[49]

The work of the Commission, expected to continue indefinitely, had as its premise to:

> indicate now the future consequences of present public-policy decisions, to anticipate future problems, and to begin the design of alternative solutions so that our society has more options and can make a moral choice, rather than be constrained, as is so often the case when problems descend upon us unnoticed and demand an immediate response.[50]

Results of the Commission deliberations have been published in several issues of Daedalus, the journal of the Academy; in Toward the Year 2000: Work in Progress, edited by Daniel Bell; and in other periodic reports in the form of working papers.

The critical role of education in the future--the post-industrial society--is interwoven within all the alternatives for future choice proffered by the Commission papers.

Herman Kahn, a member of the Commission on the Year 2000, was asked to provide a compilation of likely

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[48]Daniel Bell, "Notes on the Post-industrial Society II," The Public Interest (Spring, 1967), p. 102.

[49]Bell, Toward, p. 6.

[50]Ibid., p. 1.

and possible future developments that the Commission could use as a starting point for more detailed consideration of policy consequences and alternatives. The report which he and his associates at the Hudson Institute prepared, The Year 2000,[51] established a framework for the Commission to develop as well as a foundation for continuing studies by the Institute. Employing a unique blend of historical fact and statistical extrapolation, the Hudson Institute researchers produced a substantive amount of information suggesting possible future trends in the areas of population, economics, government, bio-medicine, international relationships, science, technology, intellectual institutions, values, and rights; in effect, they created an extraordinary sketch of the future.

Their efforts underscored a crucial point about future studies:

> No one pretends that single 'events' can be predicted. These are often contingent and even irrational. Nor can one predict what historians call 'turning points' in the lives of men or nations--those events (e.g., the success or failure of a revolution) that can move nations in new directions. But all such events are constrained by various contexts: of resources, of customs, of will. And they are shaped, as well, by basic trends in human society: the growth of science, literacy, economic interdependence, and the like. This volume, therefore, is not an exercise in prophecy; it is an effort to sketch the constraints of social choice.[52]

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[51] Herman Kahn and Anthony J. Wiener, The Year 2000 (New York: The Macmillan Company, 1967).

[52] Ibid., p. xxviii.

A major future study directed to education was an eight-state project,[53] Designing Education for the Future. Edgar L. Morphet, the project director, explained the project:

> The American society will continue to experience an increasing rate of change. Many of these changes will have important implications for, and will necessitate changes in education. There is urgent need to attempt to anticipate the changes that are likely to occur in society during the next ten to fifteen years, to understand their implications for education, and to plan for adjustments that will be necessary to meet emerging needs.[54]

The project consisted in several kinds of activities: a series of area conferences involving participants from all eight states, during which papers dealing with various aspects of anticipated societal changes were presented by educators, business leaders, sociologists, research experts, and other qualified planning specialists; individual state projects which utilized the information obtained from the area conference speakers to resolve local problems; and a series of seven publications which contained conference papers as well as reactions to the papers from conference participants.[55]

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[53]Participating states were Arizona, Colorado, Idaho, Montana, New Mexico, Nevada, Utah, and Wyoming.

[54]Edgar L. Morphet and Charles O. Ryan, eds., Designing Education for the Future, No. 1: Prospective Changes in Society by 1980 (New York: Citation Press, 1967), p. 1.

[55]The seven project publications are entered in the bibliography under Edgar L. Morphet, project director and editor for the series.

While the project focused on change and planning for change, an underlying assumption was that in education people make the difference. According to the project director and planning committee, the quality of every educational program resides in the teachers, administrators, and other instructional personnel who provide the service. It follows that the focus of efforts to change, to improve, should be upon the personnel who are central to the program.[56] The papers in volume 7 of the project publications, Preparing Educators to Meet Emerging Needs, dealt with positive changes in programs of pre-service and in-service education for teachers.

The papers generated for the Designing Education for the Future project, available in the seven volume series edited by Edgar L. Morphet, provide a sound base of information about probable changes in many aspects of American society, about the possible status of society in the 1980's, about the implications of such change for education, and about the ways in which education can prepare to meet the anticipated changes. This series of books provides valuable information for other future-planning agencies to utilize in their own deliberations.

Jacobson reports that a Delphi study was used by one of the Designing Education for the Future committees

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[56]Edgar L. Morphet and David L. Jesser, eds., Designing Education for the Future, No. 7: Preparing Educators to Meet Emerging Needs (New York: Citation Press, 1969), p. v.

to generate recommendations for educational systems of the 1980's.[57] He considered the experience to have been worthwhile and enlightening, but not totally successful for the intended purpose as the participants became more involved with the process, per se, than with the recommendations. (Owing to time constraints, the questionnaire items were determined by a committee rather than by the participants, which fact may account for the situation described by Jacobson.)

An Educational Innovation Seminar, sponsored by the Institute of Government and Public Affairs, UCLA, was another broadly-conceived attempt to involve scholars from disciplines akin to education in future-planning for education. The seminar, as reported in Inventing Education for the Future, sought to:

> examine the present and future environments in which education is expected to perform; gain an understanding of education's inadequacies; seek possible ways to improve the ability of education to meet its responsibilities; find ways to evaluate innovations in education to obtain a basis for selection; identify and examine the goals of education; and, finally, examine the means of, and barriers against, introducing innovations into the educational system.[58]

The designers of the seminar attempted to incorporate a systems approach to the study in the belief that

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[57]James A. Jacobson, "Forecasting Future Development in Education" (paper presented at the 1970 annual meeting of AERA, Minneapolis, Minnesota, March 4, 1970).

[58]Werner Z. Hirsch, Inventing Education for the Future (San Francisco: Chandler Publishing Company, 1967), p. xi.

this was a creative way to evaluate the potential cost and benefit of proposed innovations prior to their selection and implementation. As part of this systems analysis, Olaf Helmer and Marvin Adelson conducted with seminar participants a Delphi experiment which attempted to identify desirable future educational innovations and then to allocate budgetary support for the innovations. Helmer reported both in Inventing Education for the Future and in a separate Rand publication, The Use of the Delphi Technique in Problems of Educational Innovation, that the purpose of the study, his pilot application of the Delphi method to educational planning, was to explore the potential of applying Delphi to educational planning. He felt that the data collected during the experiment was significant, but that even more valuable was the reaction of the participants who felt that the Delphi Technique should be used for additional study in several aspects of educational future-planning.[59]

The Delphi was only one of several systems approach techniques used and/or discussed during the Educational Innovation Seminar; others included program budgeting, simulation and gaming, evaluation models, operations analysis.

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[59]Olaf Helmer, The Use of the Delphi Technique in Problems of Educational Innovation (Santa Monica, California: The Rand Corporation, 1966), p. 22.

Underlying the seminar was a theme of caution. As reflected in the volume of published papers, Inventing Education for the Future, many speakers reminded the seminar participants that experience recommends care in the adoption of innovation--a program of thoughtful evaluation must proceed every decision to introduce innovation into an educational system.

The remainder of this chapter will treat studies which used the Delphi Technique specifically for educational future-planning.

The Rand Corporation, the research and development organization which supported Helmer's early studies of the Delphi Technique, has published a number of position papers and reports which discuss the methodology as well as the results of several Delphi studies. Much of the Rand research has been contracted by military and governmental agencies; the long-term studies conducted for these agencies by the Rand researchers have resulted in refinements of the technique. Published reports of these refinements have been useful for other researchers, e.g., educators, who wished to adapt the method for their needs and purposes.

Dalkey has conducted much of the recent Delphi research for Rand. He reported in 1971 that his studies have "supported the conclusion that Delphi procedures are appropriate for processing value material as well as

factual material."[60] Most of the studies reported in this section have used the Delphi Technique for the purpose of assessing opinions and values.

W. Timothy Weaver made an extensive study of the methodology of the Delphi Technique while he was a student and research fellow at Syracuse University. He concluded that:

> Delphi, in combination with other tools, is a very potent device for teaching people to think about the future of education in much more complex ways than they ordinarily would. When we understand this use of Delphi we may find it is a useful instrument for something more important than what it was designed for, namely, a general teaching strategy. What this means is that initially the way to get educators to make better decisions--decisions which account for alternative consequences--is to enhance their capacity to think in complex ways about the future, and Delphi seems ideally suited to such a purpose. Indeed, educators may find in Delphi and other forecasting tools a better pedagogy.[61]

Weaver concluded that, because the future of education is uncertain, because its historical justification is being questioned, educators must become increasingly concerned with the future. "It is inevitable that more of the future be taken into account, but it is only through thoughtful study of forecasts and forecast tools that it can be taken into account reasonably."[62]

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[60]Norman C. Dalkey and D. L. Rourke, Experimental Assessment of Delphi Procedures with Group Value Judgments (Santa Monica, California: The Rand Corporation, 1971), p. 17.

[61]W. Timothy Weaver, "The Delphi Forecasting Method," Phi Delta Kappan (January, 1971), p. 271.

[62]Ibid.

Weaver concurred with Bell, Jouvenel, and other futurists that any consideration of the future should attempt to clarify what can reasonably be made to happen in order to provide a basis for decision making, for choosing desirable alternatives.

Another researcher who analyzed the methodology of the Delphi Technique was James Waldron. He examined personality characteristics of participants in a Delphi study in relation to their behavior during the study.[63] He concluded that personality variables of participants are significant factors in a Delphi study because they affect the participant's tendency to change his opinion, i.e., to move toward group consensus. He determined that the results of Delphi studies are likely to be affected by non-objective factors, e.g., personality variables. Because of such influence, he agreed with Weaver that: "The Delphi process may have greater value when it is used as a pedagogical tool for providing a framework in which individuals are motivated to think about the future and to pull together as objectively as possible a large variety of information."[64]

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[63]James S. Waldron, "An Investigation into the Relationship among Conceptual Level, Time Delay of Information Feedback, and Performance in the Delphi Process" (unpublished Ph.D. dissertation, Syracuse University, 1970).

[64]James S. Waldron, "The Delphi Process: Some Assumptions and Some Realities" (paper presented at the 1971 annual meeting of AERA, New York, New York, February 7, 1971), p. 15.

Campbell also analyzed the methodology of the Delphi Technique to determine the importance of feedback to the process. He asked two groups of twenty graduate students in business to forecast gross national product, defense expenditures, and fourteen other business indexes. One group received opinion feedback between rounds, while participants in the other group were asked to revise their original estimates with no additional explanation or information. The forecasts were later checked with what actually happened. Final analysis showed that the group with feedback did better in the forecasting task for thirteen out of the sixteen items on the questionnaire.[65]

Cyphert and Gant used the Delphi Technique to clarify and re-order the goals of the School of Education, University of Virginia.[66] Participating in their study were nearly 400 faculty members, administrators, and students from the University, educators, politicians, and business leaders from the state, and selected teacher educators from across the nation. The participants were first asked to suggest prime targets on which the School of Education should concentrate its energies and resources in the next

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[65]Robert M. Campbell, "A Methodological Study of the Utilization of Experts in Business Forecasting" (unpublished Ph.D. dissertation, UCLA, 1966).

[66]Frederick R. Cyphert and Walter L. Gant, "The Delphi Technique: a Case Study," Phi Delta Kappan (January, 1971), pp. 272-273.

decade. In successive rounds, the participants rated each suggested goal on a priority continuum.

The researchers felt they obtained from the study usable data for formulating future targets for the School of Education. "In addition to the satisfaction of planning one's future with the assistance of data--a pleasant change in educational circles--the survey made influential persons in the Commonwealth aware of the School's existence and awakened them to a realization of its future accomplishments."[67]

Anderson reported the use of Delphi to explicate and determine priorities of service for an intermediate school district in Ohio.[68] Participants in this study generated an initial statement of objectives by completing a stem sentence related to long-range resource allocation. The statements clustered into two sets: client services and organizational adaptations. In successive rounds, participants assigned priorities to each set independently. The data generated were used both for program planning and for modifying organizational structures.

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[67]Frederick R. Cyphert and Walter L. Gant, "The Delphi: a Tool for Collecting Opinions in Teacher Education," The Journal of Teacher Education, XXI (Fall, 1970), 425.

[68]Donald P. Anderson, "Clarifying and Setting Objectives on an Intermediate School District's Objectives Utilizing the Delphi Technique" (paper presented at the 1970 annual meeting of AERA, Minneapolis, Minnesota, March 4, 1970).

B. T. Keeler, executive secretary for the Alberta, Canada, Teachers' Association, used the Delphi Technique to identify problems (societal, educational, governmental) likely to develop during the next thirty years which will affect the functions, programs, and structures of Canadian teachers' organizations.[69] Participants were asked to react to each identified problem by assigning a rating as to desirability, probability, and possible impact. Keeler stressed the pedagogical value of the technique in his report of the study; he perceived it as "a method for helping educators study the future and for increasing their capacity to deal with the ambiguity of the future. Essentially, it may be assumed that by enhancing our capacity to think about the future, we may improve our ability to make future decisions in education."[70]

Governors State University, a senior university in Park Forest, Illinois, used the Delphi Technique for a basic application of future-planning. Prior to its opening, the planning staff for the university conducted a modified Delphi study to solicit opinion about the institutional characteristics and desirable objectives for the developing university from individuals in government, education, business, industry, and the arts. A report of this study

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[69] B. T. Keeler, Modified Delphi Investigation (Edmonton, Alberta: The Alberta Teachers' Association, 1971).

[70] Ibid., p. 3.

prepared by Daniel P. Norton, research advisor from Educational Testing Service, stated that while not all relevant information for the planning of a university was obtained from the study, many fundamental issues were incorporated in items on the second questionnaire. Norton concluded "this document may prove useful to those engaged in such deliberations (planning an educational institution)."[71]

Educational Testing Service reported another educational application of the Delphi Technique in a study conducted for the Regional Educational Laboratory for the Carolinas and Virginia (RELCV).[72] The study was designed to obtain several kinds of information: to investigate in a small number of institutions with differing characteristics what on-campus and off-campus groups perceive the goals of the institution to be; to evaluate whether the Delphi Technique produces opinion convergence; to provide participating institutions with results of the study for purposes of self-evaluation; to evaluate the Institutional Goals Inventory (IGI), a document devised by the RELCV staff and used as the data

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[71]Daniel P. Norton, Governors State University Needs Assessment Survey Project Report (Evanston, Illinois: Educational Testing Service Midwestern Office, 1970), p. 1.

[72]Norman P. Uhl, Encouraging the Convergence of Opinion, through the Use of the Delphi Technique, in the Process of Identifying an Institution's Goals (Durham, North Carolina: Educational Testing Service Southeastern Office, 1971).

base for the study; to provide information for RELCV to use in revising its Administrative-Organizational Systems model (AOS), a systems approach devised by RELCV to provide an efficient method for allocating resources to achieve specific goals. This study differed essentially from others reported in the review of literature because participants did not identify items for consideration, i.e., goals, roles, problems; rather, they reacted to goals established in the IGI and thereby assisted the RELCV to evaluate and refine the instrument.

The report of the RELCV study prepared by Uhl included an extensive amount of data which should be useful to the participating institutions for evaluating and redesigning their goals and activities. Uhl also provided a detailed analysis of the procedures followed in the study so that it could be replicated or adapted by other institutions. He concluded: "It is important that institutions develop rational processes by which some agreement can be achieved among their constituent groups with regard to their goals."[73]

Hudspeth reported a "Focus-Delphi" study whose "major function . . . was to refine the Delphi process so that those engaged in policy planning could more clearly explore social alternatives by analyzing levels of consensus

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[73] Ibid., p. 71.

within a social system. Unlike a traditional Delphi study, the purpose was not to elicit, or force, consensus, but rather to discover where--or where not--it already existed."[74] Hudspeth, like Adelson and Helmer in their report of the Delphi study conducted for the Educational Innovation Seminar, considered the data generated from the study to be of secondary importance. The purpose of both applications of the Delphi Technique was to develop a procedure, to provide a tested and refined method which could be applied by other researchers to educational problems.

The Focus Delphi process restructured the data analysis procedures so that group differences, essentially those between producer and consumer, could be better realized and utilized as a result of the study. Hudspeth believes that educational future-planning requires three kinds of data: the program the student comes from (in-put); the program itself (through-put); the needs of the student and employer (out-put).[75]

The Delphi Technique has also been found useful in curriculum development. Judd reported that when it was used to help plan curriculum for a new branch campus, a

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[74]Delayne R. Hudspeth, A Long-range Planning Tool for Education: The Focus Delphi (Syracuse, New York: Syracuse University Research Institute, 1970), p. 2.

[75]Ibid., p. 5.

highly innovative and experimental curriculum was adopted by an extremely conservative faculty.[76] Judd felt that the chief value of the technique, beyond that of long-range planning, is that it permits democratic consensus formation on today's problems. Individual views were expressed, not suppressed, and the curriculum planners knew what they were getting into because they could ascertain from the Delphi findings the degree of consensus they had achieved on various aspects of the proposed curriculum.[77]

Ruskin also stressed the importance of anticipating long-range needs in any curriculum development activity. He said:

> It is worth noting that forecasting the future draws attention to a serious risk: today's view of the future may later be found inaccurate. This is a legitimate criticism, but it applies to all curricular planning whether or not forecasts are explicitly made. All educational programs involve assumptions about what students should study now to prepare for the future. If no forecasts are prepared, the assumption is being made that present programs are best. A forecast may lead to the conclusion that present programs are, in fact, optimal. Recognizing that such an outcome may exist is not the same, however, as assuming its existence. The forecast must still be made to arrive at this conclusion.[78]

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[76] Robert C. Judd, "Delphi Method: Computerized 'Oracle' Accelerates Consensus Formation," College and University Business (September, 1970), pp. 30-44.

[77] Ibid., p. 30.

[78] Arnold M. Ruskin, "The Use of Forecasting in Curricular Planning," Educational Record, LII (Winter, 1971), 62-63.

These studies were selected for the review of literature to display the varied application and the degree of success of the Delphi Technique for educational future-planning. It appears that the method is effective.

Pfeiffer said of the Delphi Technique:

> Its power seems to lie in the fact that it creates some of the most important elements of an ideal debate. It provides an impersonal anonymous setting in which opinions can be expressed in clear terms and heeded before the voicing of criticisms and counteropinions, a setting in which ideas can be modified on the basis of reason rather than prestige or a desire to climb on the bandwagon.[79]

He concluded that Delphi-type techniques will be used more and more as educational projects come to depend on judgment and consensus of experienced educators.

Summary

Literature reporting research dealing with personnel in the media field revealed that a large number of studies have been conducted over an extended period of time. This expression of interest in manpower suggests that professional leadership is the critical factor in implementing the use of media for educational purposes. Essentially, the adequacy of personnel in the media field, not the sophistication of its technology, will determine its success or failure.

Generally, the personnel studies reflected a merging of two formerly discrete professional specialization

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[79] John Pfeiffer, New Look at Education (New York: The Odyssey Press, 1969), p. 155.

groups, librarians and audio-visual specialists, into one, a media specialist. Several studies reported similarities in preparation, job descriptions, and on-the-job behaviors. A major unifying force was the publication by the American Association of School Librarians and the Department of Audiovisual Instruction of joint standards, Standards for School Media Programs, which recommended and provided suggestions for achieving a unified media program.

The review of literature also revealed an increasing number of studies dealing with future-planning in education, many of which used the Delphi Technique to gather and refine data. This fact suggests that educators are beginning to recognize and to accept the importance of the futurist philosophy and to use future-oriented techniques in their considerations and planning for the future of education.

CHAPTER III

DESIGN OF THE STUDY

The purpose of this study was to identify viable roles for the school library media specialist of the future. The study was designed to use one of the futurist research methods, the Delphi Technique, to ask experts in the allied fields of library/media services, library/media education, curriculum and instruction, and educational research to consider together what the roles of the school library media specialist should be in the future.

Participants in the study were first asked to suggest roles which they believed the school library media specialist should perform in the future. Then the participants were asked to evaluate and to rate each recommended role, indicating their perception of the importance of the role for the work of the school library media specialist in the future. Finally, the participants were provided a report of the group rating for each identified role and were asked to indicate their agreement or disagreement with the majority opinion.

In this chapter, the design of the study and the procedure followed in the research are reported. Included are explanations of the research method, the selection of

participants, the nature of participation in the study, the procedure of the study through Rounds I, II, and III, and the statistical treatment of the data. A summary completes the chapter.

Research Method

The Delphi Technique was selected as the research method for this study because it permitted the solicitation of information about the roles of the school library media specialist of the future from those educational leaders throughout the country who were most qualified to provide the information. The technique, developed by Olaf Helmer and his colleagues at the Rand Corporation,[1] is one of several new scientifically-oriented research methods currently being used, evaluated, and refined by future-planning agencies.

The technique is particularly well-suited for research in the behavioral sciences, those which Helmer and Rescher term "inexact."[2] They acknowledge that the inexact sciences rely on informal reasoning processes;

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[1]The Rand Corporation has published several papers by Brownlee Haydon, Olaf Helmer, Nicholas Rescher, Norman C. Dalkey, and others which explain the development and application of the Delphi Technique. Several of these papers are listed in the bibliography which accompanies this thesis.

[2]Olaf Helmer and Nicholas Rescher, "On the Epistemology of the Inexact Sciences," Management Science, VI (October, 1959), 27.

however, they believe that scientific methodologies can be applied in the social sciences, especially in the area of prediction. Their paper, On the Epistemology of the Inexact Sciences,[3] details a rationale for the application of scientific methodology to research in the behavioral sciences which provided a theoretical basis for this study.

The Delphi Technique is a research method which attempts to make systematic effective use of informed intuitive judgments by identified experts in a given field of inquiry about the future condition of that field. Application of the technique derives from the realization that personal expectations of influential individuals in a given field of inquiry have significant effect on the direction of future development in the field.

The Delphi Technique employs a series of questionnaires interspersed with information and opinion feedback derived from previous questionnaires. This manner of collecting data was devised by Helmer to offset the several undesirable aspects of group discussion, a commonly used technique for determining expert opinion. He believes the outcome of a group discussion is often nothing more than a compromise agreement among divergent views. This agreement may be biased by such factors as acquiescence to the influence of a dominant individual (who may be truly a

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[3] Ibid., pp. 25-52.

leader or who may only have the greatest supposed authority or the loudest voice); group pressure for conformity; an unwillingness to abandon publicly-expressed opinion; and "noise" in the communication system.[4]

The Delphi Technique relies on individual, anonymous response so that each participant can respond according to his own perceptions, with no outside pressure to influence his judgment. Also, the determination of a statistical group response insures that each individual opinion is reflected in the group response.

Another inherent value of the Delphi Technique is that educators who engage in the process are encouraged to attend to and become aware of alternative options for the future, a desirable and necessary first step in implementing long-range educational future-planning.

Selection of Participants

The substance and consequence of Delphi research depends on the expertise and cooperation of the participants. Therefore, the selection of participants was a critical task. Previous research indicated that a group of about 50 participants provides the most meaningful interaction. Thus, it was essential to identify approximately this number of educational leaders who could

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[4]Olaf Helmer, Analysis of the Future: The Delphi Method (Santa Monica, California: The Rand Corporation, 1967). p. 7.

qualify as experts for the determination of viable roles for the school library media specialist of the future.

A systematic survey, preliminary to the Delphi study itself, was conducted to seek nominations of persons who could provide significant inputs to the study. The preliminary survey required several preparatory steps.

First, a definition for the term "expert" was sought. Rescher's definition was selected: "An expert is able to bring to bear his background information in a way that is not systematized in a predefined analytical model but involves informed judgment based on inarticulated data. He is thus able to base his assessment not only upon overt trends, but also upon underlying regularities and a general, informed appraisal of the phenomenology at issue."[5]

Next, the following guidelines were established for the identification of experts to participate in the study:

1. Direct experience in, or sufficient knowledge about, public school operation in order to make viable predictions about education in 1985 and about the roles of the school library media specialist in the future.
2. An objective and disciplined outlook on education which will permit intuitive and rational judgments about its future.

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[5]Kurt Baier and Nicholas Rescher, eds., Values and the Future (New York: The Free Press, 1969), p. 106.

3. Sufficient experience in positions of authority and responsibility so that their opinions will be acceptable to other educators.
4. A sensitivity for the creative utilization of resources, human and material, in the educative process in order to suggest viable new roles for the school library media specialist of the future.
5. Orientation to the future.

Persons who were asked to nominate participants for the study were provided these criteria to use as a basis for their recommendations.

Then, it was determined that experts should be selected from four professional specializations:

1. Teacher educators who prepare library and/or media specialists
2. Directors/practitioners of library/media services
3. Specialists in curriculum and instruction
4. Specialists in educational research and development

Following these preparatory steps, the executive secretaries of the following professional societies in which the target population would logically hold membership were contacted and asked for recommendations for participants: Association for Educational Communication

and Technology, American Association of School Librarians, Association for Supervision and Curriculum Development.

The following organizations which are engaged in future-oriented research in education were also contacted to secure nominations for participants: Rand Corporation, Institute for the Future, Educational Policy Research Center/Syracuse University, Stanford University Research Center, Human Resources Research Organization.

Additional suggestions for participants were secured through discussion of the study with acknowledged leaders of the several professional groups to be represented in the study. Interviews were conducted in person and by long distance telephone with seven educators and four practitioners in the library/media fields, with three curriculum specialists, and with two research and development specialists.

Potential participants were identified through a review of the literature, i.e., by selecting persons who are reporting and/or responding to research and practices related to the study. Several of these persons were later nominated by their professional societies.

Participation in Study

Eighty three persons were recommended by their professional colleagues as having appropriate knowledge and experience to make judgments about the future roles of the school library media specialist.

Data in Table 3.1 report the nominations according to professional specialization.

TABLE 3.1.--Nominations for Participants According to Professional Specialization.

Professional Specialization	Number of Nominations
Educators	24
Practitioners	23
Curriculum Specialists	18
Research Specialists	18
Total	83

Information in Table 3.2 reveals that nominations in the first two specialization groups represented 26 educators and practitioners in the library field and 21 educators and practitioners in the media field.

TABLE 3.2.--Nominations for Participants According to Area of Interest.

Area of Interest	Number of Nominations
Library	26
Media	21
Curriculum	18
Research	18
Total	83

Each of the 83 identified experts was invited to participate in the study. Fifty-seven persons agreed to participate; 14 persons refused the invitation for such reasons as retirement, sabbatical leave, and heavy travel or work schedule; ten persons did not answer; and two answers arrived late. Response to the first letter was 88%, while the actual participation was 71%.

Fifty-seven persons were contacted in the second round of the study. Of these, 53 responded, 2 did not, and 2 answers arrived late; this response comprised 96% participation.

In the third round, 53 questionnaires were distributed. The results were 46 answers and 7 late responses. This response represents 100% participation. The final questionnaire was due back on June 7, 1972; the slower rate of response, as compared with the two earlier rounds, may have resulted from participants' busy end-of-year schedule.

Data in Table 3.3 report participation in the study according to professional specialization.

TABLE 3.3.--Participants in Study According to Professional Specialization.

Professional Specialization	Number of Participants
Educators	18
Practitioners	15
Curriculum Specialists	8
Research Specialists	12
Total	53

Data in Table 3.4 report participants in the study grouped by area of interest.

TABLE 3.4.--Participants in Study According to Area of Interest.

Area of Interest	Number of Participants
Library	23
Media	10
Curriculum	8
Research	12
Total	53

Procedure of Study

Three rounds of Delphi questionnaires, each accompanied by a cover letter, were used in the study. Previous Delphi studies indicated that, while four and five rounds have been attempted, significant movement toward consensus occurred at Round III. Additional rounds beyond three resulted in lower participation and no significant change in opinion.

In Figure 1, a brief outline of the design of the study is provided; procedural details for each round follow.

Round I

The first letter (Appendix A), which explained the purpose and importance of the study, invited the recipient to participate in the study. The letter also detailed briefly the methodology of the Delphi Technique with a proposed time schedule so that the respondent would know in advance the extent of his involvement. The original letter of invitation was dated March 13, 1972; subsequent questionnaires followed at approximately four week intervals, with the final questionnaire due back on June 7, 1972.

A letter (Appendix B) signed by the chairman of the Doctoral Guidance Committee, which supported the purpose and importance of the study, also invited the recipient to participate in the study.

The first questionnaire (Appendix C) was enclosed with the introductory letters. This questionnaire, an

Informational Input by Investigator	Informational Input by Participants
Letter I explains purpose, importance, and procedure for Delphi study.	
	Questionnaire I asks participant to recommend viable roles for the school library media specialist of the future.
Letter II explains how information obtained from Questionnaire I was refined to derive 58 role statements.	
	Questionnaire II asks participant to rate each of the 58 recommended roles on a Likert-type 5-point scale to indicate his perception of the relative importance of the role for the work of the school library media specialist in the future.
Letter III reports the results of the group rating on Questionnaire II.	
	Questionnaire III asks participant to re-rate each role statement to indicate his agreement or disagreement with the group opinion.

Figure 1. Design of the Study.

open-ended design, asked the participant to suggest those roles which he perceived to be important for the school library media specialist to perform in the future. The questionnaire provided space for five role recommendations with a notation that additional suggestions were to be placed on the back of the sheet.

In this round, as in each of the following two, a duplicate questionnaire was provided so that the participant could maintain a record of his response. Also, a stamped, self-addressed envelope for returning one copy of the completed questionnaire was provided.

It was necessary to send out "reminder" postcards to approximately 6 to 10 of the participants on the due date of each of the three rounds. These reminders stimulated additional responses for each round.

Round II

The 57 completed first questionnaires yielded approximately 250 role statements for the school library media specialist of the future. To prepare a second questionnaire of manageable length, incorporating all of the ideas derived from the first round, it was necessary to analyze, code, and edit the role recommendations.[6]

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[6]Bernard Berelson explains the coding procedure in his paper in the Handbook of Social Psychology:

> "The coding procedure is similar to content analysis in that it involves the codification of verbal materials which can take many diverse forms and

Because the role statements derived from the analysis/coding/editing process would become the data base for the study, this step, as was true for the selection of participants, was critical for the success of the research.

To implement the analysis/coding/editing process, each of the 250 recommended role statements was first copied onto an individual 4 by 6 note card. The cards were then grouped under seven function categories: Research,

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> still 'mean' the same thing in terms of the categories under which they are subsumed . . . coding is based upon the presence or absence of the categorized material, not upon its frequency--upon whether, not how much."
>
> Bernard Berelson, "Content Analysis," in Handbook of Social Psychology, ed. by Gardner Lindzey (Cambridge, Massachusetts: Addison-Wesley Publishing Company, 1954), p. 495.

The coding procedure was adapted to the needs of the Delphi process by discussing the matter of editing initial responses with Olaf Helmer. During a telephone conversation on April 7, 1972, Helmer explained the nature of editing individual responses in a Delphi study in this way:

> "There is no fixed procedure, and I think you have to use some common sense in its application. You should feel free to eliminate duplicate responses and to do quite a bit of editing, as long as you make a conscientious effort, as the experimenter, not to distort any of the opinions that were submitted. Editing may include putting responses into clearer English, as well as combining similar responses. You just have to be very careful not to introduce your own bias into the study in any way."
>
> Olaf Helmer, telephone call, April 7, 1972. Information was repeated in a letter from the Institute for the Future, dated May 4, 1972.

Evaluation, Design and Production, Utilization, Instruction, Communication (Information Management), and Management. Systematic content analysis of the recommended roles established that these seven categories would accommodate the total range of functions suggested for the work of the school library media specialist. The categories were adapted from the functions dimension of the Media Domain model developed in Hamreus's Media Guidelines Project.[7]

Within each function category, role statements were again analyzed for content; items were edited, rewritten, and combined according to the guidelines of Berelson and Helmer.

Two library educators, one from Michigan State University and one from Western Michigan University, provided valuable assistance in editing the role statements, especially in the area of clarifying meaning.

The resulting second questionnaire (Appendix E) contained 58 recommended roles for the school library media specialist of the future grouped into seven function categories.

Printed in front of each role statement on Questionnaire II was a Likert-type 5-point scale. The accompanying letter (Appendix D) asked the participant to evaluate each

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[7]Dale G. Hamreus, ed., Media Guidelines: Development and Validation of Criteria for Evaluating Media Training, Volume II (Monmouth, Oregon: Division of Teaching Research, Oregon State System for Higher Education, 1970), pp. II--4, 5.

recommended role and to rate it on the Likert scale to indicate his perception of the importance of the role for the effective performance of the school library media specialist in the future. The participant was encouraged to use the total range of highest (1) to lowest (5) scores in order to establish definitive priorities among the role statements. Because most, if not all, of the identified roles were of considerable importance to the work of the school library media specialist, the participant was urged to be discriminating in the assignment of priorities during the rating task.

Round III

Responses to Questionnaire II were used in preparing the third and final questionnaire. Questionnaire III (Appendix G) was a duplicate of the second questionnaire except that for each role statement the rating score most respondents selected on round two was circled in red.

The objective of round three was to discover if, after the participant learned how other participants responded, he agreed with the majority rating of the importance of the roles or if he believed the relative importance of certain of the roles to be different from the majority opinion. The cover letter (Appendix F) asked the participant to indicate his agreement or disagreement with the group opinion by re-rating each role item. The

participant was asked to explain the reason for his opinion, if it differed from the majority, by writing a brief statement under the item.

Treatment of Data

The major data derived from the study were the role expectations for the school library media specialist. These data were analyzed to determine how participants in the study interpreted the future role of the school library media specialists.

It was anticipated that some participants would defend individual opinions which differed from the majority opinion. These opinions were examined in relation to the major recommendations resulting from the study.

Movement toward group consensus usually results from the dynamics of the Delphi Technique. It was anticipated that movement toward group consensus regarding the relative importance of the identified roles for the school library media specialist of the future would derive from this study.

A mean score and standard deviation for each of the 58 role items were computed from the rating data obtained on both the second and third rounds to determine if there was movement toward group consensus. A decrease in the standard deviation indicates movement toward consensus.

A second set of mean scores and standard deviations was obtained for each of the seven function categories to determine another measure of movement toward consensus.

It was also anticipated that there would be differences in the expressed expectations for roles and performance of the school library media specialist of the future among the four professional specialization groups represented in the study, i.e., library/media practitioners, library/media educators, curriculum specialists, and educational research specialists.

Another statistical analysis, a one-way multivariate analysis of variance, was applied to the rating data obtained from the second and third rounds of the study to determine if there were differences in the concerns of the four professional groups.

It was determined that a comparison of combined scores for the seven function categories would be more meaningful than a comparison of individual scores for the 58 role items in the multivariate analysis. In a multivariate analysis of variance, single item measures have low reliability; also, the analysis method requires that there be fewer items (dependent variables) than subjects (independent variables). Therefore, the data base for the one-way multivariate analysis of variance consisted of combined function category scores for the four participating specialization sub-groups. The dependent variables

in the analysis were the combined scores from the seven function categories (Research, Evaluation, Design and Production, Utilization, Instruction, Communication, and Management) and the independent variables were the 53 participants in the four specialization sub-groups (library/media practitioners, library/media educators, curriculum specialists, and educational research specialists).

A significance level of .05 in the multivariate analysis was selected as indicating between-group differences.

Summary

This study used the Delphi Technique to elicit from a group of 53[8] participants recommendations for viable roles for the school library media specialist of the future. The participants were nominated by their professional colleagues as being uniquely qualified to provide significant input to the study. The study consisted of three successive rounds of questionnaires interspersed with appropriate feedback of information and opinion.

In the first round, the participants were asked to suggest roles for the school library media specialist of the future. In round two, the participants were provided

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[8]In Round I, 57 respondents participated in the study; however, 53 respondents participated in Round II and III.

a list of 58 generic role statements grouped in seven function categories, representing the total recommendations of the respondents, and were asked to rate each statement on a Likert-type 5-point scale to indicate their perception of the importance of the role for the performance of the school library media specialist in the future. In the third round, the majority opinion was reported for each item and the participants were asked to re-rate the items in light of the group opinion, i.e., to indicate their agreement or disagreement with the majority opinion.

A selective listing of recommended roles for the school library media specialist, together with rating scores which indicated relative importance, constituted the major data obtained from the study.

The data were analyzed statistically to determine two different kinds of information. A mean score and standard deviation were obtained for both the 58 individual role items on the questionnaires and for the seven function categories to determine movement toward group consensus.

A one-way multivariate analysis of variance was computed to determine differences of opinion among members of the four professional specialization groups who participated in the study, i.e., library/media practitioners, library/media educators, curriculum specialists, and educational research specialists.

CHAPTER IV

ANALYSIS OF DATA

The analysis of data reported in this chapter incorporates three distinctive treatments: an analysis and discussion of the roles for the school library media specialist of the future which were recommended by the participants; a statistical analysis of the rating scores for both the individual role statements and the seven function categories, comprising a mean score and standard deviation, to determine movement toward group consensus regarding the relative importance of the recommended roles for the work of the school library media specialist in the future; the application of a one-way multivariate analysis of variance to the combined rating scores of the seven function categories to obtain differences of opinion regarding the relative importance of the role statements among members of the four professional specialization groups who participated in the study, i.e., library/media practitioners, library/media educators, curriculum specialists, and educational research specialists.

Recommended Roles

This study attempted to determine what leaders in the field of education think will be important roles for the school library media specialist to perform in the future. Analysis of the roles recommended by participants indicated that the school library media specialist will function as an instructional development specialist in the future. The roles point to a general responsibility of the school library media specialist to facilitate learning, i.e., to work with other teachers to design and implement effective learning environments for the students.

In Table 4.1, the 58 role statements obtained from the study are arranged in order of the mean scores derived from the final round of rating.

Many of the role statements, e.g., items 24, 23, 50, 4, 32, 36, 3, 33, and 30, all of which were rated above a mean score of 2.5 on the scale of importance, suggest that the school library media specialist will participate in the design and development of instruction. The school library media specialist will first plan curriculum with other teachers and then provide media resources to implement the instructional program.

Data in Table 4.1 show that the roles perceived by participants as most important for the work of the school library media specialist focus on two functions: the design of instruction and the integration of media with instruction

TABLE 4.1--Recommended Roles for the School Library Media Specialist of the Future Arranged by Mean Scores.

Mean		Role Statement
1.13	24.	Become knowledgeable about the implications of media for learning, both in school and out, and use this knowledge with teachers to develop and revise curriculum.
1.15	18.	Accommodate individual learning styles and abilities by providing an appropriate number and variety of instructional and informational resources.
1.24	23.	Become knowledgeable about the total context of instruction --theories, methods, and applications--so that media support can be properly integrated.
1.24	26.	Help teachers develop flexibility in teaching styles by providing alternatives (options) in resources and by helping them to select appropriate alternatives for specific purposes.
1.24	46.	Identify and acquire instructional resources in all formats which are appropriate to implement the teaching/learning goals of the school.
1.24	47.	Be alert to new instructional resources, new ways of using resources for instruction, and new sources for obtaining media and media services.
1.24	52.	Project role of facilitator and helper, rather than of custodian and gate-keeper.
1.26	19.	Stimulate the effective and creative utilization of media to enhance learning by helping teachers relate appropriate learning theory, behavioral objectives, and instructional purposes to their selection of media to meet specific learner needs.
1.30	38.	Become aware of the power and potential of outside school resources--people, places, institutions, events, natural phenomenon--for communicating; assist teachers to incorporate them into learning experiences for students.
1.33	58.	Provide in-service training and/or direct support to everyone requiring assistance in proper and effective utilization of media.
1.43	48.	Develop differentiated media staffs, composed of professionals and para-professionals, who bring subject orientations and specialized skills to the solution of instructional problems.
1.46	40.	Participate in existing (or initiate development of) information networks (regional, state, national, and/or world) so that users have greatest possible access to information.

TABLE 4.1--Continued.

Mean		Role Statement
1.63	50.	Provide a total learning environment by removing existing constraints, e.g., fixed time periods and discrete classroom space, and by substituting flexible use of time, space, and media as determined by instructional needs.
1.70	4.	Use knowledge of research findings and of current developments in technology and instruction to stimulate educational innovations which provide improved learning opportunities.
1.74	32.	Assume full role and responsibility of a teacher by providing leadership in activities such as curriculum development and team teaching; in effect, participate as a working member of every department, discipline, or grade level instructional team.
1.80	36.	Assist other educators to re-orient school from a primary function of transmitting information to one of developing independent learning skills.
1.91	3.	Disseminate and interpret findings of current research and development activities which relate to instruction and learning.
1.91	21.	Make joy a part of the scene.
1.96	42.	Establish the school library media center as the bibliographic control center for the school by providing bibliographies, catalogs, and other locational tools to permit access to all available information and resources.
1.98	51.	Fit the goals and purposes of the school library media center to those of the school and community by including parents, teachers, administrators, and students in policy determinations and planning activities.
2.02	54.	Develop an "autonomous learning laboratory," an experience center going beyond the cognitive realm to include opportunity for sensory development (provide materials, time, space, and facilities for touching, tasting, feeling, acting, creating, and experiencing in music, film, art, etc.)
2.04	16.	Encourage and participate in the training of students to communicate and express their ideas through a variety of media.
2.04	45.	Convert needs assessment data into programs of relevant and effective services.
2.07	6.	Help teachers to evaluate and modify existing resources to meet specific needs of learners.
2.09	10.	Initiate, design, and implement appropriate procedures for evaluating media services in terms of cost effectiveness, value for learner, value for teacher, and need for improvement.
2.09	28.	Seek opportunities for self-education, especially in the areas of technology and new educational developments.

TABLE 4.1--Continued.

Mean		Role Statement
2.11	44.	Assess the information and learning resources needs of the several constituent populations of the school and community.
2.13	31.	Participate in high-level (administrative) decision making concerning total learning experiences for students.
2.13	43.	Facilitate communication between students, teachers, and community by suggesting and providing appropriate media.
2.17	2.	Keep informed about current research and development activities which effect changes in learning theory and instructional practices.
2.17	17.	Develop desirable reading, viewing, and listening patterns, attitudes, and habits through the use of media.
2.17	27.	Assist users to analyze teaching and learning problems; suggest strategies and techniques for solving them.
2.17	37.	Help students and teachers understand the unique message communicated by each medium in addition to the content being communicated.
2.22	8.	Make available information regarding the validation (instructional effectiveness) of print and non-print resources.
2.22	12.	Help teachers design instructional resources which are consistent with valid learning theory and which meet learners' needs.
2.22	29.	Become directly involved with teachers in diagnosis and prescription of learning experiences.
2.24	1.	Keep informed about technological developments (failures as well as successes) which relate to instruction and learning.
2.26	35.	Use media to prepare students to function efficiently in a rapidly-changing technological society.
2.33	11.	Help teachers and learners evaluate (validate) self-designed and produced instructional resources.
2.33	33.	Help teachers apply principles of instructional development (statement of objectives, systems analysis, evaluation) to curriculum development activities.
2.35	9.	Evaluate the effectiveness of learning experiences, especially the contribution of media to the learning.
2.37	56.	Protect the autonomy of the learner and his right to decide what he will learn.
2.39	7.	Anticipate teacher/learner needs through a program of continuous evaluation of existing resources in all formats.
2.41	30.	Provide leadership in providing for individual, rather than group, learning.

TABLE 4.1--Continued.

Mean		Role Statement
2.41	34.	Develop in students a desire and a capability for life-long learning outside formal instruction.
2.48	57.	Serve as liaison between school and other agencies in the area that are forming coalitions for sharing resources and information.
2.57	15.	Provide appropriate raw materials, necessary tools and equipment, and ready access so that teachers and learners can use them to create and to learn.
2.72	25.	Demonstrate that technology can be employed for humanistic purposes.
2.74	14.	Encourage and help students to design their own instruction in lieu of prescribed instruction.
2.74	53.	Plan instructional facilities that permit activities implicit in behavioral, developmental, and interactive theories of learning.
2.91	5.	Participate in on-going applied research, e.g., relate use of media to shaping of positive attitudes and self image, appraise efficiency and effectiveness of media services, evaluate effectiveness of various methods of instruction.
2.93	49.	Organize resources and data about them in a facility open to the learner 24 hours every day, or make resources and data available through remote computer-based access systems.
2.98	22.	In helping others to use media, teach both the broad commonalities and the distinctions of creative inquiry in the humanities, social sciences, and sciences.
3.13	20.	Initiate and implement the encounter between learner and resource, i.e., provide the motivation and actual teaching function through such mediated experiences as IPI and CAI.
3.28	13.	Help teachers and learners produce self-designed instructional resources which satisfy artistic standards.
3.35	39.	Facilitate access to, and continuous updating of, information by using a computerized or similar technological storage and retrieval system.
3.67	55.	Justify your existence in terms of delivered service.
4.39	41.	Search for and provide information needed by students, rather than ask them to search for themselves.

through efficient management procedures. Items dealing with these two functions received the highest mean scores in the rating task.

An examination of the Delphi instrument itself (Appendix E) reveals a similar emphasis on the Instruction and Management functions; participants recommended 16 role statements for Instruction and 15 for Management. Each of the other five function categories included fewer suggested roles.

Further study of the data in Table 4.1 shows that participants anticipate a primary function of the school library media specialist to be that of helping the teacher to improve his teaching skills, e.g., items 26, 19, 58, 36, 37, and 12.

Data suggest that the school library media specialist will need to be able to evaluate resources in terms of their contribution to the learning experience of students. Teachers will rely on the school library media specialist to provide and to recommend both discrete resources and total instructional programs which will implement learning. Items 46, 19, 6, 10, 9, and 7 in Table 4.1 point up this function.

The recommended roles represent a broad base of operation for the school library media specialist of the future. Items such as 18, 46, 47, 38, and 40 suggest that the school library media specialist will utilize modern

technology to expand the scope of resources available to meet the needs of his clients. In the future, media centers of all types (K-12 public schools, colleges and universities, public agencies, privately sponsored and other specialized agencies) will be linked into systems of communication/information networks in order to share access to a wide range of resources.

Many of the suggested roles focus on the logistics of managing resources, a traditional function which continues to be important for the school library media specialist of the future.

During the final round of rating, numerous minority opinions, i.e., opinions which differed from the reported majority rating scores, were expressed by participants.

Many of the minority opinions expressed a common thought, namely, that some of the roles recommended for the school library media specialist properly belong to some other member of the school staff, e.g., the classroom teacher, the curriculum director, the principal. Role statements which received such comments included those focusing on direct instruction with students, curriculum development, and analysis of research findings. Several participants felt that the role statements represented "almost all of education" and that consistently high priority ratings for most of the statements represented

an impossible situation for the school library media specialist of the future to attempt to satisfy.

Two statements--"21. Make joy a part of the scene." and "55. Justify your existence in terms of delivered service."--were the most controversial as evidenced by a wide spread of rating scores and by the greatest number of comments. A majority of participants rated statement 21 to be highest priority in both rating rounds, but a significant number of participants (35 in round two and 16 in round three) disagreed with this rating.

Item 55 received a dichotomous rating. While a majority of the group rated it lowest priority in both rounds of rating and it received a low mean score (3.67), a large number of participants (12 in round two and 9 in round three) rated this item highest priority and stated that it represented accountability, i.e., a statement of the school library media specialist's responsibility to be accountable.

Although content analysis of the recommended roles revealed much duplication, i.e., many similar ideas, in the approximately 250 total items, the fifty-eight generic statements which were derived from the analysis/coding/editing procedure were not equally endorsed by all fifty three participants.

Most participants were discriminating in their ratings and attempted to establish definitive priorities among the role statements by using the total range of highest to lowest scores on the Likert five-point scale of importance.

Data in Table 4.2 report that in round two ratings participants used the total range of scores--1 to 5--for all but four role items, i.e., 7, 18, 26, and 41. Round three ratings, which reveal a definite movement toward group consensus, are reported in Table 4.3. Participants used a 1 to 5 rating spread for only 33 of the 58 items. The movement toward group consensus resulted in fewer scores in the low range of the scale of importance.

While analysis of individual rating scores revealed substantial variation, the scores which report group opinion tended to fall in the top three scores of the Likert scale (1-3). Modal scores for each item are circled on Tables 4.2 and 4.3. Only one item--No. 39--received a "4" on the Likert scale of importance, while two items--Nos. 41 and 55--received "5" rating scores.

Data in Table 4.1 reveal that group ratings expressed as mean scores also tended to cluster at the high end of the Likert scale (1-3); only two items--Nos. 55 and 41--received a mean score lower than 3.5. This tendency toward high mean scores suggests that most of the identified roles were perceived by the participants to be of considerable

TABLE 4.2--Rating Scores--Questionnaire II.

High				Low		
						Research
1	(2)	3	4	5	1.	Keep informed about technological developments (failures
11	20	15	3	4		as well as successes) which relate to instruction and learning.
1	(2)	3	4	5	2.	Keep informed about current research and development activities
10	18	15	7	3		which effect changes in learning theory and instructional practices.
(1)	2	3	4	5	3.	Disseminate and interpret findings of current research and
16	12	11	12	2		development activities which relate to instruction and learning.
(1)	2	3	4	5	4.	Use knowledge of research findings and of current developments
20	14	7	9	3		in technology and instruction to stimulate educational innovations which provide improved learning opportunities.
1	2	(3)	4	5	5.	Participate in on-going applied research, e. g., relate use of
10	9	15	10	9		media to shaping of positive attitudes and self image, appraise efficiency and effectiveness of media services, evaluate effectiveness of various methods of instruction.
						Evaluation
1	(2)	3	4	5	6.	Help teachers to evaluate and modify existing resources to
20	23	6	1	3		meet specific needs of learners.
1	2	(3)	4	5	7.	Anticipate teacher/learner needs through a program of
14	13	20	6	--		continuous evaluation of existing resources in all formats.
1	(2)	3	4	5	8.	Make available information regarding the validation (instructional
8	20	17	4	4		effectiveness) of print and non-print resources.
1	(2)	3	4	5	9.	Evaluate the effectiveness of learning experiences, especially
10	21	10	7	5		the contribution of media to the learning.
1	(2)	3	4	5	10.	Initiate, design, and implement appropriate procedures for
10	20	8	7	8		evaluating media services in terms of cost effectiveness, value for learner, value for teacher, need for improvement.
1	(2)	3	4	5	11.	Help teachers and learners evaluate (validate) self-designed
9	20	12	8	4		and produced instructional resources.
						Design and Production
1	(2)	3	4	5	12.	Help teachers design instructional resources which are consistent
17	18	11	5	2		with valid learning theory and which meet learners' needs.
1	2	(3)	4	5	13.	Help teachers and learners produce self-designed instructional
4	10	18	8	13		resources which satisfy artistic standards.
1	2	(3)	4	5	14.	Encourage and help students to design their own instruction
12	8	17	10	6		in lieu of prescribed instruction.

TABLE 4.2--Continued.

High				Low		
1	2	(3)	4	5	15.	Provide appropriate raw materials, necessary tools and equipment, and ready access so that teachers and learners can use them to create and to learn.
16	7	19	9	2		
						Utilization
1	(2)	3	4	5	16.	Encourage and participate in the training of students to communicate and express their ideas through a variety of media.
15	17	15	2	4		
1	(2)	3	4	5	17.	Develop desirable reading, viewing, and listening patterns, attitudes, and habits through the use of media.
13	18	11	7	4		
(1)	2	3	4	5	18.	Accommodate individual learning styles and abilities by providing an appropriate number and variety of instructional and informational resources.
33	11	6	3	--		
(1)	2	3	4	5	19.	Stimulate the effective and creative utilization of media to enahnce learning by helping teachers relate appropriate learning theory, behavioral objectives, and instructional purposes to their selection of media to meet specific learner needs.
26	15	7	3	2		
1	2	(3)	4	5	20.	Initiate and implement the encounter between learner and resource, i. e., provide the motivation and actual teaching function through such mediated experiences as IPI, CAI.
5	12	16	9	11		
						Instruction
(1)	2	3	4	5	21.	Make joy a part of the scene.
18	8	15	5	7		
1	2	(3)	4	5	22.	In helping others to use media, teach both the broad commonalities and the distinctions of creative inquiry in the humanities, social sciences, and sciences.
3	9	24	5	12		
(1)	2	3	4	5	23.	Become knowledgeable about the total context of instruction--theories, methods, and applications--so that media support can be properly integrated.
20	13	14	4	2		
(1)	2	3	4	5	24.	Become knowledgeable about the implications of media for learning, both in school and out, and use this knowlege with other teachers to develop and revise curriculum.
21	17	9	4	2		
1	2	(3)	4	5	25.	Demonstrate that technology can be employed for humanistic purposes.
9	7	22	5	10		
(1)	2	3	4	5	26.	Help teachers develop flexibility in teaching styles by providing alternatives (options) in resources and by helping them to select appropriate alternatives for specific purposes.
26	16	5	6	--		
1	(2)	3	4	5	27.	Assist users to analyze teaching and learning problems and suggest strategies and techniques for solving them.
11	19	13	9	1		
1	(2)	3	4	5	28.	Seek opportunities for continuous self-education, especially in the areas of technology and new educational developments.
13	19	14	4	3		
1	(2)	3	4	5	29.	Become directly involved with teachers in diagnosis and prescription of learning experiences.
9	20	13	6	5		

TABLE 4.2--Continued.

High				Low		
1	(2)	3	4	5	30.	Provide leadership in providing for individual, rather than group, learning.
8	20	18	2	5		
1	(2)	3	4	5	31.	Participate in high-level (administrative) decision-making concerning total learning experiences for students.
15	18	9	5	6		
(1)	2	3	4	5	32.	Assume full role and responsibility of a teacher by providing leadership in activities such as curriculum development and team teaching; in effect, participate as a working member of every department, discipline, or grade level instructional team.
19	15	9	7	3		
1	(2)	3	4	5	33.	Help teachers apply principles of instructional development (statement of objectives, systems analysis, evaluation) to curriculum development activities.
9	17	12	7	8		
1	2	(3)	4	5	34.	Develop in students a desire and a capability for life-long learning outside formal instruction.
15	8	20	5	5		
1	(2)	3	4	5	35.	Use media to prepare students to function efficiently in a rapidly-changing technological society.
6	23	13	4	7		
1	(2)	3	4	5	36.	Assist other educators to re-orient school from a primary function of transmitting information to one of developing independent learning skills.
16	24	8	3	2		
						Communication (Information management)
1	(2)	3	4	5	37.	Help students and teachers understand the unique message communicated by each medium in addition to the content being communicated.
5	19	16	8	5		
(1)	2	3	4	5	38.	Become aware of the power and potential of outside school resources--people, places, institutions, events, natural phenomenon--for communication and assist teachers to incorporate them into learning experiences for students.
21	16	10	3	3		
1	2	3	(4)	5	39.	Facilitate access to and continuous updating of information by using a computerized or similar technological storage and retrieval system.
7	7	16	19	4		
(1)	2	3	4	5	40.	Participate in existing (or initiate development of) information networks (regional, state, national and/or world) so that users have greatest possible access to information.
18	12	13	4	6		
1	2	3	4	(5)	41.	Search for and provide information needed by students, rather than ask them to search for themselves.
--	7	14	13	19		
1	(2)	3	4	5	42.	Establish the school library media center as the bibliographic control center for the school by providing catalogs, bibliographies, and other locational tools to permit access to all available information and resources.
16	20	10	3	4		
1	(2)	3	4	5	43.	Facilitate communication between students, teachers, and community by suggesting and providing appropriate media.
8	21	14	8	2		

TABLE 4.2--Continued.

High				Low		Management
1	(2)	3	4	5	44.	Assess the information and learning resources needs of the various constituent populations, i. e., learners (in school and anticipated), teachers, administrators, and other cooperating agencies.
12	20	13	7	1		
1	(2)	3	4	5	45.	Determine and establish information and learning resources services that meet the needs of the various constituent populations, i. e., convert needs assessment data into relevant and effective services.
13	19	14	4	3		
(1)	2	3	4	5	46.	Identify and acquire instructional resources in all formats which are appropriate to implement the teaching/learning goals of the school.
27	12	11	2	1		
(1)	2	3	4	5	47.	Be alert to new instructional resources, new ways of using resources for instruction, and new sources for obtaining media and media services.
20	17	11	3	2		
(1)	2	3	4	5	48.	Develop differentiated media staffs, composed of professionals and para-professionals, who bring subject orientations and specialized skills to the solutions of instructional problems.
20	11	8	9	5		
1	2	(3)	4	5	49.	Organize resources and data about them in a facility open to the learner 24 hours every day or make resources and data available through remote computer-based access systems.
8	8	19	12	6		
(1)	2	3	4	5	50.	Provide a total learning environment by removing existing contraints, e. g., fixed time periods and discrete classroom space, and by substituting flexible use of time, space, and media as determined by instructional needs.
22	11	10	4	6		
1	(2)	3	4	5	51.	Fit the goals and purposes of the school library media center to those of the school and community by including parents, teachers, administrators, and students in policy determinations and planning activities.
15	26	9	2	1		
(1)	2	3	4	5	52.	Project role of facilitator and helper, rather than of custodian and gate-keeper.
31	10	8	1	3		
1	2	(3)	4	5	53.	Plan instructional facilities that permit activities implicit in behavioral, developmental, and interactive theories of learning.
13	15	19	3	3		
1	(2)	3	4	5	54.	Develop an "autonomous learning laboratory," an experience center going beyond the cognitive realm to include the opportunity for sensory development (provide materials, time, space and facilities for touching, tasting, feeling, acting, creating, and experiencing in music, film, art, etc.)
11	20	15	4	3		
1	2	3	4	(5)	55.	Justify your existence in terms of delivered service.
12	7	10	8	16		
1	(2)	3	4	5	56.	Protect autonomy of learner and his right to decide what he will learn.
5	20	14	8	6		
1	2	(3)	4	5	57.	Serve as liasion between school and other agencies in area that are forming coalitions for sharing resources and information.
15	7	24	4	3		
(1)	2	3	4	5	58.	Provide in-service training and/or direct support to everyone requiring assistance in proper and effective utilization of media.
23	14	6	5	5		

TABLE 4.3--Rating Scores--Questionnaire III.

High				Low		
						Research
1	(2)	3	4	5	1.	Keep informed about technological developments (failures as
2	36	5	1	2		well as successes) which relate to instruction and learning.
1	(2)	3	4	5	2.	Keep informed about current research and development activities
5	31	8	1	1		which effect changes in learning theory and instructional practices.
(1)	2	3	4	5	3.	Disseminate and interpret findings of current research and
24	10	6	4	2		development activities which relate to instruction and learning.
(1)	2	3	4	5	4.	Use knowledge of research findings and of current developments
30	8	3	2	3		in technology and instruction to stimulate educational innovations which provide improved learning opportunities.
1	2	(3)	4	5	5.	Participate in on-going applied research, e. g., relate use of
3	7	29	5	2		media to shaping of positive attitudes and self image, appraise efficiency and effectiveness of media services, evaluate effectiveness of various methods of instruction.
						Evaluation
1	(2)	3	4	5	6.	Help teachers to evaluate and modify existing resources to
8	33	2	--	3		meet specific needs of learners.
1	2	(3)	4	5	7.	Anticipate teacher/learner needs through a program of
7	14	25	--	--		continuous evaluation of existing resources in all formats.
1	(2)	3	4	5	8.	Make available information regarding the validation (instructional
3	35	5	1	2		effectiveness) of print and non-print resources.
1	(2)	3	4	5	9.	Evaluate the effectiveness of learning experiences, especially
2	33	7	1	3		the contribution of media to the learning.
1	(2)	3	4	5	10.	Initiate, design, and implement appropriate procedures for
10	28	4	2	2		evaluating media services in terms of cost effectiveness, value for learner, value for teacher, and need for improvement.
1	(2)	3	4	5	11.	Help teachers and learners evaluate (validate) self-designed
3	32	5	5	1		and produced instructional resources.
						Design and Production
1	(2)	3	4	5	12.	Help teachers design instructional resources which are consistent
4	34	5	--	3		with valid learning theory and which meet learners' needs.
1	2	(3)	4	5	13.	Help teachers and learners produce self-designed instructional
2	3	28	6	7		resources which satisfy artistic standards.
1	2	(3)	4	5	14.	Encourage and help students to design their own instruction
4	8	30	4	-		in lieu of prescribed instruction.

TABLE 4.3--Continued.

High				Low		
1	2	(3)	4	5	15.	Provide appropriate raw materials, necessary tools and equipment, and ready access so that teachers and learners can use them to create and to learn.
6	10	29	--	1		
						Utilization
1	(2)	3	4	5	16.	Encourage and participate in the training of students to communicate and express their ideas through a variety of media.
5	35	5	1	--		
1	(2)	3	4	5	17.	Develop desirable reading, viewing, and listening patterns, attitudes, and habits through the use of media.
6	32	4	2	2		
(1)	2	3	4	5	18.	Accommodate individual learning styles and abilities by providing an appropriate number and variety of instructional and informational resources.
42	1	3	--	--		
(1)	2	3	4	5	19.	Stimulate the effective and creative utilization of media to enhance learning by helping teachers relate appropriate learning theory, behavioral objectives, and instructional purposes to their selection of media to meet specific learner needs.
40	3	1	1	1		
1	2	(3)	4	5	20.	Initiate and implement the encounter between learner and resource, i. e., provide the motivation and actual teaching function through such mediated experiences as IPI and CAI.
2	2	33	6	3		
						Instruction
(1)	2	3	4	5	21.	Make joy a part of the scene.
30	2	6	4	4		
1	2	(3)	4	5	22.	In helping others to use media, teach both the broad commonalities and the distinctions of creative inquiry in the humanities, social sciences, and sciences.
3	4	33	3	3		
(1)	2	3	4	5	23.	Become knowledgeable about the total context of instruction--theories, methods, and applications--so that media support can be properly integrated.
39	4	2	1	--		
(1)	2	3	4	5	24.	Become knowledgeable about the implications of media for learning, both in school and out, and use this knowledge with teachers to develop and revise curriculum.
42	3	--	1	--		
1	2	(3)	4	5	25.	Demonstrate that technology can be employed for humanistic purposes.
3	10	30	2	1		
(1)	2	3	4	5	26.	Help teachers develop flexibility in teaching styles by providing alternatives (options) in resources and by helping them to select appropriate alternatives for specific purposes.
39	5	1	--	1		
1	(2)	3	4	5	27.	Assist users to analyze teaching and learning problems; suggest strategies and techniques for solving them.
2	37	4	3	--		
1	(2)	3	4	5	28.	Seek opportunities for self-education, especially in the areas of technology and new educational developments.
3	38	4	--	1		
1	(2)	3	4	5	29.	Become directly involved with teachers in diagnosis and prescription of learning experiences.
5	33	3	3	2		

TABLE 4.3--Continued.

High				Low		
1	(2)	3	4	5	30.	Provide leadership in providing for individual, rather than
2	31	7	4	2		group, learning.
1	(2)	3	4	5	31.	Participate in high-level (administrative) decision making
4	36	3	2	1		concerning total learning experiences for students.
(1)	2	3	4	5	32.	Assume full role and responsibility of a teacher by providing
26	10	7	2	1		leadership in activities such as curriculum development and team teaching; in effect, participate as a working member of every department, discipline, or grade level instructional team.
1	(2)	3	4	5	33.	Help teachers apply principles of instructional development
2	34	5	3	2		(statement of objectives, systems analysis, evaluation) to curriculum development activities.
1	2	(3)	4	5	34.	Develop in students a desire and a capability for life-long
10	13	19	2	2		learning outside formal instruction.
1	(2)	3	4	5	35.	Use media to prepare students to function efficiently in a
2	36	4	2	?		rapidly-changing technological society.
1	(2)	3	4	5	36.	Assist other educators to re-orient school from a primary
11	33	2	--	--		function of transmitting information to one of developing independent learning skills.
						Communication (Information management)
1	(2)	3	4	5	37.	Help students and teachers understand the unique message
2	37	4	3	--		communicated by each medium in addition to the content being communicated.
(1)	2	3	4	5	38.	Become aware of the power and potential of outside school
36	6	4	--	--		resources--people, places, institutions, events, natural phenomenon--for communicating; assist teachers to incorporate them into learning experiences for students.
1	2	3	(4)	5	39.	Facilitate access to, and continuous updating of, information
4	7	5	29	1		by using a computerized or similar technological storage and retrieval system.
(1)	2	3	4	5	40.	Participate in existing (or initiate development of) information
35	4	4	3	--		networks (regional, state, national, and/or world) so that users have greatest possible access to information.
1	2	3	4	(5)	41.	Search for and provide information needed by students, rather
1	2	7	4	32		than ask them to search for themselves.
1	(2)	3	4	5	42.	Establish the school library media center as the bibliographic
8	34	3	--	1		control center for the school by providing bibliographies, catalogs, and other locational tools to permit access to all available information and resources.
1	(2)	3	4	5	43.	Facilitate communication between students, teachers, and
1	39	5	1	--		community by suggesting and providing appropriate media.

TABLE 4.3--Continued.

Management

High				Low		
1	(2)	3	4	5	44.	Assess the information and learning resources needs of the several constituent populations of the school and community.
4	37	2	2	1		
1	(2)	3	4	5	45.	Convert needs assessment data into programs of relevant and effective services.
7	35	1	1	2		
(1)	2	3	4	5	46.	Identify and acquire instructional resources in all formats which are appropriate to implement the teaching/learning goals of the school.
39	4	2	1	--		
(1)	2	3	4	5	47.	Be alert to new instructional resources, new ways of using resources for instruction, and new sources for obtaining media and media services.
40	2	3	1	--		
(1)	2	3	4	5	48.	Develop differentiated media staffs, composed of professionals and para-professionals, who bring subject orientations and specialized skills to the solution of instructional problems.
36	3	5	1	1		
1	2	(3)	4	5	49.	Organize resources and data about them in a facility open to the learner 24 hours every day, or make resources and data available through remote computer-based access systems.
3	5	31	4	3		
(1)	2	3	4	5	50.	Provide a total learning environment by removing existing constraints, e. g., fixed time periods and discrete classroom space, and by substituting flexible use of time, space, and media as determined by instructional needs.
33	4	5	1	3		
1	(2)	3	4	5	51.	Fit the goals and purposes of the school library media center to those of the school and community by including parents, teachers, administrators, and students in policy determinations and planning activities.
8	33	4	--	1		
(1)	2	3	4	5	52.	Project role of facilitator and helper, rather than of custodian and gate-keeper.
41	3	--	--	2		
1	2	(3)	4	5	53.	Plan instructional facilities that permit activities implicit in behavioral, developmental, and interactive theories of learning.
6	4	33	2	1		
1	(2)	3	4	5	54.	Develop an "autonomous learning laboratory," an experience center going beyond the cognitive realm to include opportunity for sensory development (provide materials, time, space, and facilities for touching, tasting, feeling, acting, creating, and experiencing in music, film, art, etc.)
4	39	2	--	1		
1	2	3	4	(5)	55.	Justify your existence in terms of delivered service.
9	4	5	3	25		
1	(2)	3	4	5	56.	Protect the autonomy of the learner and his right to decide what he will learn.
3	29	10	2	2		
1	2	(3)	4	5	57.	Serve as liaison between school and other agencies in the area that are forming coalitions for sharing resources and information.
7	10	29	--	--		
(1)	2	3	4	5	58.	Provide in-service training and/or direct support to everyone requiring assistance in proper and effective utilization of media.
39	3	2	--	2		

importance for the work of the school library media specialist in the future.

Some participants were concerned that the reported group ratings showed too many high scores. These participants felt that the group, as a whole, did not establish definitive priorities among the total number of recommended roles since most were rated high priority. While it is correct that the scores used to report group response fell primarily in the high range of the Likert scale (1-3), it must be pointed out that individual participants did establish priorities in their individual rating patterns.

Analysis of the recommended roles supported the assumption that: "The school library media specialist of the future will need to assume a different role from that of the traditional school librarian."

Group Consensus

The dynamics of the Delphi Technique usually result in a movement toward group consensus. There is evidence from previous Delphi studies to indicate that, during successive rounds of questionnaires, as information is fed back from previous rounds, opinions tend to converge toward a group norm. It was anticipated that movement toward group consensus regarding the relative importance of the recommended roles for the work of the school library media specialist in the future would derive from this study.

In order to determine if there was significant movement toward group consensus, a mean score and standard deviation for each of the fifty-eight recommended roles were computed from the rating score data obtained on the second and third questionnaires. A decrease in the standard deviation was accepted as an indication that movement toward group consensus did, in fact, result from the study. The information reported in Table 4.4 shows that the standard deviation became smaller between rounds two and three for 56 of the 58 items, i.e., the group of participants in successive rounds of the study moved their ratings on 56 of the role statements toward the group norm.

The two items for which the standard deviation became greater (an indication that the group ratings moved away from consensus) in successive rounds of rating--"21. Make joy a part of the scene." and "55. Justify your existence in terms of delivered service."--have been reported earlier in this chapter as having evoked a large number of expressed minority opinions. These two items were the most controversial in the study and received the most disparate ratings. It appears that, as the participants re-considered the two statements, their opinions (as reflected in the rating scores) became more different.

A mean score and standard deviation were also computed for each of the seven function categories to provide another measure of significant movement toward consensus. Data in Table 4.5 show that for each of the seven function

TABLE 4.4--Mean Scores and Standard Deviations for Recommended Roles for the School Library Media Specialist of the Future.

Role Statement	Round	Mean	Standard Deviation
Research			
1. Keep informed about technological developments (failures as well as successes) which relate to instruction and learning.	II	2.43	1.14
	III	2.24	0.77
2. Keep informed about current research and development activities which effect changes in learning theory and instructional practices.	II	2.57	1.12
	III	2.17	0.74
3. Disseminate and interpret findings of current research and development activities which relate to instruction and learning.	II	2.53	1.24
	III	1.91	1.19
4. Use knowledge of research findings and of current developments in technology and instruction to stimulate educational innovations which provide improved learning opportunities.	II	2.27	1.30
	III	1.70	1.19
5. Participate in on-going applied research, e. g., relate use of media to shaping of positive attitudes and self image, appraise efficiency and effectiveness of media services, evaluate effectiveness of various methods of instruction.	II	2.98	1.38
	III	2.91	0.84
Evaluation			
6. Help teachers to evaluate and modify existing resources to meet specific needs of learners.	II	1.88	0.97
	III	2.07	0.90
7. Anticipate teacher/learner needs through a program of continuous evaluation of existing resources in all formats.	II	2.31	1.01
	III	2.39	0.74
8. Make available information regarding the validation (instructional effectiveness) of print and non-print resources.	II	2.57	1.10
	III	2.22	0.79

TABLE 4.4--Continued.

Role	Statement	Round	Mean	Standard Deviation
9.	Evaluate the effectiveness of learning experiences, especially the contribution of media to learning.	II	2.51	1.19
		III	2.35	0.87
10.	Initiate, design, and implement appropriate procedures for evaluating media services in terms of cost effectiveness, value for learner, value for teacher, and need for improvement.	II	2.71	1.36
		III	2.09	0.94
11.	Help teachers and learners evaluate (validate) self-designed and produced instructional resources.	II	2.61	1.18
		III	2.33	0.84
	Design and Production			
12.	Help teachers design instructional resources which are consistent with valid learning theory and which meet learners' needs.	II	2.20	1.13
		III	2.22	0.87
13.	Help teachers and learners produce self-designed instructional resources which satisfy artistic standards.	II	3.31	1.27
		III	3.28	0.96
14.	Encourage and help students to design their own instruction in lieu of prescribed instruction.	II	2.80	1.33
		III	2.74	0.74
15.	Provide appropriate raw materials, necessary tools and equipment, and ready access so that teachers and learners can use them to create and to learn.	II	2.49	1.22
		III	2.57	0.81
	Utilization			
16.	Encourage and participate in the training of students to communicate and express their ideas through a variety of media.	II	2.25	1.11
		III	2.04	0.56

TABLE 4.4--Continued.

Role	Statement	Round	Mean	Standard Deviation
17.	Develop desirable reading, viewing, and listening patterns, attitudes, and habits through the use of media.	II	2.47	1.24
		III	2.17	0.88
18.	Accommodate individual learning styles and abilities by providing an appropriate number and variety of instructional and informational resources.	II	1.61	0.92
		III	1.15	0.51
19.	Stimulate the effective and creative utilization of media to enhance learning by helping teachers relate appropriate learning theory, behavioral objectives, and instructional purposes to their selection of media to meet specific learner needs.	II	1.88	1.11
		III	1.26	0.80
20.	Initiate and implement the encounter between learner and resource, i. e., provide the motivation and actual teaching function through such mediated experiences as IPI and CAI.	II	3.16	1.27
		III	3.13	0.78
	Instruction			
21.	Make joy a part of the scene.	II	2.51	1.36
		III	1.91	1.40
22.	In helping others to use media, teach both the broad commonalities and the distinctions of creative inquiry in the humanities, social sciences, and sciences.	II	3.29	1.17
		III	2.98	0.83
23.	Become knowledgeable about the total context of instruction--theories, methods, and applications--so that media support can be properly integrated.	II	2.20	1.13
		III	1.24	0.64
24.	Become knowledgeable about the implications of media for learning, both in school and out, and use this knowledge with teachers to develop and revise curriculum.	II	2.02	1.09
		III	1.13	0.50

TABLE 4.4--Continued.

Role Statement	Round	Mean	Standard Deviation
25. Demonstrate that technology can be employed for humanistic purposes.	II	3.00	1.33
	III	2.72	0.75
26. Help teachers develop flexibility in teaching styles by providing alternatives (options) in resources and by helping them to select appropriate alternatives for specific purposes.	II	1.86	1.02
	III	1.24	0.71
27. Assist users to analyze teaching and learning problems; suggest strategies and techniques for solving them.	II	2.45	1.08
	III	2.17	0.61
28. Seek opportunities for self-education, especially in the areas of technology and new educational developments.	II	2.35	1.13
	III	2.09	0.59
29. Become directly involved with teachers in diagnosis and prescription of learning experiences.	II	2.61	1.20
	III	2.22	0.89
30. Provide leadership in providing for individual, rather than group, learning.	II	2.49	0.99
	III	2.41	0.88
31. Participate in high-level (administrative) decision-making concerning total learning experiences for students.	II	2.43	1.33
	III	2.13	0.72
32. Assume full role and responsibility of a teacher by providing leadership in activities such as curriculum development and team teaching; in effect, participate as a working member of every department, discipline, or grade level instructional team.	II	2.29	1.24
	III	1.74	1.02
33. Help teachers apply principles of instructional development (statement of objectives, systems analysis, evaluation) to curriculum development activities.	II	2.80	1.33
	III	2.33	0.84

TABLE 4.4--Continued.

Role	Statement	Round	Mean	Standard Deviation
34.	Develop in students a desire and a capability for life-long learning outside formal instruction.	II III	2.55 2.41	1.29 1.02
35.	Use media to prepare students to function efficiently in a rapidly-changing technological society.	II III	2.71 2.26	1.20 0.80
36.	Assist other educators to re-orient school from a primary function of transmitting information to one of developing independent learning skills.	II III	2.08 1.80	1.04 0.50
	Communication			
37.	Help students and teachers understand the unique message communicated by each medium in addition to the content being communicated.	II III	2.82 2.17	1.13 0.61
38.	Become aware of the power and potential of outside school resources--people, places, institutions, events, natural phenomenon--for communicating; assist teachers to incorporate them into learning experiences for students.	II III	2.12 1.30	1.16 0.63
39.	Facilitate access to, and continuous updating of, information by using a computerized or similar technological storage and retrieval system.	II III	3.08 3.35	1.16 1.06
40.	Participate in existing (or initiate development of) information networks (regional, state, national, and/or world) so that users have greatest possible access to information.	II III	2.45 1.46	1.33 0.91
41.	Search for and provide information needed by students, rather than ask them to search for themselves.	II III	3.82 4.39	1.07 1.04

TABLE 4.4--Continued.

Role	Statement	Round	Mean	Standard Deviation
42.	Establish the school library media center as the bibliographic control center for the school by providing bibliographies, catalogs, and other locational tools to permit access to all available information and resources.	II III	2.18 1.96	1.13 0.67
43.	Facilitate communication between students, teachers, and community by suggesting and providing appropriate media.	II III	2.55 2.13	1.06 0.45
	Management			
44.	Assess the information and learning resources needs of the several constituent populations of the school and community.	II III	2.35 2.11	1.05 0.71
45.	Convert needs assessment data into programs of relevant and effective services.	II III	2.35 2.04	1.13 0.82
46.	Identify and acquire instructional resources in all formats which are appropriate to implement the teaching/learning goals of the school.	II III	1.86 1.24	1.02 0.64
47.	Be alert to new instructional resources, new ways of using resources for instruction, and new sources for obtaining media and media services.	II III	2.10 1.24	1.08 0.67
48.	Develop differentiated media staffs, composed of professionals and para-professionals, who bring subject orientations and specialized skills to the solution of instructional problems.	II III	2.41 1.43	1.40 0.93
49.	Organize resources and data about them in a facility open to the learner 24 hours every day, or make resources and data available through remote computer-based access systems.	II III	3.00 2.93	1.23 0.90

TABLE 4.4--Continued.

Role Statement	Round	Mean	Standard Deviation
50. Provide a total learning environment by removing existing constraints, e. g., fixed time periods and discrete classroom space, and by substituting flexible use of time, space, and media as determined by instructional needs.	II	2.31	1.38
	III	1.63	1.18
51. Fit the goals and purposes of the school library media center to those of the school and community by including parents, teachers, administrators, and students in policy determinations and planning activities.	II	2.02	0.91
	III	1.98	0.68
52. Project role of facilitator and helper, rather than of custodian and gate-keeper.	II	1.78	1.15
	III	1.24	0.85
53. Plan instructional facilities that permit activities implicit in behavioral, developmental, and interactive theories of learning.	II	2.33	1.05
	III	2.74	0.83
54. Develop an "autonomous learning laboratory," an experience center going beyond the cognitive realm to include opportunity for sensory development (provide materials, time, space, and facilities for touching, tasting, feeling, acting, creating, and experiencing in music, film, art, etc.)	II	2.41	1.10
	III	2.02	0.58
55. Justify your existence in terms of delivered service.	II	3.10	1.54
	III	3.67	1.65
56. Protect the autonomy of the learner and his right to decide what he will learn.	II	2.84	1.17
	III	2.37	0.85

TABLE 4.4--Continued.

Role	Statement	Round	Mean	Standard Deviation
57.	Serve as liaison between school and other agencies in the area that are forming coalitions for sharing resources and information.	II	2.47	1.17
		III	2.48	0.75
58.	Provide in-service training and/or direct support to everyone requiring assistance in proper and effective utilization of media.	II	2.20	1.34
		III	1.33	0.92

TABLE 4.5.--Mean Scores and Standard Deviations for Seven Function Categories.

Function Category	Round	Mean	Standard Deviation
Research	II	12.66	4.18
	III	10.93	3.28
Evaluation	II	14.64	3.82
	III	13.43	2.73
Design and Production	II	10.81	3.15
	III	10.80	2.05
Utilization	II	11.38	3.65
	III	9.76	1.68
Instruction	II	39.51	9.35
	III	32.78	5.50
Communication	II	18.96	3.77
	III	16.76	2.56
Management	II	35.43	8.42
	III	30.46	5.49

categories the standard deviation became smaller between rounds two and three. This is another indication that participants tended to move their ratings toward a group norm, i.e., that movement toward consensus resulted from the study.

The reduction in standard deviation for the rating scores between rounds two and three of the study, determined for both individual role items and function categories, indicated that there was movement toward group consensus as a result of the dynamics of the Delphi Technique. This result supported the assumption that: "Experts engaging in the Delphi Technique will tend in successive rounds of the process to approach a consensus as to the relative importance of the items under consideration."

Group Differences

It was anticipated that members of the four professional specialization groups who participated in the study, i.e., library/media practitioners, library/media educators, curriculum specialists, and educational research specialists, would evaluate and rate the importance of the recommended roles for the school library media specialist of the future differently. It was assumed that each group possessed a unique orientation to education and to the work of the school library media specialist and would exhibit distinct differences of opinion about the recommended roles in their rating scores.

A one-way multivariate analysis of variance was applied to the rating data from the second and third rounds of the study to determine if there were differences in the concerns of the four professional sub-groups. The results of the analysis shown in Tables 4.6 and 4.7 indicate that there were no overall differences among the four groups who participated in the study.

For round two, the multivariate significance level was less than 0.4930, an indication that there was no significant between-group difference. The multivariate significance level for round three was less than 0.0843. While this represents a marginal degree of between-group difference for round three, it must be concluded that generally there were no significant between-group differences among the four participating specialization groups.

A significance level was also computed for the combined scores of each of the seven function categories in order to determine if differences were revealed in the group ratings of the individual categories.

Data in Table 4.6 report the significance level for each of the seven function categories in round two. Only one function category, Research, showed significant difference at the .05 level ($p \leq 0.0212$); the rating scores for the remaining six function categories were not significantly different at the .05 level.

TABLE 4.6.--Multivariate Analysis of Variance--Round II.

F--ratio for multivariate test of equality of mean vectors 0.9795

D.F. 21 and 124.0229 P less than 0.4930

Function Category	Between Mean SQ	Univariate F	P less than
Research	53.9623	3.5444	0.0212*
Evaluation	23.3296	1.6611	0.1876
Design and Production	15.9044	1.6638	0.1870
Utilization	7.0732	0.5148	0.6741
Instruction	28.3429	0.3115	0.8170
Communication	6.1026	0.4144	0.7435
Management	20.8285	0.2819	0.8383

*Significant at .05 level.

Degrees of Freedom for hypothesis 3.

Degrees of Freedom for error 49.

TABLE 4.7.--Multivariate Analysis of Variance--Round III.

F--ratio for multivariate test of equality of mean vectors 1.5269

D.F. 21 and 103.9227 P less than 0.0843

Function Category	Between Mean SQ	Univariate F	P less than
Research	6.2589	0.5641	0.6418
Evaluation	6.3701	0.8461	0.4765
Design and Production	13.4982	3.8114	0.0168*
Utilization	2.4937	0.8810	0.4587
Instruction	9.7676	0.3083	0.8193
Communication	17.4271	3.0234	0.0401*
Management	35.3336	1.1859	0.3267

*Significant at .05 level.

Degrees of Freedom for hypothesis 3.

Degrees of Freedom for error 42.

Data in Table 4.7 report the significance level for each of the seven function categories in round three. Design and Production showed the greatest amount of between-group variance ($p \leq 0.0168$) significant at the .05 level; the Communication function also showed significant difference at the .05 level ($p \leq 0.0401$). The remaining five function categories showed no significant between-group variance in the rating scores.

It must be concluded that the four sub-groups of participants tended to be more alike than different in their perceptions of the importance of the recommended roles for the work of the school library media specialist in the future.

Results of the multivariate analysis of variance rejected the assumption that: "Members of the four professional specialization groups who participated in the study will tend to have different opinions about the relative importance of roles for the school library media specialist of the future."

Summary

The data derived from this study were analyzed in three ways:

First, the roles for the school library media specialist which were recommended by the participants were reported and analyzed. These data reveal that participants anticipate changes in the functions of the school library

media specialist in the future. Included in the discussion of roles was information about the participants' rating of the role statements to indicate their perception of the relative importance of the role for the work of the school library media specialist in the future. It was pointed out that, although the procedure of the Delphi Technique requires a group score be reported for each item, the comments and rating patterns of individual participants revealed differences of opinions within the group.

In order to determine if any movement toward group consensus derived from the study, a mean score and standard deviation were computed from the rating scores for each role statement and from the combined rating scores for each function category for rounds two and three. For the individual role statements, the standard deviation decreased for 56 of the 58 items; the standard deviation decreased for each of the seven function categories. Reduction in the standard deviation indicated that there was movement toward group consensus, i.e., the participants tended to move their rating scores toward a group norm in successive rounds of evaluation.

A one-way multivariate analysis of variance was applied to the combined rating scores for the seven function categories to determine if there were differences of opinion about the relative importance of the roles among members of the four professional specialization sub-groups who

participated in the study. Results of this analysis indicated that generally there were no significant differences among the four participating specialization groups' ratings of the seven function categories.

In round two, the four professional specialization sub-groups showed significant differences in their rating scores for only one of the seven function categories determined at the .05 level, i.e., Research ($p \leq 0.0212$); there was no significant overall between-group difference in this round of the study (P less than 0.4930). In round three, the difference was significant at the .05 level for two of the seven function categories, i.e., Design and Production ($p \leq 0.0168$) and Communication ($p \leq 0.0401$); the overall difference between groups was determined to be marginal (P less than 0.0843).

Results of the multivariate analysis of variance suggest that the four participating sub-groups tended to be more alike than different in their perceptions of the importance of the recommended roles for the work of the school library media specialist in the future.

CHAPTER V

SUMMARY AND CONCLUSIONS

The purpose of the study was to identify viable roles for the school library media specialist of the future. The study was designed to use one of the futurist research methods, the Delphi Technique, to ask experts in the allied fields of library/media services, library/media education, curriculum and instruction, and educational research to consider together what the roles of the school library media specialist should be in the future.

Participants for the study were nominated by their professional colleagues as being uniquely qualified to provide significant input to the study.

The study consisted of three successive rounds of questionnaires, interspersed with appropriate feedback of information and opinion.

In round one, participants were asked to suggest roles which they believed the school library media specialist should perform in the future. In round two, the participants were provided a list of fifty-eight role statements grouped under seven function categories (Research, Evaluation, Design and Production, Utilization, Instruction, Communication, and Management), comprising the total recommendations

of the group of respondents, and were asked to rate each statement on a Likert-type 5-point scale to indicate their perception of the importance of the role for the work of the school library media specialist in the future. In round three, the participants were provided a report of the group rating, expressed as a modal score, for each identified role and were asked to re-rate the item in light of the group opinion, i.e., to indicate their agreement or disagreement with the majority opinion.

Since the purpose of the study was to elicit from participating educational experts recommendations for viable roles for the school library media specialist of the future, the most important data derived from the study were the selective list of role expectations. These data were analyzed to determine whether changes were forecast for the performance of the school library media specialist in the future.

The rating data were analyzed statistically to determine two additional kinds of information. First, a mean score and standard deviation were obtained both for the fifty-eight individual role items on Questionnaire II and for the seven function categories to determine movement toward group consensus. Second, a one-way multivariate analysis of variance was computed to determine differences of opinion regarding the importance of the identified roles among members of the four professional specialization

sub-groups who participated in the study (library/media practitioners, library/media educators, curriculum specialists, and educational research specialists).

Conclusions

Two kinds of conclusions have been drawn from the analysis of data: those dealing with the role recommendations and those dealing with the methodology of the study. The major conclusions are:

1. The school library media specialist of the future will function as an instructional development specialist.

In this role, his major responsibility will be to facilitate learning by:

a. participating actively as a member of an instructional team to design and develop curriculum; his special contribution to the team effort will be the effective integration of media into the instructional program
b. helping the teacher to improve his teaching skills and techniques
c. evaluating the appropriateness of instructional resources for the learning needs of his clients
d. utilizing modern technology to broaden his base of operation, i.e., to gather instructional resources from a variety of sources and to

deliver instructional resources in a variety of ways to meet learners' needs

This conclusion supports the basic assumption underlying the study, i.e., the school library media specialist of the future will need to assume a different role from that of the traditional school librarian.

2. The participants tended to approach consensus regarding the relative importance of the recommended roles in successive rounds of the study.

The movement toward group consensus in successive rounds of the study was confirmed by a reduction in the standard deviations of the rating scores for the fifty-eight individual role items and of the combined rating scores for the seven function categories. The standard deviation was smaller in round three for 56 of the 58 role statements and for all seven of the function categories. These data support an additional assumption underlying the study, i.e., experts engaging in the Delphi Technique will tend in successive rounds of the process to approach a consensus as to the relative importance of the items under consideration.

However, it must also be concluded that participants were not unduly constrained by the methodology of the study; they were able to express individual opinions via their ratings. Minority opinions expressed in round three reflected the individuality of the views held by experts

participating in the study. These opinions derived from the participants' efforts to be discriminating in establishing priorities for the work of the school library media specialist in the future. Many of the comments reflected such differences of opinion as occur within any group of experts who have had varied experience backgrounds.

3. The members of the four professional specialization groups who participated in the study tended to be more alike than different in their perception and rating of the relative importance of the recommended roles.

Results from the one-way multivariate analysis of variance indicated that there were no significant overall differences of opinion among members of the four sub-groups who participated in the study. These data reject one assumption, i.e., members of the four professional specialization groups who participate in the study will tend to have different opinions about the relative importance of roles for the school library media specialist of the future.

Despite their unique orientation to education, the library/media practitioners and educators, the curriculum specialists, and the researchers who participated in this study agreed more than they disagreed in their perceptions of the importance of the recommended roles for the work of the school library media specialist in the future.

Implications

The following implications can be drawn from the study.

Different role expectations for the school library media specialist of the future require programs of professional preparation different from those designed to prepare the traditional school librarian. The job of the school library media specialist, as defined by this study, will require expertise in areas such as instructional development and technology, behavioral sciences, learning theory, curriculum theory, information sciences, and computer sciences as well as the conventional library and media areas. Professional programs for preparing the school library media specialist will require inputs from all of these fields.

This study indicates that there is agreement concerning the roles of the school library media specialist among members of the four professional specialization groups who participated. The development of effective interdisciplinary training programs should be facilitated by this expressed agreement.

Different role expectations for the school library media specialist of the future also require a work environment different from that of the traditional school librarian. In order for the school library media specialist to assume responsibility for the new roles ascribed to him by

participants in the study, he must be permitted opportunity to work with teachers and students in non-traditional ways.

The results of this study reflect opinions and judgments from leaders in several professional specializations who are uniquely qualified to evaluate the roles and functions of the school library media specialist. Their ideas and opinions, stemming from extensive experience in the field of education, are worthy of serious consideration by educators for future-planning activities.

Recommendations

The findings of this study indicate an urgent need for future-planning activities focused on:

1. designing new programs for the professional education of the school library media specialist which prepare students to perform the roles recommended by participants in this study
2. designing innovative educational environments in which the school library media specialist is both enabled and encouraged to perform the recommended roles

Perhaps the most comprehensive change suggested by the findings of this study is to make programs for educating the school library media specialist of the future interdisciplinary. The roles of the school library media specialist, as defined in the study, include responsibilities

greater than the traditional library/media skills; therefore, programs of preparation must be broadened to include inputs from those allied fields which will enable the school library media specialist to perform these identified responsibilities.

Educational programs for preparing the school library media specialist must incorporate opportunities for the student to develop competencies in several interrelated areas. Specifically, the school library media specialist must be prepared to:

1. Understand and apply the principles and practices of instructional development so that he can participate as a member of the instructional development team concerned with improving instructional practices throughout the school.
2. Work with people rather than deal only with collections of materials.
3. Participate in curriculum development, i.e., become an active member of the team which designs curriculum from the beginning rather than be called upon only to integrate media components after the program has been determined.
4. Facilitate learning rather than merely collect and disseminate information.
5. Use man/machine systems of mediated instruction to improve instructional programs.

6. Understand learning theory and human behavior in order to help teachers improve their teaching skills through the effective use of instructional resources.
7. Evaluate materials in terms of their effectiveness for the instructional program.
8. Use modern technology for information storage and retrieval, e.g., operate a computer-based system to facilitate acquisition of information from a regional center.
9. Evaluate and interpret educational research in order to assist teachers apply appropriate research findings to their teaching activities.
10. Design and implement action-research studies which evaluate the effectiveness of local school library media center operations and activities.

To insure that the school library media specialist acquires the competencies required for him to perform the recommended future roles, a variety of instructional patterns must be incorporated into the program of professional preparation, e.g., performance-based criteria, discrete modules of instruction, case study approaches, multi-discipline seminars, field experience, team teaching.

Such a varied approach to educating the school library media specialist will not only provide the broader

scope of preparation required for the future but also serve as a model for him to adopt in his own work.

The work environment of the school library media specialist must be structured in ways that enable and encourage him to accept responsibility for performing the new roles identified for him. Essentially, the school library media specialist must be permitted opportunity to work with teachers and students in non-traditional ways.

Specifically, the school library media specialist must have:

1. The prerogative to restructure traditional media center operation and to reallocate services and resources to facilitate learning activities.
2. Adequate support staff (clerks, technicians, and pages), to carry on operational management activities while he is involved with instructional activities.
3. Access to appropriate technology to facilitate learning activities.
4. Adequate financial support to provide the services and resources required by the instructional program.
5. Opportunity for continuous self-education through participation in conferences, in-service activities, and professional courses.

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APPENDICES

APPENDIX A

COVER LETTER I, MARCH 13, 1972

APPENDIX E

DELPHI QUESTIONNAIRE II

A STUDY OF THE ROLES OF THE SCHOOL LIBRARY MEDIA SPECIALIST OF THE FUTURE

Delphi Questionnaire II

Name_____

Research

High				Low		
1	2	3	4	5	1.	Keep informed about technological developments (failures as well as successes) which relate to instruction and learning.
1	2	3	4	5	2.	Keep informed about current research and development activities which effect changes in learning theory and instructional practices.
1	2	3	4	5	3.	Disseminate and interpret findings of current research and development activities which relate to instruction and learning.
1	2	3	4	5	4.	Use knowledge of research findings and of current developments in technology and instruction to stimulate educational innovations which provide improved learning opportunities.
1	2	3	4	5	5.	Participate in on-going applied research, e. g., relate use of media to shaping of positive attitudes and self image, appraise efficiency and effectiveness of media services, evaluate effectiveness of various methods of instruction.

Evaluation

1	2	3	4	5	6.	Help teachers to evaluate and modify existing resources to meet specific needs of learners.
1	2	3	4	5	7.	Anticipate teacher/learner needs through a program of continuous evaluation of existing resources in all formats.
1	2	3	4	5	8.	Make available information regarding the validation (instructional effectiveness) of print and non-print resources.
1	2	3	4	5	9.	Evaluate the effectiveness of learning experiences, especially the contribution of media to the learning.
1	2	3	4	5	10.	Initiate, design, and implement appropriate procedures for evaluating media services in terms of cost effectiveness, value for learner, value for teacher, and need for improvement.
1	2	3	4	5	11.	Help teachers and learners evaluate (validate) self-designed and produced instructional resources.

Design and Production

1	2	3	4	5	12.	Help teachers design instructional resources which are consistent with valid learning theory and which meet learners' needs.
1	2	3	4	5	13.	Help teachers and learners produce self-designed instructional resources which satisfy artistic standards.
1	2	3	4	5	14.	Encourage and help students to design their own instruction in lieu of prescribed instruction.

High				Low		
1	2	3	4	5	15.	Provide appropriate raw materials, necessary tools and equipment and ready access so that teachers and learners can use them to create and to learn.

Utilization

1	2	3	4	5	16.	Encourage and participate in the training of students to communicate and express their ideas through a variety of media.
1	2	3	4	5	17.	Develop desirable reading, viewing, and listening patterns, attitudes, and habits through the use of media.
1	2	3	4	5	18.	Accommodate individual learning styles and abilities by providing an appropriate number and variety of instructional and informational resources.
1	2	3	4	5	19.	Stimulate the effective and creative utilization of media to enhance learning by helping teachers relate appropriate learning theory, behavioral objectives, and instructional purposes to their selection of media to meet specific learner needs.
1	2	3	4	5	20.	Initiate and implement the encounter between learner and resource i. e., provide the motivation and actual teaching function through such mediated experiences as IPI and CAI.

Instruction

1	2	3	4	5	21.	Make joy a part of the scene.
1	2	3	4	5	22.	In helping others to use media, teach both the broad commonalities and the distinctions of creative inquiry in the humanities, social sciences, and sciences.
1	2	3	4	5	23.	Become knowledgeable about the total context of instruction--theories, methods, and applications--so that media support can be properly integrated.
1	2	3	4	5	24.	Become knowledgeable about the implications of media for learning, both in school and out, and use this knowledge with teachers to develop and revise curriculum.
1	2	3	4	5	25.	Demonstrate that technology can be employed for humanistic purposes.
1	2	3	4	5	26.	Help teachers develop flexibility in teaching styles by providing alternatives (options) in resources and by helping them to select appropriate alternatives for specific purposes.
1	2	3	4	5	27.	Assist users to analyze teaching and learning problems; suggest strategies and techniques for solving them.
1	2	3	4	5	28.	Seek opportunities for self-education, especially in the areas of technology and new educational developments.
1	2	3	4	5	29.	Become directly involved with teachers in diagnosis and prescription of learning experiences.

High Low

1 2 3 4 5 30. Provide leadership in providing for individual, rather than group, learning.

1 2 3 4 5 31. Participate in high-level (administrative) decision making concerning total learning experiences for students.

1 2 3 4 5 32. Assume full role and responsibility of a teacher by providing leadership in activities such as curriculum development and team teaching; in effect, participate as a working member of every department, discipline, or grade level instructional team.

1 2 3 4 5 33. Help teachers apply principles of instructional development (statement of objectives, systems analysis, evaluation) to curriculum development activities.

1 2 3 4 5 34. Develop in students a desire and a capability for life-long learning outside formal instruction.

1 2 3 4 5 35. Use media to prepare students to function efficiently in a rapidly-changing technological society.

1 2 3 4 5 36. Assist other educators to re-orient school from a primary function of transmitting information to one of developing independent learning skills.

Communication (Information management)

1 2 3 4 5 37. Help students and teachers understand the unique message communicated by each medium in addition to the content being communicated.

1 2 3 4 5 38. Become aware of the power and potential of outside school resources--people, places, institutions, events, natural phenomenon--for communicating; assist teachers to incorporate them into learning experiences for students.

1 2 3 4 5 39. Facilitate access to, and continuous updating of, information by using a computerized or similar technological storage and retrieval system.

1 2 3 4 5 40. Participate in existing (or initiate development of) information networks (regional, state, national, and/or world) so that users have greatest possible access to information.

1 2 3 4 5 41. Search for and provide information needed by students, rather than ask them to search for themselves.

1 2 3 4 5 42. Establish the school library media center as the bibliographic control center for the school by providing bibliographies, catalogs, and other locational tools to permit access to all available information and resources.

1 2 3 4 5 43. Facilitate communication between students, teachers, and community by suggesting and providing appropriate media.

Management

High				Low		
1	2	3	4	5	44.	Assess the information and learning resources needs of the several constituent populations of the school and community.
1	2	3	4	5	45.	Convert needs assessment data into programs of relevant and effective services.
1	2	3	4	5	46.	Identify and acquire instructional resources in all formats which are appropriate to implement the teaching/learning goals of the school.
1	2	3	4	5	47.	Be alert to new instructional resources, new ways of using resources for instruction, and new sources for obtaining media and media services.
1	2	3	4	5	48.	Develop differentiated media staffs, composed of professionals and para-professionals, who bring subject orientations and specialized skills to the solution of instructional problems.
1	2	3	4	5	49.	Organize resources and data about them in a facility open to the learner 24 hours every day, or make resources and data available through remote computer-based access systems.
1	2	3	4	5	50.	Provide a total learning environment by removing existing constraints, e. g., fixed time periods and discrete classroom space, and by substituting flexible use of time, space, and media as determined by instructional needs.
1	2	3	4	5	51.	Fit the goals and purposes of the school library media center to those of the school and community by including parents, teachers, administrators, and students in policy determination and planning activities.
1	2	3	4	5	52.	Project role of facilitator and helper, rather than of custodian and gate-keeper.
1	2	3	4	5	53.	Plan instructional facilities that permit activities implicit in behavioral, developmental, and interactive theories of lear
1	2	3	4	5	54.	Develop an "autonomous learning laboratory," an experience cent going beyond the cognitive realm to include opportunity for sensory development (provide materials, time, space, and facilities for touching, tasting, feeling, acting, creating, and experiencing in music, film, art, etc.)
1	2	3	4	5	55.	Justify your existence in terms of delivered service.
1	2	3	4	5	56.	Protect the autonomy of the learner and his right to decide what he will learn.
1	2	3	4	5	57.	Serve as liaison between school and other agencies in the area that are forming coalitions for sharing resources and informat
1	2	3	4	5	58.	Provide in-service training and/or direct support to everyone requiring assistance in proper and effective utilization of me

APPENDIX F

COVER LETTER III, MAY 22, 1972

APPENDIX G

DELPHI QUESTIONNAIRE III

A STUDY OF THE ROLES OF THE SCHOOL LIBRARY MEDIA SPECIALIST OF THE FUTURE

Delphi Questionnaire III

Name_____

Research

High				Low		
1	(2)	3	4	5	1.	Keep informed about technological developments (failures as well as successes) which relate to instruction and learning.
1	(2)	3	4	5	2.	Keep informed about current research and development activities which effect changes in learning theory and instructional practices.
(1)	2	3	4	5	3.	Disseminate and interpret findings of current research and development activities which relate to instruction and learning.
(1)	2	3	4	5	4.	Use knowledge of research findings and of current developments in technology and instruction to stimulate educational innovations which provide improved learning opportunities.
1	2	(3)	4	5	5.	Participate in on-going applied research, e. g., relate use of media to shaping of positive attitudes and self image, appraise efficiency and effectiveness of media services, evaluate effectiveness of various methods of instruction.

Evaluation

1	(2)	3	4	5	6.	Help teachers to evaluate and modify existing resources to meet specific needs of learners.
1	2	(3)	4	5	7.	Anticipate teacher/learner needs through a program of continuous evaluation of existing resources in all formats.
1	(2)	3	4	5	8.	Make available information regarding the validation (instructional effectiveness) of print and non-print resources.
1	(2)	3	4	5	9.	Evaluate the effectiveness of learning experiences, especially the contribution of media to the learning.
1	(2)	3	4	5	10.	Initiate, design, and implement appropriate procedures for evaluating media services in terms of cost effectiveness, value for learner, value for teacher, and need for improvement.
1	(2)	3	4	5	11.	Help teachers and learners evaluate (validate) self-designed and produced instructional resources.

Design and Production

1	(2)	3	4	5	12.	Help teachers design instructional resources which are consistent with valid learning theory and which meet learners' needs.
1	2	(3)	4	5	13.	Help teachers and learners produce self-designed instructional resources which satisfy artistic standards.
1	2	(3)	4	5	14.	Encourage and help students to design their own instruction in lieu of prescribed instruction.

High Low

1	2	(3)	4	5	15.	Provide appropriate raw materials, necessary tools and equipment, and ready access so that teachers and learners can use them to create and to learn.

Utilization

1	(2)	3	4	5	16.	Encourage and participate in the training of students to communicate and express their ideas through a variety of media.
1	(2)	3	4	5	17.	Develop desirable reading, viewing, and listening patterns, attitudes, and habits through the use of media.
(1)	2	3	4	5	18.	Accommodate individual learning styles and abilities by providing an appropriate number and variety of instructional and informational resources.
(1)	2	3	4	5	19.	Stimulate the effective and creative utilization of media to enhance learning by helping teachers relate appropriate learning theory, behavioral objectives, and instructional purposes to their selection of media to meet specific learner needs.
1	2	(3)	4	5	20.	Initiate and implement the encounter between learner and resource i. e., provide the motivation and actual teaching function through such mediated experiences as IPI and CAI.

Instruction

(1)	2	3	4	5	21.	Make joy a part of the scene.
1	2	(3)	4	5	22.	In helping others to use media, teach both the broad commonalities and the distinctions of creative inquiry in the humanities, social sciences, and sciences.
(1)	2	3	4	5	23.	Become knowledgeable about the total context of instruction--theories, methods, and applications--so that media support can be properly integrated.
(1)	2	3	4	5	24.	Become knowledgeable about the implications of media for learning, both in school and out, and use this knowledge with teachers to develop and revise curriculum.
1	2	(3)	4	5	25.	Demonstrate that technology can be employed for humanistic purposes.
(1)	2	3	4	5	26.	Help teachers develop flexibility in teaching styles by providing alternatives (options) in resources and by helping them to select appropriate alternatives for specific purposes.
1	(2)	3	4	5	27.	Assist users to analyze teaching and learning problems; suggest strategies and techniques for solving them.
1	(2)	3	4	5	28.	Seek opportunities for self-education, especially in the areas of technology and new educational developments.
1	(2)	3	4	5	29.	Become directly involved with teachers in diagnosis and prescription of learning experiences.

High				Low		
1	(2)	3	4	5	30.	Provide leadership in providing for individual, rather than group, learning.
1	(2)	3	4	5	31.	Participate in high-level (administrative) decision making concerning total learning experiences for students.
(1)	2	3	4	5	32.	Assume full role and responsibility of a teacher by providing leadership in activities such as curriculum development and team teaching; in effect, participate as a working member of every department, discipline, or grade level instructional team.
1	(2)	3	4	5	33.	Help teachers apply principles of instructional development (statement of objectives, systems analysis, evaluation) to curriculum development activities.
1	2	(3)	4	5	34.	Develop in students a desire and a capability for life-long learning outside formal instruction.
1	(2)	3	4	5	35.	Use media to prepare students to function efficiently in a rapidly-changing technological society.
1	(2)	3	4	5	36.	Assist other educators to re-orient school from a primary function of transmitting information to one of developing independent learning skills.

Communication (Information management)

1	(2)	3	4	5	37.	Help students and teachers understand the unique message communicated by each medium in addition to the content being communicated.
(1)	2	3	4	5	38.	Become aware of the power and potential of outside school resources--people, places, institutions, events, natural phenomenon--for communicating; assist teachers to incorporate them into learning experiences for students.
1	2	3	(4)	5	39.	Facilitate access to, and continuous updating of, information by using a computerized or similar technological storage and retrieval system.
(1)	2	3	4	5	40.	Participate in existing (or initiate development of) information networks (regional, state, national, and/or world) so that users have greatest possible access to information.
1	2	3	4	(5)	41.	Search for and provide information needed by students, rather than ask them to search for themselves.
1	(2)	3	4	5	42.	Establish the school library media center as the bibliographic control center for the school by providing bibliographies, catalogs, and other locational tools to permit access to all available information and resources.
1	(2)	3	4	5	43.	Facilitate communication between students, teachers, and community by suggesting and providing appropriate media.

High				Low		
1	(2)	3	4	5	44.	Assess the information and learning resources needs of the several constituent populations of the school and community.
1	(2)	3	4	5	45.	Convert needs assessment data into programs of relevant and effective services.
(1)	2	3	4	5	46.	Identify and acquire instructional resources in all formats which are appropriate to implement the teaching/learning goals of the school.
(1)	2	3	4	5	47.	Be alert to new instructional resources, new ways of using resources for instruction, and new sources for obtaining media and media services.
(1)	2	3	4	5	48.	Develop differentiated media staffs, composed of professionals and para-professionals, who bring subject orientations and specialized skills to the solution of instructional problems.
1	2	(3)	4	5	49.	Organize resources and data about them in a facility open to the learner 24 hours every day, or make resources and data available through remote computer-based access systems.
(1)	2	3	4	5	50.	Provide a total learning environment by removing existing constraints, e. g., fixed time periods and discrete classroom space, and by substituting flexible use of time, space, and media as determined by instructional needs.
1	(2)	3	4	5	51.	Fit the goals and purposes of the school library media center to those of the school and community by including parents, teachers, administrators, and students in policy determinations and planning activities.
(1)	2	3	4	5	52.	Project role of facilitator and helper, rather than of custodian and gate-keeper.
1	2	(3)	4	5	53.	Plan instructional facilities that permit activities implicit in behavioral, developmental, and interactive theories of learn
1	(2)	3	4	5	54.	Develop an "autonomous learning laboratory," an experience cent going beyond the cognitive realm to include opportunity for sensory development (provide materials, time, space, and facilities for touching, tasting, feeling, acting, creating, and experiencing in music, film, art, etc.)
1	2	3	4	(5)	55.	Justify your existence in terms of delivered service.
1	(2)	3	4	5	56.	Protect the autonomy of the learner and his right to decide what he will learn.
1	2	(3)	4	5	57.	Serve as liaison between school and other agencies in the area that are forming coalitions for sharing resources and informat
(1)	2	3	4	5	58.	Provide in-service training and/or direct support to everyone requiring assistance in proper and effective utilization of re