Discovered in North Carolina:

An Overview of Research Related to School Library Media Programs

by *Pauletta Bracy*

The state of North Carolina has long been regarded as an innovator in school media librarianship. Because of its eminent presence in the profession, North Carolina media coordinators and their peers have had many opportunities to participate in statewide research which has sought to further the mission of the profession and contribute to its knowledge base. This overview of published research and doctoral dissertations highlights studies conducted in the state and investigations which include North Carolina with other states. The foci of the fifteen research studies vary, reflecting attention to contemporary and relevant issues and providing insight and guidance that enhance overall professional development nationwide.

All research has purpose beyond the obvious questions or hypotheses that shape the research design and guide the inquiry. Research can establish benchmarks in the evolution of a profession; and, through investigatory exploration, practices and conditions are documented, confirmed, and validated. Resultant findings have implications for the world of practice by suggesting ways in which professional media coordinators plan for overall program enhancement. Older studies have value in verifying innovation at the time of inquiry and, become the basis for documenting progress when investigating the status quo at a later time. Thus, research is vital. In empirical fashion, it validates the legitimacy of a profession and substantiates its unique contributions to the universal body of knowledge.

The purpose and significance of research in school media librarianship are further epitomized in a summary of three "W"s:

Why? (Is the questions);
What? (Is the set of findings revealed from the study based on the question); and
Where? (Is the direction to follow as implications of the findings are addressed).

For purposes of reporting, the terms of media coordinator, school library media specialist, library media specialist, media specialist, and librarian are used interchangeably throughout the overview and accurately reflect the nomenclature used by the individual researchers.

Perception Studies:

In the Eyes of the Beholders

Four studies were concerned with perception of the media coordinator and sought to determine how the profession is perceived by principals, students, and peers.

Carol Gaskins Lewis examined the perceptions of North Carolina middle school principals and media coordinators about the role of the school library media program in the school's instructional program. She sought to discern the extent of cooperation in meeting common goals and to identify areas in which communication and cooperation are yet to be realized.[1] The methodology included a mail survey and focused group interviews involving 84 percent of the state's middle school principals and 95 percent of the total number of middle school media coordinators in the state. Six questions reflecting pertinent variables guided the study.

The first question related to national program standards. Principals and media coordinators, for the most part, agreed on the extent to which national standards were being implemented in their schools. Media coordinators were active in the instructional programs and also felt that climate and facilities did affect the library media program. Both groups reported that some aspects of an exemplary program were not yet realized. They felt that the media coordinators did not conduct staff development for teachers, did not locate relevant resources outside the school, and that media coordinators were not provided sufficient opportunities for professional growth and development in the areas of media and technology. Regarding improvement of the instructional program, principals strongly agreed that they expected media coordinators and teachers to work and plan together. Conversely, media coordinators did not believe that principals held that expectation.[2]

A second category was national standards for resources. While principals believed that their schools were better off as far as resources recommended in the national guidelines were concerned, their media coordinators disagreed. Media coordinators did

not believe that budget sources were dependable or that the process accommodated acquisition of newer technologies. However, both agreed that the budget was not sufficient to maintain a quality collection.[3]

Thirdly, national standards for service roles were addressed. Both groups agreed that media coordinators performed all three roles defined in the standards: information specialist, teacher, and instructional consultant. Although they agreed on the extent to which media coordinators taught information skills and that all three roles were provided, there were significant differences in principals' and media coordinators' perceptions about the extent to which the other roles were performed. Media coordinators believed they provided more guidance to users in the selection of appropriate resources than did their principals. On the other hand, principals believed media coordinators served as instructional consultants to a significantly greater extent than did the media coordinators.[4]

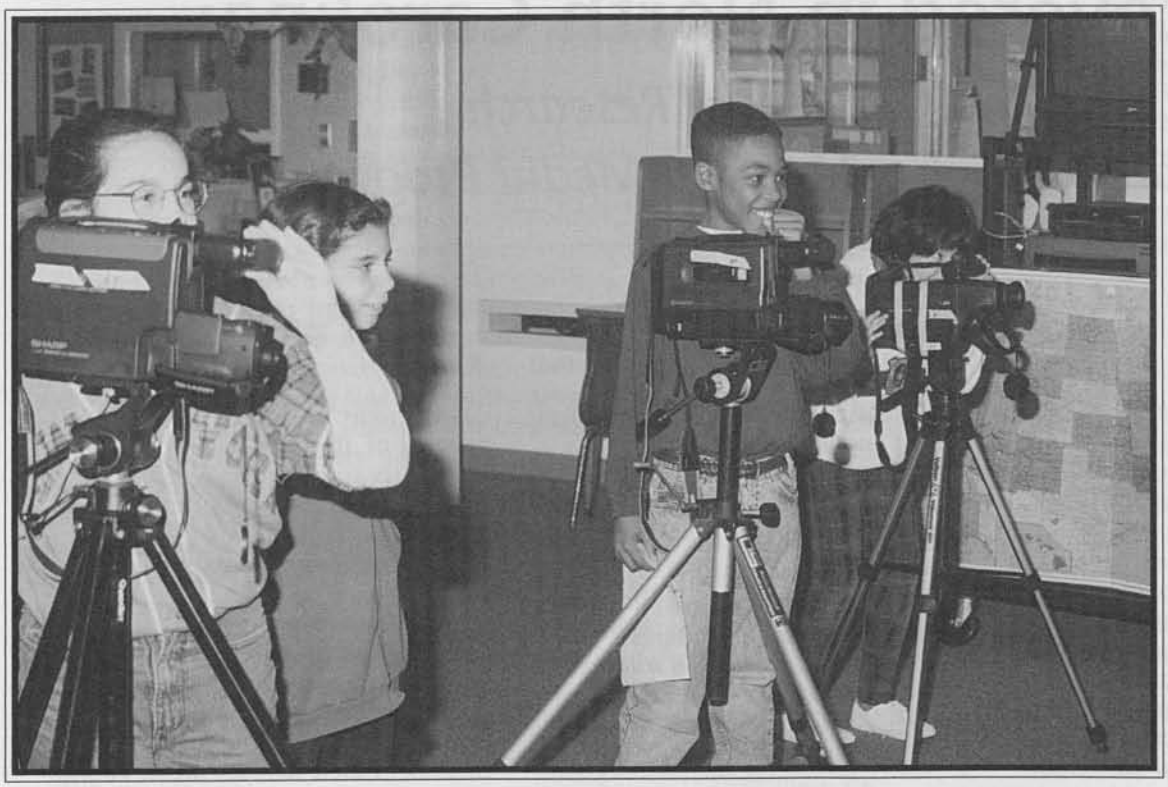
The fourth question focused on media program involvement in essential media school components. The four components addressed in the study were interdisciplinary teams, interdisciplinary units, flexible scheduling, and teacher-based guidance. Principals and media coordinators reported different perceptions about the implementation of these components. However, the results showed few interdisciplinary teams or units, little flexibility in scheduling (except for both groups reporting flexible scheduling in the library media center), and some teacher-based guidance programs. Further, it was perceived that the media program was not involved, for the most part, with the instructional program; the media coordinators did not regularly meet with teams; the information skills program was not integrated into instructional units; and participatory activities for students were not included in instructional units.[5]

The fifth area of inquiry was the relationship of national program, resources, and role standards and media program involvement in the essential middle school components. The close relationship between the extent to which the national standards for library media programs and the extent to which middle school components were implemented suggested a positive relationship between the library media program and the middle school instructional program.[6]

Lastly, the sixth question concerned the relationship of national program, resources, and role standards and demographics. Little relationship was observed between selected variables (including principal tenure, school enrollment, media staff experience, and size) of the two groups and the ratings the groups assigned to the extent to which national standards for the library media program, resources, and service roles of the media center were in evidence.[7]

Lewis concluded that implications of the study centered on a need for better communication among key influential persons in middle schools. The interrelatedness of various program areas will be recognized in order to improve teaching for learning.[8]

Inspired by North Carolina's state-mandated evaluation system, Alice Phoebe Naylor and Kenneth D. Jenkins undertook a study to determine principals' understanding of the terms used to describe the functions of library media evaluation instruments as stated in the 1983 state evaluation instrument. In addition, they sought to identify the sources of prin-



Student-produced news shows allow children to develop their video skills.

Principals had the highest understanding of the library media specialist's role in creating the public image of the library media center. Their lowest understanding was of services provided, procedures for reviewing and selecting materials, and evaluating the quality of the collection.

cipals' knowledge for making judgments about the performance of library media specialists.[9] Twenty-two randomly selected principals representing elementary and secondary schools in both rural and urban areas participated in the study.

Principals' statements were sorted on a range of high, medium, and low which carried the following descriptions:

> "High" responses defined the library media center as an extension of the classroom and the library media specialist as an integral part of the school's curriculum planning process. They also described teachers and library media specialists working together to plan instructional programs.
>
> "Medium" statements described the library media specialist in either an adjunct role to the school program or no different from any other teacher.
>
> "Low" statements were those that characterized the library media specialist in technical/managerial terms ... "Low" scores also were characterized by a total lack of knowledge of the library media program ...[10]

Principals responded to statements that related to the five major work functions which comprised the instrument: (1) goals and resources; (2) resource maintenance and acquisition; (3) program dissemination; (4) access; and (5) professionalism.

For only two of the functions—public impressions of the library media programs and duties beyond job descriptions—did more than half of the statements reveal a "high" level of understanding. The fact that for 10 percent of the competencies, 50 percent of the statements were rated "high" led researchers to observe that principals needed improved understanding of how the library media specialist is expected to perform.[11]

Principals had the highest understanding of the library media specialist's role in creating the public image of the library media center. Their lowest understanding was of services provided, procedures for reviewing and selecting materials, and evaluating the quality of the collection.[12] Overall, principals generally were unaware of the full range of services provided by the library media specialist.[13]

Data also were analyzed to obtain a general assessment of principal responses to individual competencies. Results indicated that principals knew most about the competencies of developing goals and integrating media skills into the curriculum. They knew least about competencies most specific to the profession such as collection development and maintenance, and the range of services offered by the media specialists.[14]

The data also revealed that principals' knowledge of technology was high; yet at all levels, responses showed complete dependence on the media specialists for help in the use of technology. Based on their responses to questions about technology, it was apparent that principals accepted media specialists as more informed than themselves as far as technology was concerned.[15]

Naylor and Jenkins concluded that the study presented a bleak picture of principals' understanding of and involvement in the library media specialist's contributions to instruction. However, it also suggested that library media specialists can approach the evaluation process with added self-confidence and professionalism.[16]

In a third study similar in purpose to one previously discussed, Jerry Marshel Campbell examined the perceptions of elementary principals and their perceived role in the school library media programs operating in their respective schools as well as the perceived role of the principal in school library media programs from the perspective of the school library media specialist. In addition, the source of principals' knowledge about school library media programs was investigated.[17]

Findings of the mail survey of 334 principals and 302 school library media specialists revealed a significant difference in perceptions of the principals and school library media specialists. Generally, principals perceived a high relationship to programs; school library media specialists disagreed significantly on all items of the survey. Also, principals indicated that their major source about media programs came from present school library media specialists; course work in school administration was the least important source of knowledge.[18]

On the other hand, Constance A. Mellon was interested in how another significant client group — sixth graders — perceived the school library and the librarian.[19] Data were collected by Mellon and a research assistant who conducted nine focus groups at three elementary schools in eastern North Carolina. They concluded that children's perceptions are affected by the personalities and behaviors of the individual librarians.[20] Analysis of the children's responses also led to the conclusion that children whose librarians genuinely like them enjoyed visiting the library. Children whose librarians were outstanding professional practitioners took pride in their libraries.[21]

Negative behaviors were also described by the children:

> Even librarians who are "nice" and "helpful" can turn children off by "snappy" behavior, by setting rules that they do not follow themselves,

by failing to learn their names, and by making children wait too long for access to new materials.[22]

Student perceptions of roles and activities were matched to the profession in general. Students who described their librarian as nice and helpful saw the role of the librarian as helping people to find and use materials. Students who respected their librarian described librarianship as a "very good job." Students whose librarians emphasized the importance of reading thought that one should read "in order to make it anywhere in life."[23]

Realizing the potential impact of student opinion, Mellon noted that students' perceptions of their school libraries are important because they appear to influence how students perceive librarians and libraries outside of school.[24]

Research on Role

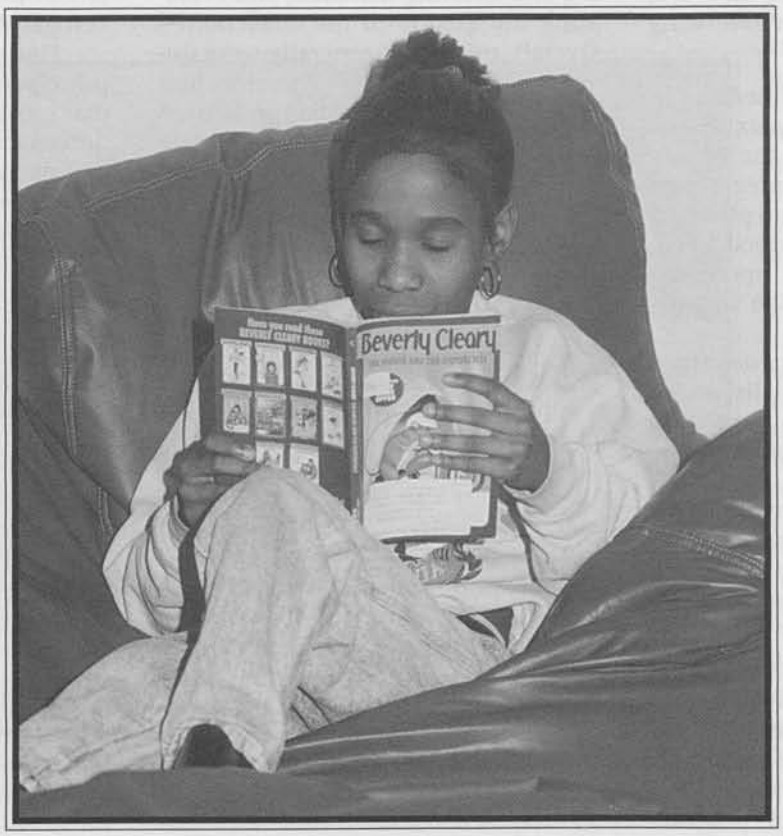
On the Job Training

Somewhat related to perceptions are two studies which helped identify characteristics of outstanding programs created by media coordinators and another which revealed insight on how professionals handle the daily maintenance of library media programs.

Jody Beckley Charter profiled strengths and weaknesses of six high school media programs identified by experts and selected through administration of the Purdue Self-Examination Survey for Media Centers.[25] Final selections included two schools each from North Carolina and Oklahoma; and one each from Florida and South Carolina.

The researcher visited each of the schools and utilized additional evaluation instruments. Nine program factors were determined to have a pervasive influence on exemplary programs. Those were setting; district level development; frequency and variety of services; strong administrative support; professional staff tenure and educational preparation; written plans and conducted evaluation functions; facilities; acceptance of an instructional development role for library media specialists; and attitudes of parents and other community representatives that the library media center was "basic," not a "frill".[26]

In the second study Sandra A. Benedict and Michael J. Fimian sought to develop and refine an instrument designed to measure empirically the perceived stress levels as well as to determine the occurrence and manifestations of stress in a statewide sample of school library media specialists.[27] Three-hundred-thirty-seven media specialists representing elementary, middle, and secondary public schools participated in the study. The devised instrument, called the Media Specialist Stress Inventory (MSSI), consisted of six factors including three related to stress "sources" (time and work load management, lack of professional supports, and instructional tradeoffs) and three related to "manifestations" of stress (emotional, cardio-behavioral, and gastronomic-fatigue).[28]



Students often use media center resources for leisure reading.

Computed scores revealed that stress sources were experienced as being stronger than the stress manifestations. Of the three stress sources, the strongest scores were for time and work load management; lack of professional supports was the least-strong source. Thus, time and work management problems posed the most stress for library media specialists; instructional tradeoffs were the next most stressful set of problems; and lack of professional supports was the weakest.[29] Of the three stress manifestation factors, emotional responses were rated the strongest; then gastronomic and fatigue problems; and, finally, cardiovascular and coping responses to stressful work conditions.[30]

A second instrument, the Maslach Burnout Inventory, was used to assess the level of burnout perceived by the library media specialists. Generally the sample demonstrated low-to-moderate levels of burnout. Those dimensions most frequently experienced were emotional exhaustion and the lack of personal accomplishment. Depersonalization was experienced least often.[31]

In a comparison of specific groups, media specialists who had had no prior teaching experience perceived the following significantly more frequently than those with teaching experience: depersonalization, experience with respect to on-the-job lack of accomplishment; significantly more intense overall burnout; and significantly stronger cardio-behavioral manifestations. Across grade levels, media specialists working in elementary schools consistently perceived significantly more frequent emotional exhaustion, stronger time and work load management problems, and stronger emotional manifestations than library media specialists in secondary schools. Middle school library media specialists fell mid-range and did not significantly differ from elementary or secondary library media specialists. No significant differences were evident in comparison across educational levels and gender, or in the presence or absence of assistance.[32]

Analyses were conducted to determine the extent to which stress factors could be considered as predictors of burnout. Researchers discovered that library media specialists experiencing problems related to emotional mani-

festations, instructional tradeoffs, time and work load management, and lack of professional supports would be most susceptible to burnout.[33]

Overall results indicated that library media specialists experienced stress sources and manifestations with mild to moderate strength. In consideration of the MSSI, researchers concluded that it is a valid and reliable instrument to measure the strength of occupational stress in school library media specialists. They also observed that the MSSI likewise provided a valuable diagnostic tool for assessing the need for, and focus of, pre-service and in-service stress-prevention programs.[34]

Reading Interests Surveys

Teens Tell It All

Libraries have traditionally been associated with reading as a recreational activity. For those working with children and young adults, their reading preferences are of primary interest. Two studies by Constance Mellon of East Carolina University explored the reading behaviors of rural teens.

With eastern North Carolina as setting, Mellon along with two graduate students designed a study to determine the leisure reading patterns of rural ninth-grade students.[35] Three-hundred-sixty-two students at two schools grouped in classes such as Academically Gifted, College Preparatory (College Prep), General, Chapter I, and Special Education (Special Ed) comprised the sample. A five-page twenty-eight item questionnaire given to the students focused on factors related to reading by choice.

Eighty-two percent of the students indicated that they did read in their spare time. By gender, 72 percent of the males and 92 percent of the females read for leisure. Group analysis revealed that 100 percent of the Gifted group, 82 percent of the College Prep group, and 70 percent of the General and Chapter I groups read during their spare time. For the non-readers, the most frequently cited reasons were that they "worked after school" and "hated to read."[36]

For males, the top three categories of reading materials across all groups were magazines, sports/sports biographies, and comic books. For females, the top three categories were romance, mystery, and magazines. Magazines favored by boys were *Hot Rod, Field and Stream*, and *Sports Illustrated*. Girls preferred *Teen, Seventeen, Jet, Ebony*, and *Young Miss*. Male readers of non-fiction specified books on sports, hunting, and war; girls chose biographies. Twice as many males read science fiction as did females.[37]

The primary source of reading materials was the school library. Females borrowed books from friends more readily than males did while males appeared to read the magazines in their homes more often than females. More females than males used the public library and an equal percentage read the books found in their home collections. The major contrast across groups was in the use of the public library. Eighty-two percent of the Gifted and 59 percent of the College Prep students utilized the public library, but less than half of the other groups used the library.[38]

Eighty-three percent of both male and female readers spent their own money on reading materials. Across the groups, the Gifted bought the most paperbacks and the fewest comics. The greatest percentage of comics was purchased by General students and Special Ed students bought the most newspapers.[39]

In all categories, most leisure reading occurred in the bedroom or living room of the home for both genders. Slightly more than half of the students indicated that they also read for pleasure during school hours. Males read mostly on week nights and females frequently read both on week nights and weekends. Summer vacations were the least popular reading period.[40]

Overall, most attitudes expressed toward reading were positive, but reading was rarely selected as the favorite use of spare time.[41] Mellon concluded that one of the most compelling findings of the study was that teenagers, at least rural teenagers, were reading.[42]

To further explore reading patterns of teenagers, Mellon and master's degree students in East Carolina University's Department of Library Studies surveyed reading interests for a period of three years.[43] More than 700 teenagers in eastern North Carolina were surveyed. Classes ranged from the academically gifted to groups whose California Achievement Test scores revealed that they read below the 25th percentile. Some findings were consistent with those of the earlier study conducted in 1986 and previously reported.

Across all groups, over 70 percent of the respondents indicated that they did read for pleasure. Those who claimed that they did not enjoy leisure reading gave reasons of lack of time or dislike of reading. Teenagers who did read indicated that they did so for entertainment and information.[44]

The overwhelming majority of teens chose leisure reading materials through the recommendations of friends. Although some mentioned the influence of teachers or library media specialists in selecting books to read in their leisure, this response was not statistically significant. Parents were also

an infrequent influence although many teens tended to read books and periodicals found in their homes.[45]

Magazines and newspapers were the all-time favorite reading material of teens. Readers spent their own money on magazines, kept them as reference materials, and shared them with friends. Responses to questions about the appeal of magazines revealed that teens read them for the same reasons they read books: for pleasure, for information, for escape.[46] Almost all respondents read newspapers and tended to read both their local papers and one more national in scope.[47]

Approximately two-thirds of the teens claimed that they enjoyed reading short stories, and over half claimed an interest in reading nonfiction. Top categories of nonfiction preferred by females and males were biography and science, respectively. Other frequently mentioned genres were mechanics and psychology.[48]

Participants were asked about reading tastes of boys and girls, and the majority of males and females agreed that differences did exist. Romance was cited as the top choice for females; and war, sports, and science fiction were identified as choices for males. The researcher conclusively observed that girls' reading preferences tended to be imaginative while boys' reading preferences were often informational.[49]

Teens were queried about what three books they would choose for a year in isolation, on a desert island or in space. Responses were quite varied and rarely did more than three respondents in any one survey choose the same book. The *Bible*, however, proved to be a popular choice, especially in rural school districts, and Stephen King books were the next most frequently mentioned. "Good, thick books" such as *Gone with the Wind* and *War and Peace* were also popular choices.[50]

Mellon concluded this study with a confirmation of earlier findings: "What was amazing in our survey results was that in spite of their busy lives, in spite of the classroom reading that was a daily requirement, the overwhelming majority of teens still chose to read for pleasure."[51]

Analyses of Service:

May I Help You?

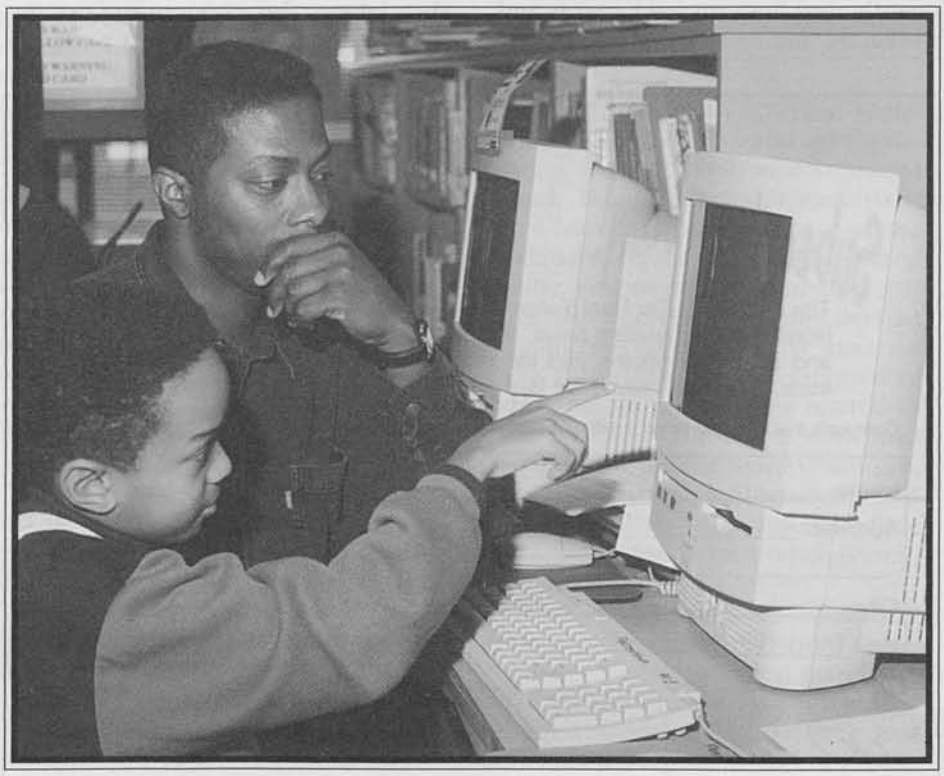
A group of three studies emphasized professional roles in providing the best in reference services, facilitating information skills instruction, and cooperating with colleagues in the public library environment. In the first of these, Marilyn L. Shontz of the University of North Carolina at Greensboro investigated the potential use of reference transaction measures such as Transaction Analysis, Reference Completion Rate, and Transactions Per Student in the school library media programs of eleven selected middle and high schools.[52] The three measures constituted the Reference Transaction Module which focused on the implementation and effectiveness of proposed reference transaction measures: To what extent do participants view reference transaction measurement techniques as useful? effective? labor and time-intensive? Also, how well do the instruction and forms work? What changes need to be made before recommending their use?[53] Data on transactions were collected during sample time periods and recorded on instruments developed by the researcher.

The majority of the school library media specialists reported frustration at not being able to record transactions accurately.[54] The categories and definitions provided appeared to be generally effective, although some questions were raised mostly regarding CD-ROM technology, non-search stations, and technical assistance.[55]

Findings revealed that the total General Reference Transactions and the CD-ROM/ Computerized Reference Transactions were nearly equal in the eleven programs. The lowest weekly average for General Reference was 15 and the highest was 119; the lowest for CD-ROM/ Computerized was 4 and the highest was 198. Per capita general reference transactions ranged from .55 to 6.09 and per capita CD-ROM/ Computerized transactions ranged from .14 to 7.27.[56] The total per capita in the Other/Directional category was 4.39 which equaled the total per capita of the first three categories: General, Microformats, and CD-ROM/Computerized. The three categories with the lowest per capita transactions were microformats, referrals, and incomplete. Calculations of the reference completion rate revealed that 98.6 percent of all transactions were considered complete in the same day. The averages for individual library media programs ranged from 97 percent to 100 percent.[57]

Shontz concluded that, overall, the implementation of the Reference Transaction Module was successful,[58] and that its use can help library media specialists identify, quantify, analyze, and compare results of reference services in their school library media programs.[59]

In a second study, Diane D. Kester of East Carolina University sought to answer questions about the transfer of information skills from high school to college among students enrolled in a



Effective media programs incorporate technology into the curriculum.

one-hour credit course, LIBS 1000: Research Skills, at her institution. A second purpose was to provide guidance to high schools as they prepare students for college.[60]

At the first class meeting in the fall of 1992, a questionnaire was administered to 442 students. Although enrollment comprised all levels of students, only the 300 responses from freshmen who had most recently graduated from high school were used in the study.

Eighty-five percent of the respondents reported that they had received some instruction in high school and that it had come mostly from the librarian, but also from the English teacher, or both. Over half of the students ranked "working on assigned reports" as the most frequent reason they used the library. Going to the library "to get books to read for pleasure" was ranked most frequently by only 5 percent of the respondents.[61]

When students were asked how they accessed information from back issues of magazines, 31 percent cited personnel such as the librarian or student assistants. Thirty-five percent identified periodical indexes by title and named *The Reader's Guide* most frequently. Of those who identified the index by name, 8 percent remembered having had instruction in using library resources.[62]

Asked to identify eighteen standard reference terms and resources, students most correctly defined "author," "publisher," "copyright date," and "atlas." Those terms with accuracy of less than 10 percent were "government documents," CD-ROM index," and "Boolean searching." The most correctly identified resource was *The Reader's Guide* and least familiar was "DIALOG/Classmate".[63] When seeking assistance, respondents indicated that the "desk," the "circulation desk," and the "librarian" were the most popular places to go for help in locating information in the library.[64]

Kester summarized that high school library skills instruction appeared to have little carryover or effect on students going to college, with few exceptions. Also, little integration of library skills with course content appeared to be taking place, and team teaching between the librarian and the classroom teacher was not yet prevalent.[65]

One North Carolina county was the setting for a survey which attempted to determine the status of cooperation between the two types of local library: public and school. In addition, Shannon examined factors leading to the success of cooperative activities, factors perceived as barriers to cooperative activities, and factors which had potential for facilitating greater cooperation. Finally, Shannon tried to determine if there was a relationship between size of the public library and level of cooperation with the schools.[66] Twenty-three school librarians and thirteen public librarians returned surveys in the study.

Both school and public library respondents agreed that services to youth could be improved by increased cooperation. When asked about satisfaction with the amount of contact with the other, school librarians were more positive.[67] Both groups were asked if their libraries had written policies concerning cooperation. Answers were mixed, but most reported that there were no such policies.[68]

Respondents were directed to indicate in which activities from a compiled list their libraries had recently participated. There was no relationship between size of the public library and the number of cooperative activities reported. Those cited most fre-

quently by school librarians were "Homework Alert," interlibrary loan, and arranging for the public librarian to visit the school. "Homework Alert" and visits to schools were most often reported by the public libraries.[69]

A model for school library and public library cooperation consisting of four levels was used to evaluate levels of cooperation. Based on the model, cooperative activities in the county reflected those included in level 2 — informal communication. In most cases, contact between the two agencies had been initiated by either the public or the school librarian. Activities also reflected a number of those included in level 3 — informal cooperation. School classes visited public libraries, and some public librarians visited schools; in some instances, representatives from both systems cooperated in special projects. With the exception of a case of joint administration in a combined school/public library, results did not indicate that libraries are moving toward level 4 — formal cooperation,which would include written and formalized policies and procedures for cooperation and mutual sharing of resources.[70] (Level 1 was "no cooperation")

The factor most frequently associated with successful cooperative efforts was communication. Lack of time and lack of communication were most often cited as barriers to cooperation [between school and public libraries].[71]

Shannon concluded that commitment and communication, two essentials in developing and sustaining cooperative relationships between school and public librarians, were critically important first steps in fostering interlibrary cooperation.[72]

Infusion Investigations:

Technological Nuts and Bolts

This final group of research reports addresses technology in the school library media program and how it is used to enhance delivery of services and ensure effective management.

Intrigued by the introduction of microcomputers into the marketplace in 1986, Carol F. Hall investigated this use of the technology for administrative purposes by North Carolina media coordinators. The survey of 200 public school media coordinators also sought to determine the prevalence of use of microcomputers, the role of media coordinators in the selection of the technology, sources of funding, and training received by media coordinators.[73]

In 1986, the median number of microcomputers in the public schools was 6 and the mean was 9.6. Senior high schools had the greatest number. For the library media center, the median was 1 and the mean was 2. Senior high schools had fewer microcomputers in the media center than the junior/middle and elementary schools.[74]

Most of the media coordinators had microcomputers readily accessible to them ten years ago, but only 22.5 percent used them for administrative tasks. Junior high/middle school media coordinators made greater use of computers for these purposes than elementary and high school media coordinators. The greatest use for administrative functions was for overdues, followed by library instruction, circulation, audiovisual inventory, and equipment inventory. Microcomputers were used least for processing, bibliographies, order files, ordering, periodical control, library reports, word processing, and supplemental book inventory.[75]

Lack of time and lack of communication were most often cited as barriers to cooperation [between school and public libraries].

Overall, media coordinators indicated a total of thirty-two different software programs in use for media center administration. A larger number planned to obtain microcomputers and a considerable percentage planned to use them for administrative purposes.[76]

Hall's findings indicated that media coordinators were not actively involved in the selection and purchase of microcomputers. The schools reported that state funds, followed by local funds and federal funds respectively, were sources of financial support.[77]

Most media coordinators confirmed that they had received some training in, and were familiar with, the general use of microcomputers, but fewer than half had received training in microcomputer applications for administrative functions. The need for further training was also revealed by the survey.[78]

In a study which sought to ascertain the proportion of time spent in various work activities by high school library media specialists with and without automated circulation systems, Nancy Lou Everhart used percentages to determine whether automating circulation activities made a difference in how a school library media specialist spent his/her time; in what specific workload activities automation made a difference; and if the media specialists with an automated circulation system were better equipped to meet the challenges presented in *Information Power: Guidelines for School Library Media Programs*, ALA's and AECT's 1988 joint publication.[79] Matched pairs of media specialists in Alaska, Arizona, Florida, Illinois, Indiana, Kentucky, North Carolina, Oklahoma, and South Dakota were identified by state and regional library media supervisors in those states.

Everhart's findings indicated that media specialists with automated systems distributed their time differently than those who did not have them. Those [media specialists] with automated systems spent more time in development of the educational program, instructional development, and use of technology. Media specialists in nonautomated centers spent more time working with circulation and production. No difference was found in administration, instruction, selection, processing, clerical, providing access, reference, organization, or personal time.[80]

The estimates of the Standards Writing Committee which began work on *Information Power* did not coincide with how media specialists in either automated or nonautomated centers spent their time. The committee overestimated the amount of time spent by both groups on curriculum and instructional development and underestimated the time actually devoted to administration and personal time. The Committee had also expected that those in automated centers would generally spend more time in networking activities than was reported.[81]

Still another study of technology in school media centers began in the spring of 1993 when Carol Truett of Appalachian State University conducted a survey which sought to explore the use of CD-ROM and laser or videodisc technologies in North Carolina elementary, middle/junior high, and senior high schools.[82]

An overwhelming majority of 85 percent of the eighty-eight respondent schools had CD-ROM technology and well over half (56.8 percent) had videodisc technology as well. Of those schools that did not have either, librarians most often reported the cost as the prohibitive factor.[83]

The CD-ROM title reported as the most used was *Compton's Multimedia Encyclopedia* with almost a third of the respondents citing it as number one. *Grolier's Electronic Encyclopedia* was a close second, *InfoTrac* was third, and World Book's *Information Finder* and *SIRS* tied for fourth place. *Newsbank* was the fifth most-often cited title. In assessing preference of format, encyclopedias were the most heavily used.[84] Across grade levels, encyclopedias were most important at the elementary level. Of those citing an index or abstract as the most important CD-ROM title, almost 90 percent were at the high school level.[85]

Of the videodisc titles considered to be most useful, *Windows on Science* was ranked first, although only a fourth of the respondents deemed it so. Likewise, it was the most prevalent or frequently mentioned title; almost half of the librarians with videodiscs reported this title as part of their collections.[86]

In response to the question about how the use of CD-ROM and/or laserdisc technology had changed the teaching of reference skills and the research process in the library, the most frequently acknowledged change was "increased student motivation, interest, enjoyment."[87] Regarding the question about the group affected or changed by the technology, over half of the respondents named at least one change among librarians. For example, librarians found that they spent more time teaching use of the technology, computer skills, and use of CD-ROM; that more instruction was needed; that they were teaching students how to become more independent learners; and that less time was not devoted to book-related skills. Seventy-five percent of the respondents cited at least one student change, which included greater efficiency in doing research, helpfulness of having printed article copies, increased circulation, more current information and better references, and equalization of learning opportunities.[88] Two predominantly negative changes reported were that technology limited the use of an information source to one person at a time and that there was an increase in plagiarism and a decrease in observed thought processes.[89]

An examination of change across grade levels led the researcher to conclude that technology-related student and librarian changes both appeared to increase with grade level. Elementary librarians were more apt to report little or no change occurring in their research program as a result of new technology. Both positive and negative changes appeared more likely and frequently as grade levels increased, but positive changes greatly outnumbered negative ones and those that were considered neutral.[90]

A final conclusion by Truett was that the use of new technologies was becoming both widespread and generally accepted by school library media specialists.[91]

The last research in this section and in the overview involved 415 randomly selected media specialists in elementary, middle, and senior high schools in the states of North Carolina, Florida, Georgia, and South Carolina. Leticia Ekhaml endeavored to determine their expertise and involvement in media production.[92]

More than half of the respondents spent only about 10 percent of their work time assisting school library media patrons, and another 10 percent spent their time in producing instructional materials. Only 5 to 6 percent spent half of their work time in actual production and in assisting patrons in producing instructional materials.[93]

Half of the sample reported that they produced the materials for the school library media center, teachers, and administrators. Twenty-three percent indicated that they assisted teachers and students in production activities.[94]

Respondents were asked to rate the degree of academic preparation in production skills and the importance of those skills. Of all skills, computer authoring and programming were rated the least important in academic preparation, and coloring was the least important production skill. Rated high in adequacy of preparation were duplicating, preserving, illustrating, and audio recording. They all were rated high in importance as well.[95] When asked to name the most important production skill every school library media specialist should have, the majority of respondents indicated "videotaping." Respondents were most involved in creating bulletin boards, laminations, overhead transparencies, posters, video, newsletters, slides, slide/tapes, and learning centers.[96]

In summation, Ekhaml concluded that there was underutilization of production by school library media specialists at the building level.[97]

Although much can be gained from the findings of the research reported above, the agenda remains open-ended. There is still much to explore, investigate, examine, and analyze. As a part of professional growth and development, it is imperative that media coordinators become critical and astute consumers of research and implementers of research design.

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