

One common goal – student learning: Evidence from New Jersey

By Dr Ross J Todd

Overview

(This is a refereed article.)

This paper presents some selected key findings of the first phase of a multiphase research study commissioned by the New Jersey Association of School Librarians (NJASL) in 2009 and undertaken by the Centre for International Scholarship in School Libraries (CISSL) at Rutgers, The State University of New Jersey. The overall research agenda seeks:

- (a) to construct a picture of the status of New Jersey's school libraries and the work of school librarians in the educational landscape of New Jersey;
- (b) to understand the contribution of quality school libraries to education in New Jersey;
- (c) to understand the contextual and professional dynamics that inhibit and enable school libraries to contribute significantly to educational agendas, and
- (d) to make recommendations to key stakeholders to develop a sustained and long term program of capacity building and evidence-based continuous improvement of school libraries in New Jersey.

While this is a state-specific study, findings have salience for the broader landscape of education and school librarianship. Phase 1 of this research program sought to provide a comprehensive picture of the status of public school libraries in New Jersey: their infrastructure, personnel, resource and information technology provision, and the instructional and administrative work of the school librarians. This research phase was titled 'One Common Goal: Student Learning'. A key finding, documented in this paper, centres around the role of school librarians in the development of the intellectual capacity of students. Such findings provide an opportunity to reflect on strategies for continuous improvement of school libraries and their pedagogical role in information age schools.

Background

School libraries have been an integral and sustained part of the educational landscape of New Jersey for many decades. Some of the earliest national research on the impact of school libraries on student learning was undertaken in New Jersey. Mary Gaver, a professor in the Graduate School of Library Services at Rutgers University, led a major research study, *Effectiveness of Centralised School Library Services in Elementary Schools* (1963), involving 271 schools in 13 states, including New Jersey. She compared the test scores of students in three learning environments: schools with classroom libraries, schools with centralised libraries run by non-librarians, and schools with centralised libraries run by librarians. Students in schools with centralised libraries managed by qualified school librarians tended to score higher than students without centralised libraries or qualified school librarians. Gaver's pioneering study blazed a trail for subsequent school library impact studies. She held the strong belief that:

With the school library literally the heart of the educational program, the students of the school have their best chance to become capable and enthusiastic readers, informed about the world around them, and alive to the limitless possibilities of tomorrow (Gaver, 1958).

An extensive body of international research has grown from Gaver's vision and research, and a substantial number of research studies have been undertaken since 1990 to understand the nature, dynamics and impacts of school libraries and the professional work of school librarians in the educational landscape (Scholastic, 2008). In the main, these studies show that students' achievement correlate with:

1. The size of the school library staff (Lance, et al., 1999; Baumbach, 2002; Lance, et al., 2001; Lance, et al., 2000; Smith, 2001);
2. Full-time, certified school librarians (Lance, et al., 1999; Callison, 2004; Rodney, et al., 2003; Baxter & Smalley, 2003; Todd, et al., 2004; Lance, et al., 2000);
3. The frequency of library-centred instruction (Lance, et al., 1999) and collaborative instruction between school librarians and teachers (Lance, et al., 2000; Lance, et al., 2005; Lance, et al., 2001);
4. Size or currency of library collections (Burgin & Bracy, 2003; Lance, et al., 2000; Smith, 2001);
5. Licensed databases through a school library network (Lance, 2002);
6. Flexible scheduling (Lance, et al., 2005; Lance, et al., 2003); and
7. School library spending (Lance, et al., 2001; Baxter & Smalley, 2003).

These correlation studies use regression analysis to isolate the effect of variables such as varying socio-economic status of students.

A study conducted by Todd & Kuhlthau (2005a, 2005b) in Ohio reported that 99.4 per cent of students in grades 3 through 12 believe school libraries and their services help them become better learners. This study surveyed 13,123 students and 879 teachers. Their voices clearly tell us that an effective school library, led by a credentialed school librarian, plays a critical role in facilitating student learning and knowledge building. This study was replicated in Delaware with 5733 students and 408 teachers (Todd, 2005a), and in Australia (Hay, 2006) with 6728 students and 525 teachers. These studies convey a strong and consistent message: school libraries are powerful agents of learning, central to engaging students in information processes that enable the transformation of information into deep knowledge and understanding, and providing them with life skills to continue living, learning and working in an information- and technology-intense world. Over time, these studies have posed even more challenging questions, particularly those centering on the dynamics of students' learning through school libraries, and the need to identify more deeply the nature of the learning outcomes enabled through the school library.

In 2003-2005, a CISSL study examined specifically how students constructed knowledge of curriculum topics when they engaged in a collaboratively designed and implemented library-based research task. The study, *The Impact Of School Libraries On Student Learning*, involved ten New Jersey public schools, ten school librarians and 17 classroom teachers, and 574 students in grades six to twelve (Todd, 2006). The study found two distinctive patterns of knowledge development: additive and integrative. Additive knowledge development was characterised by the progressive addition of property and manner facts, and where students primarily stockpiled facts, even though facts were sorted, organised and grouped to some extent into thematic units by conclusion. Students' knowledge development remained on a descriptive level throughout the unit of inquiry. The second pattern was integrative, where students moved beyond gathering facts, to building explanations, addressing discrepancies, organising facts in more coherent ways, interpreting found information to establish personal viewpoints and conclusions, and reflecting on new knowledge.

This study also found that changes in knowledge growth did not occur evenly in the schools. While overall there were no significant variations across the age, grade, and gender groups, the depth of knowledge development was influenced by factors such as the nature of the research task, engagement and ownership, and nature of instructional interventions focusing on the development of skills to construct knowledge rather than finding information. Data also showed that students valued instructional interventions through the school library that focused on the development of research skills, especially information analysis and synthesis, skills in using specific online sources (online databases, Internet, OPACs), enhanced information seeking beyond Google, dealing with information conflict and assessing quality of information. These factors appear to contribute to the development of deep knowledge. The study highlights the central importance of instructional interventions that engage students with information and information technology and enable them to transform it into deep knowledge, and the role that school libraries can play in this process.

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At the heart of collaborative instructional interventions is the development of intellectual quality. The lens of the *Productive Pedagogy* framework developed by Gore, Griffiths, & Ladwig, (2002) provides insights into what constitutes intellectual quality, and the nature of the instructional environment which underpins it. Productive pedagogy is concerned about what is being taught and the quality of learning produced. Based on a series of research studies in Queensland, Australia in 2002, Gore, Griffiths, & Ladwig sought to develop a model of productive pedagogy that results in high quality student learning and improved outcomes.

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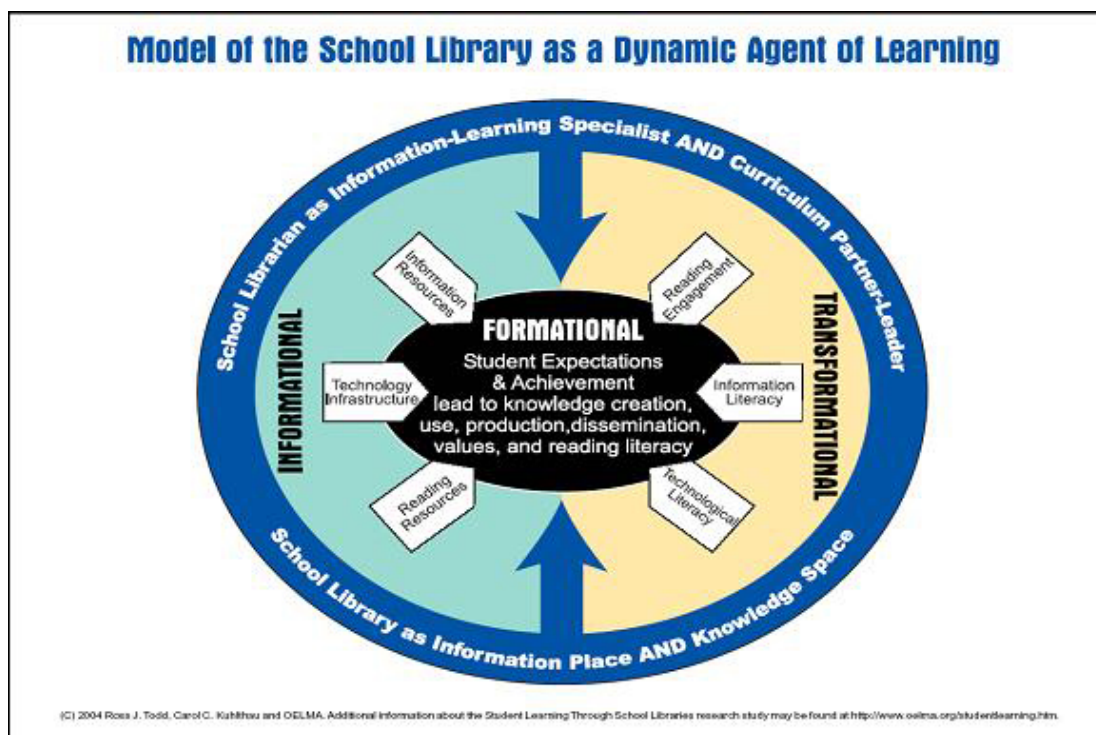
As a framework for quality teaching and learning, it is built around four fundamental principles, namely *Intellectual Quality*, *Relevance*, *Supportive Environment*, and *Recognition of Difference*. Intellectual quality centres on the development of higher order thinking, depth of knowledge, depth of understanding, ability to engage in substantive conversation,

ability to recognise knowledge as problematic, and reading literacy grounded in language, grammar, and technical vocabulary. Relevance is about learning that is linked to students' background knowledge, connected to real life contexts, and where students solve intellectual and real world problems, and integrate knowledge from diverse fields to develop new understandings. A supportive learning environment is about providing a socially supportive and positive learning environment where students have a say in the pace, direction and outcome of their lessons, where they are engaged and on-task, where performance criteria are made explicit, where diverse cultural backgrounds are brought into play, and where a sense of community, identity and active citizenship are fostered. Recognition of difference refers to the dynamics of learning as an inclusive social and cultural process of community and identity building, where diversity and difference are recognised and integrated as part of the teaching and learning process (Todd, 2005a). Are school libraries centres of productive pedagogy? What is the school library's contribution to intellectual quality? The findings of the study reported in this paper provide some insights, and some significant opportunities to identify gaps and to work towards continuous improvement.

Conceptual framework, research goals, and methodology

The goal of this study was to provide a comprehensive picture of the status of school libraries in New Jersey, with particular emphasis on their instructional program, as well as reading and related activities, collections, budgets, facilities, information technology, personnel, and the administrative work of the school librarian. This phase of the research sought to establish baseline data about the fundamental elements of school libraries in New Jersey in order to provide an evidence base for continuous improvement. The conceptual framework for it was based on the Model of the School Library as a Dynamic Agent of Learning, developed by Todd & Kuhlthau (2005a, b). This model posits that as a dynamic agent of learning and a centre for intellectual quality, a school library's intellectual and physical infrastructure and output centres on three essential interrelated and iterative components: informational (the information resource and information technology infrastructure); transformational (the instructional interventions, reading and related initiatives, and other student engagement initiatives), and formational (learning impacts and student outcomes). This is shown in Figure 1:

Figure 1



Based on this conceptual framework, data were collected through a seven part online survey instrument:

Part 1: Contact information and school details. Data included demographical and descriptive information of participating schools.

Part 2: School library staff. Information included: levels of certification of school librarians; number and level of staff – both professional librarians and support staff; full and part-time status of staff; technology support.

Part 3: Teaching activities in the school library and professional activities. Data included: the number of cooperations, coordinations and collaborations that occur during the academic year between school librarians and classroom teachers; the main foci of information literacy instruction, including identification of instructional activities related to effective use of information technology; student learning outcome(s) enabled by the school library program and priorities for change and continuous improvement of school library programs.

Part 4: Reading and related activities in the school library. Data included the nature of reading/writing/literacy initiatives during the previous school year.

Part 5: Administration of the school library. Data identified the range of administrative tasks (e.g., selection, ordering, processing library materials); supervision of paraprofessional/student/volunteer aides; maintenance of equipment; non-library duties (e.g., building assignments); the library collections, including materials in print, digital and other formats; additions to library collection in last school year; extent and frequency of weeding; extent of technology, including AV and computer hardware available to students in school library; availability of local and remote access to an automated catalogue; access to the Internet; existence and functionality of a school library website; availability of subscription databases; availability of applications (e.g., Microsoft Office applications such as Word, PowerPoint, and Excel), production software (e.g., computer-assisted instruction), educational software; audio-visual materials (e.g., video, DVD, and CD); and availability and use of interlibrary loan from local and regional libraries.

Part 6: School library access. Data identified type of library access availability for student use.

Part 7: School library budget. Data identified budget allocation, sources and trends.

Of considerable benefit to the study was the provision of *TitleWise* data on collections documented in accounts administered by Follett Library Resources. *TitleWise* is a robust collection analysis tool that provides a high level of both detail and accuracy on nature and status of collections in school libraries. According to Follett, about 80 per cent of school libraries in New Jersey utilise this tool. Participants in the study were asked to give permission for CISSL to access their school's *TitleWise* data through Follett. A copy of the survey instrument, executive summary and detailed data report ***NJASL Phase 1 Report - One Common Goal: Student Learning*** is available at: www.cissl.rutgers.edu.

The survey instrument was designed to collect both quantitative and qualitative data, using both categorical data and open-ended questions. The survey was not an anonymous survey so that strategies could be implemented as part of the data collection process to ensure participation by all school librarians; however, participants were guaranteed confidentiality. In planning this approach to data collection, it was considered essential that a high level of participation be reached in order for the data to be useful for planning, decision making and continuous improvement by all stakeholders and to be viewed as a study with a strong level of external validity. Data collection took place between May to October in 2009.

Summary of findings

It is not the purpose here to document the full scope of the findings; rather, this summary will present selected findings (parts 1 and 2), with emphasis on the collaborative instructional role of school librarians (part 3). Subsequent publications will focus on reading and literacy development, and collection development. The presentation of this data in summary form provides a useful comparative tool for benchmarking for strategic planning and continuous improvement.

Sample characteristics

A total of 765 valid responses were received which represents 30% of both public and private schools in New Jersey. This raises the question of the representativeness of the sample. The sample for this survey was a voluntary sample,

and it is recognised that such a sample size is not necessarily a guarantee of its ability to accurately represent a target population. It is acknowledged that non-respondents tend to differ from respondents, so their absence in the final sample makes it difficult to generalise the results to the overall target population. We believe that we have achieved a representative sample because the sample source includes the whole population of schools in New Jersey, the data collection method actively sought to reach the whole population without the imposition of selection bias. We minimised non-response bias through an active process of telephone, email and personal call-back, as permitted under the university's ethics agreement. Based on the survey data and a standard confidence level of 95%, the margin of error is calculated to be 2.7%. In other words, if the survey is repeated 100 times we would expect the answer to any question to vary 2.7% in 95 out of 100 times. Statistically, this means that the study sample does not differ from the true population by more than 2.7% a certain number of times. This suggests that the sample has a strong level of representativeness of the population.

Data were collected from all counties of New Jersey. 53% of the sample of participating schools was elementary schools; 18.5% of the participating schools were middle schools and 24.5% were high schools. The total number of students enrolled at the participating schools was approximately 560,740 students. The average enrolment of participating schools was 733 students. The average enrolment of elementary schools was 490; middle schools was 695 and high schools was 1278. 96.9% of schools participating schools were public schools. There were a very small number of private schools participating in the survey. Consistent with distribution of participating school by type, there is a higher representation of elementary grades in the study, compared to middle and high schools.

Personnel

95.2% of the participants in the study were professional school librarians. 27.2% of participants have 1-3 years' experience; 39.3% have 4-10 years' experience; 20% have 11-20 years' experience; and 13.5% have more than 20 years' experience. The most common job title is School Library Media Specialist (43.5% of sample). 24.9% of the sample are called Educational Media Specialists, and 12.2% of the sample have the official AASL title of School Librarian.

Of the participating sample, there is a high level of state certified school librarians. 84.5% of the sample are New Jersey state certified school librarians, either at the master's level of certification (58.9%) or associate certification level (having completed 18 credits). There is a higher percentage of associate school librarians in elementary schools (31%) compared to middle schools (23.4%) and high schools (20.9%).

91% of the participants in the study have full-time employment, with no significant differences according to school type. Research clearly and unequivocally establishes that the presence of a certified school librarian in a school library results in better performance on state achievement measures. Professional staffing is a fundamental starting point for school libraries to play a key role in students effectively learning through complex and diverse information resources. Professional staff enable students to develop the necessary intellectual scaffolds to use information meaningfully to build knowledge and understanding of their content areas. This baseline finding parallels the richness of the school librarians' contributions to the intellectual life of the school, as presented further on in the data report.

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On average, 52.5% of school libraries have some level of support staff working in the school library, and this is more likely to be in high schools. This support gap is particularly noticeable in relation to the elementary schools and middle schools, with 54.5% and 43.3% respectively having no support staff. An ANOVA test to determine the relationship between school type and the pattern of support staff found that there is a significant difference in the pattern of support staff by school type (by three types), $F(2, 653) = 39.74, p < .001$. The results indicated that the pattern of support staff differed depending on the level of school. In particular, high schools included more full time equivalent staff than elementary and middle schools. There was no significant difference between elementary and middle schools in the pattern of support staff. The statistical analysis also showed that there is a significant correlation between *patterns of support staff* and *school size* $r(654) = .324, p < .001$. These results indicated that the larger amount of enrolment schools had, the more full time equivalent support staff schools employed.

Technical support

70.9% of the participants indicate some level of responsibility for technical hardware support.

The data indicate that school librarians have technical expertise (not merely functional expertise) not only with the school library's technology infrastructure, but this expertise

extends to the whole school technology infrastructure. 70.9% of the participants indicate some level of responsibility for technical hardware support. There is no statistically significant difference in responsibility for technology support by school type. In other words, librarians in all types of schools provide this technical support. It does not differ by school type (elementary, middle or high school). 42% of the participants provide one or more hours of time in technical support. 50% of the participants in the study provide some level of technical support outside of the school library each week. School librarians in middle schools spent significantly more time supporting technology outside of school library than elementary schools, yet comparisons between elementary and high and between middle and high did not present any significant differences.

Teaching and professional activities

Cooperations, coordinations and collaborations

School librarians in New Jersey engage actively with New Jersey Core Curriculum Content Standards through a substantial number of cooperations, coordinations and collaborations. In this study, the following definitions were used:

- *Cooperation* – The teacher and the school librarian may communicate informally about a short term project, but work independently.
- *Coordination* – The teacher and the school librarian may meet together to discuss a lesson/unit of study. However, the individual goal setting, learning experience design, teaching, and evaluation are done independently.
- *Instructional Collaboration* – The teacher and school librarian jointly set goals, design learning experiences, teach and evaluate a comprehensive unit of study.

Based on data from 412 elementary schools, 141 middle schools and 187 high schools, the sample reported that in total, 19,320 cooperations, 11,179 coordinations and 3916 collaborations were undertaken during the 2008-2009 school year. On average, school librarians contributed 27 cooperations, 15 coordinations and 5 instructional collaborations with classroom teachers during the school year. Elementary school librarians contributed 14 cooperations, 6 coordinations, and 3 instructional collaborations during the school year. Middle school librarians contributed an average of 35 cooperations, 20 coordinations, and 8 instructional collaborations during the school year. High school librarians contributed an average of 45 cooperations, 32 coordinations, and 9 instructional collaborations during the school year. Instructional collaborations typically take place in all schools in Language Arts Literacy, Social Studies and Science.

Participation in school and community forums

Many school librarians in New Jersey actively participate in various school and community forums. There is some variation according to the type of activity and school type (elementary, middle, and high). 48.5% of school librarians take the opportunity to interact with classroom teachers at grade level meetings when these are held in schools. 51.5% of school librarians take the opportunity to interact with classroom teachers at team level meetings when these are held in schools. 58% of participants in the study take the opportunity to interact with classroom teachers at department level meetings where available in a school. The results indicate that the higher the school level, the more opportunities school librarians took to make presentations at department level meetings. 66.4% of participants take the opportunity to interact with school colleagues at faculty level meetings. The results indicate that the higher the school level the more opportunities school librarians took to make presentations at faculty meetings. 45.7% of participants in the study take the opportunity to interact with school colleagues at Parent/Community Organisation meetings.

The data shows active communication with school principals and curriculum supervisors. 96.1% of school librarians meet with their school principal during the school year. High school librarians meet more frequently than do librarians in middle or elementary schools. 51.7% of the school librarians meet more than five times a year. There is a strong pattern of communication with curriculum supervisors. 74.4% of school librarians meet with curriculum supervisors during the school year. High school librarians meet more frequently than do librarians in middle or elementary schools. 24.3% of the school librarians meet more than five times a year with curriculum supervisors.

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Professional development

63% of participants are involved in the provision of professional development in relation to information literacy in their schools. Elementary school librarians provided formal/informal professional development on information literacy fewer times than in middle and/or high schools. There was no significant difference between middle and high schools in terms of the frequency of provision. 72.8% of participants are involved in the provision of

professional development in relation to information technology in their schools. This takes place more frequently in high schools than in elementary and middle schools

The data also shows a robust contribution by a number of school librarians to the work of various committees in schools and districts, outside the immediate arena of the school library, indicating an active participation in the decision making processes of the school. Typically these include district-wide curriculum committees, reading/literacy committees, and instructional technology committees.

School librarians also show a high level of belonging to professional associations, both within the library community as well as the educational community. Of the 765 participants, 98.9% have membership or affiliation with at least one professional association. This is predominantly, but not solely, the New Jersey Association of School Librarians (NJASL). 83% of the participants are members of more than one professional association, including regional library and school library associations, and educational associations. In addition to NJASL, Predominant associations are: American Library Association (ALA), American Association of School Librarians (AASL), New Jersey Library Association (NJLA), National Education Association (NEA) and New Jersey Education Association, Association for Supervision and Curriculum Development) ASCD; International Society for Technology in Education (ISTE), Association for Educational Communications and Technology (AECT), and the International Reading Association.

School librarians in New Jersey engage in a diverse range of professional development activities. 2261 instances of professional development were documented, representing an average of three discrete professional development activities by each of the 756 participants who engaged in professional development (98.8% of sample). The predominant professional development activities are:

1. Participation in annual state and national conferences in the school library, library, and broader educational arena, for example African American Authors Convention;
2. Attendance at targeted workshops and seminars, for example: Guided Inquiry, Problem based learning; Differentiated Instruction; Digital Learning; Character Education; and Identifying and Teaching Reluctant Learners;
3. Specialised technology training, for example Smartboard training, Creating wikis and blogs, Social Networking training, Movie Maker training, and E-Portfolios;
4. Reading and Literacy Development, for example, Young Adults and Literacy, Developing Summer Reading, Boys and Books, and Literature Circles.

Service to the school community

School librarians also give considerable service to their schools in a multitude of ways. Five key areas of contribution were identified. These are:

- Information service roles, including school publishing and school-wide media responsibilities, publicity, school website and community information links
- School-wide reading and literacy initiatives, involving clubs, reading challenges and competitions, reading incentive schemes and specialised reading celebrations
- General school services utilising the expertise of school librarians, such as school committees and grant writing
- Student leadership, including participation in and coordination/leadership of school events targeted to developing student responsibility, leadership and civic participation
- A range of extracurricular activities focusing on student responsibility and civic participation.

Information literacy instruction

The development of information literacy competencies is strongly integrated into New Jersey's Core Curriculum Content Standards. The data show that school librarians make an extensive contribution to information literacy instruction in their schools. Figure 2 shows the range of competencies developed, and percentage of school librarians contributing to their development.

Table 1: Participation in information literacy instruction

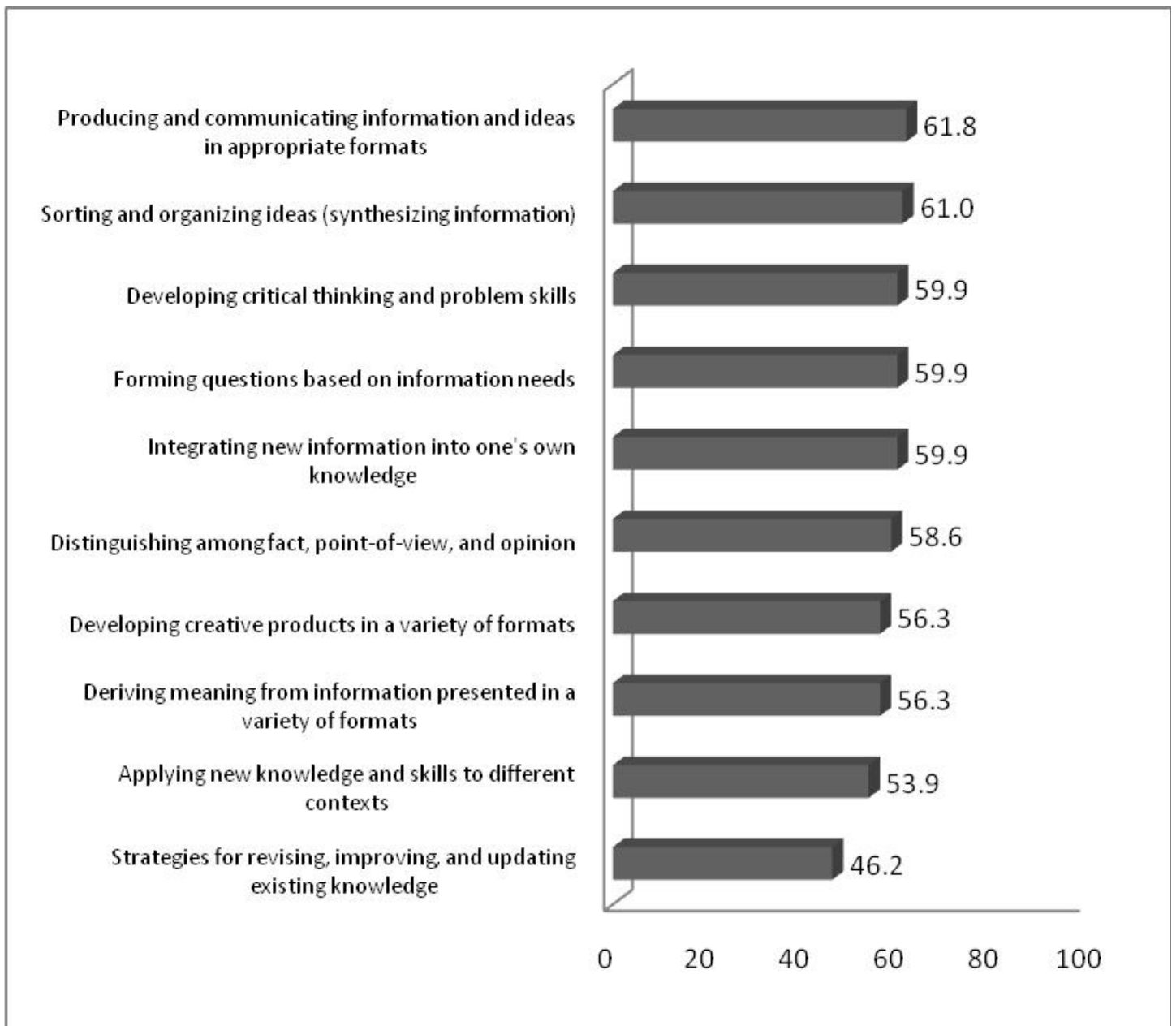


Analysis by school type shows that all school types have the following skills on their top 10 skills lists for students' information literacy:

- Knowing about the school library;
- Accessing information efficiently and effectively;
- Knowing how to use the different sources and formats of information;
- Strategising for finding, evaluating, and selecting appropriate sources to answer questions;
- Knowing about different sources and formats of information;
- Using information technology responsibly;
- Using information ethically (plagiarism, citation, bibliography).

Table 2 shows the lowest ranked information literary initiatives (10) in all school types

Table 2: Lowest ranked information literary initiatives



These dimensions of information literacy focus on knowledge construction, and are generally considered to be in the domain of classroom teachers. Accordingly, the extent of participation in these instructional activities is encouraging, and a rich opportunity for continuous improvement.

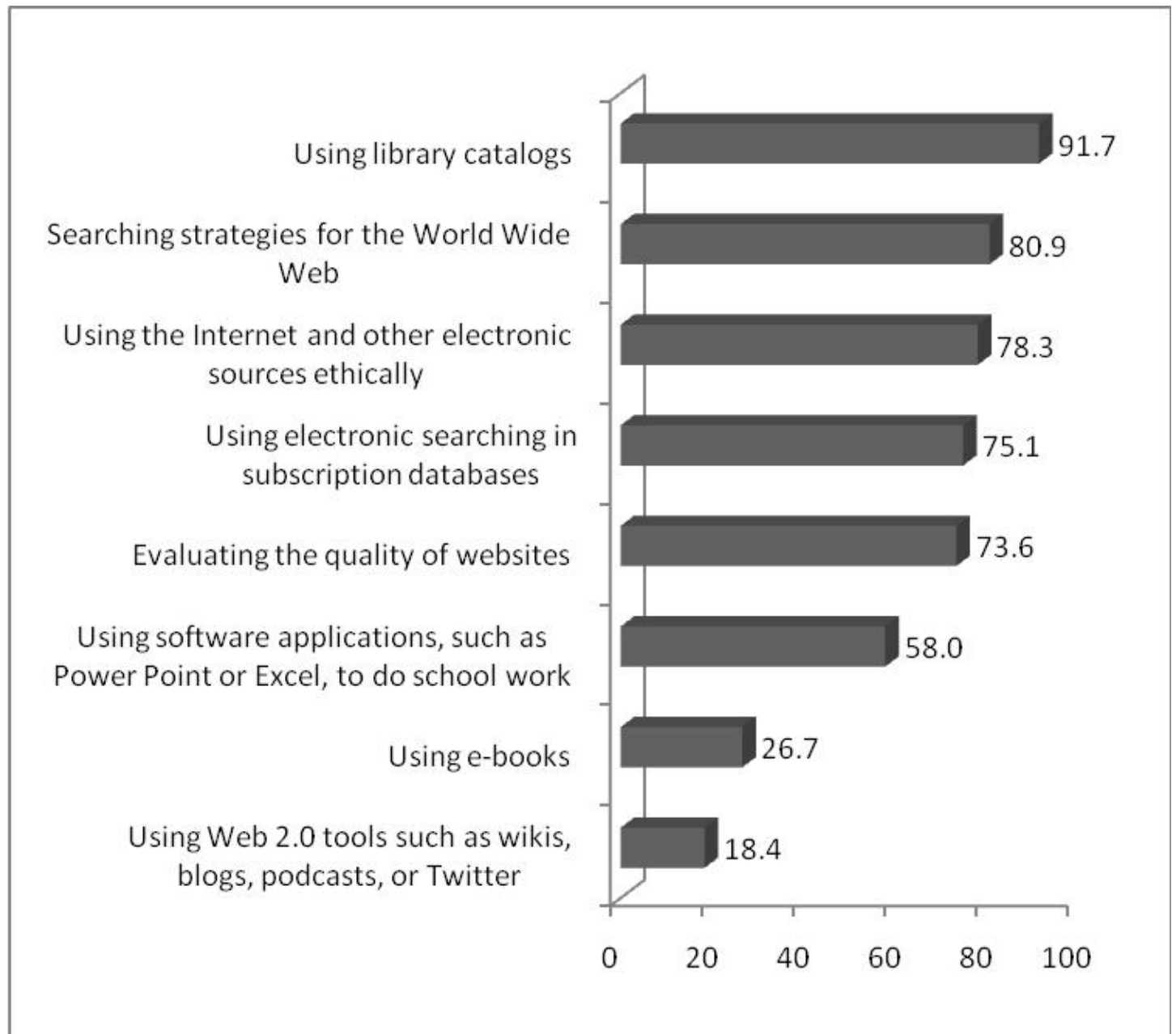
Comparative analysis across school types shows that there is some significant – and appropriate – variation in the range of information literacy competencies, especially between high and middle schools compared to elementary schools. Upper school levels give more attention to critical evaluation of diverse information sources, the

identification of main and supporting ideas (the hierarchical and associative structuring of information), the responsible and ethical use of information, and the development of critical thinking capacities. Overall, there is an information resource orientation, but also some knowledge-outcomes focus to information literacy development. The focus appears to be on essential skills of accessing and locating information, and evaluating its appropriateness for task and authority. The data suggest considerable scope for focus on the knowledge construction dimensions of information literacy.

Instruction in information technology

School librarians in New Jersey appear to take a strong instructional role in providing students with the intellectual and technical scaffolds to engage with information technology in efficient and productive ways. Figure 3 shows the range and extent of instruction in information technology to students.

Table 3: Instruction in relation to information technology



Data shows that teaching search strategies, both in relation to the World Wide Web and specialised databases, library catalogues and directories, is given the most widespread emphasis. There is evidence of the early adoption and integration of a range of Web 2.0 technologies, tools and techniques to support curriculum content standards. Data also suggests that the latter represents a strong area for ongoing development and involvement. Analysis by school type shows that this is taking place more strongly in the high schools and middle schools rather than in the elementary schools. School librarians do show considerable capacity to lead this important journey in their schools. Cognisant of the staffing gaps raised earlier in this research, this finding presents further evidence that elementary school children may be missing significant opportunities to learn information and critical skills related to the use of

information technology, not just for accessing and locating and evaluating information, but also for learning to use information technology tools and software packages to create their learning products, particularly those using web 2.0 tools.

A substantial number of school librarians in New Jersey actively provide a range of information technology-related professional development activities to teaching faculty. These provide a picture of the breadth and depth of school librarians' involvement and leadership in faculty professional development. The percentage of school librarians involved in this professional development is shown below:

- • Electronic searching in subscription databases (68.0%)
- • Searching strategies for the World Wide Web (42.3%)
- • Using software applications for learning (40.8%)
- • Using the Internet and other electronic sources ethically (38.2%)
- • Evaluating the quality of websites (33.2%)
- • Using e-books (22.3%)
- • Using Web 2.0 tools such as wikis, blogs, podcasts, or Twitter (19.2%)

It is clear that school librarians' engaging in this professional role have wide-ranging technical capacities, and a pedagogical understanding of their integration into learning. In particular, the analysis shows capacity of school librarians to: focus on and demonstrate their instructional role and pedagogical knowledge through use of information technology; demonstrate the complexity of the information landscape and the importance of appropriate use of information technology; play a school leadership role in enhancing teacher effectiveness; and play a role in driving improvement in teaching learning for student achievement. It shows a commitment to whole school development in term of effective use of information technology. Comparative analysis shows that the highest levels of involvement are in high schools, with lowest levels of participation mostly by elementary school librarians.

In addition to the categories mentioned above, open-ended responses generated five categories of professional development. These focus on professional development in relation to:

- Technical mastery of information technology hardware;
- Technical mastery of a range of information technology software;
- Technical mastery and use of library-specific software and technology tools;
- Pedagogical integration of hardware and software into classroom and library-based instruction, and on-going instructional support;
- Use of information technology tools to develop ethical use of information and information technology by students.

This professional development typically takes place through formally scheduled workshops as part of the school's professional development program or more informal one-on-one instruction.

School library impact on student learning

Do New Jersey's school libraries impact student learning? The study gathered qualitative data on the school library contribution to student learning. Through an open-ended question, it sought to uncover learning outcomes enabled by the school library program and the explicit interventions of the school librarians. Underpinning this question is the concept of evidence-based practice, which revolves around the key question: What differences does our school library and its learning initiatives make to student learning? That is, what are the differences, the tangible learning benefits, defined and expressed in ways that lead a school community to say, "We need more of this!"? Evidence-based practice is about ensuring that day to day efforts put some focus on gathering meaningful and systematic evidence on how the school library and its instructional and service initiatives contribute to learning outcomes.

721 participants provided substantive commentary on student learning impacts, although not all were able to identify library-related learning outcomes. These were analysed using a qualitative approach of constant comparison to establish key concepts, categories and relationships. The categories of outcomes identified in this question are organised around a *competencies* dimension, defined as: skills, abilities and habits of mind that underpin discovery, inquiry, and creativity; working with information to build deep knowledge and understanding, and to describe key learning outcomes. Six outcomes groupings were identified:

1. *General – Mastery of Curriculum Standards*. These refer to general statements of outcomes as they relate to New Jersey's core content curriculum standards and test score achievement.

2. *Mastery of Resource-Based Competencies*. These refer to competencies related to seeking, accessing and evaluating resources in a variety of formats, including people and cultural artefacts as sources, and libraries. They include using technology tools to seek, access and evaluate these sources.

3. *Mastery of Research Processes and Learning Management Competencies.* These refer to competencies that enable students to prepare for, plan and successfully undertake a curriculum-based research unit, including research plans and frameworks

4. *Development of Thinking-Based Competencies and Knowledge-Based Outcomes.* These are abilities and dispositions that focus on substantive engagement with data and information, the processes of higher order thinking and critical analysis that lead to the creation of representations/products that demonstrate deep knowledge and deep understanding; it also includes outcomes related to the creation of knowledge.

5. *Development Affective, Personal and Interpersonal Competencies.* These refer to competencies and dispositions related to the social and personal aspects of leaning: about self as a learner, and the social and cultural participation of inquiry

6. *Outcomes Related to Reading to Learn and Reading for Enjoyment.* These refer to competencies dispositions and attitudes related to the transformation, communication and dissemination of text in its multiple forms and modes and the development of meaning and understanding

These outcomes are developed in detail in the following table, and supported with illustrative examples.

COMPETENCY	DIMENSIONS	PARTICIPANT STATEMENTS – SELECTED EXAMPLES
<p>GENERAL DEVELOPMENT OF CURRICULUM STANDARDS</p>	<p>Mastery of curriculum standards</p> <p>362 direct references to meeting curriculum standards, the vast majority of those making these references provided no elaborative detail.</p> <p>Test score achievement</p> <p>79 direct references to contribution to school’s results in relation to standardised test scores.</p> <p>These were simple statements of general outcome, with few details provided of the specific nature or direction of the outcome, nor how these were explicitly connected to interventions and initiatives of the school library.</p>	<p>General statements related to mastery of standards</p> <p>“Meeting curriculum standards” “We meet curriculum standards for library literacy and (reading) literacy” “Meet curriculum standards in the areas of media, technology skills, student motivation for research and planning”</p> <p>General statements related to test scores</p> <p>“Superior test scores” “Improved test scores” “Test score achievement” “Higher test scores” “Boosting test scores” “Test score improvement” “Test scores in our district have improved” “Our test scores in the building are excellent” “Positive standardised test scores” “Assessment of OPAC skills indicated that 25% of 6th graders scored a C or better on a September pre-test; March post-test resulted in 65% of 6th graders scored C or better”</p>
<p>RESOURCE-BASED COMPETENCIES</p>	<p>Library as place (12 references)</p> <ul style="list-style-type: none"> - respect for library as learning space - understand library layout and structure 	<p>General statements related to library as place</p> <p>“Successfully navigating the library, changing attitudes of students about library and program” “Knowledge of organisation of the library and retrieving books and information from a variety</p>

Mastery of Information skills/information literacy development in general (121 general references)

As with other responses, these were simple statements of general outcome.

Specific information literacy capabilities, including mastery of technology competencies were identified. These included:

- selection of particular types of resources to suit research needs
- use of information retrieval systems, such as subscription databases and web-based information repositories
- use of OPACS and library catalogues
- development of search strategies to retrieve information
- evaluating information for quality, particularly websites

of sources"

"Pre-k to 2nd – we work mostly on treating materials with respect – the concept of borrowing – that it means returning"

Statements related to information literacy

"Mastery of information literacy"

"They exhibit mastery in technology skills and information literacy"

"Our students do very well at the high school with respect to information literacy according to the feedback we receive"

"They exhibit mastery in technology skills and information literacy."

"Improving information literacy skills for students."

Statements of specific competencies

"Students able to use OPAC and subscription databases to locate information to their personal needs"

"Learning about the right 'tool' for the given quest"

"Mastery of software applications in the library"

"Developing familiarity with a classification system"

"They are mastering the use of the on line data bases and reliable sources"

"Ability to do searches for bogus websites and evaluation of them"

"Mastery of Website evaluation strategies"

"Understanding need for website evaluation"

"Knowing how to broaden or narrow a search to find the information available out there"

"Mastery of searching the library catalogue"

"Understanding of the purpose of reference materials"

"Students know how to use the online catalogue to search for materials and can then locate the materials independently"

Mastery of research skills including keyword selection and search strategies"

"Selection of appropriate websites"

"Students evaluate information for validity using critical thinking skills"

"Attribution of information found"

RESEARCH PROCESSES AND LEARNING MANAGEMENT COMPETENCIES

Research processes

(359 references to student mastery of research process)

Inquiry processes

(98 references)

Independent learning

(34 references)

Project management

(12 references)

Statements related to research process and inquiry

"Know a sequence of strategies for doing good research"

"Develop their research skills – what to use when- knowing when print reference is efficient, when databases are better and when to use the free internet"

"Able to follow a general research plan from start to finish of the research task"

Successfully completed a research based guided-inquiry project on the presidents of the

	<p>This includes task organisation and management; develop and following plans, and setting up and apply structures, strategies and files to maintain and manage their overall research tasks</p>	<p>US “Able to work through an inquiry learning process” “Able to focus on their research tasks”</p> <p>Statements related to independent learning “Many of my student outcomes relate to independence e.g. locating, choosing and using information independently” “Some students have become more independent in their use of the library” “Successful completion of school assignments, and independent lifelong learning” “Ability to find materials independently” “Work independently or collaboratively with peers to conduct research or give written responses” “They become confident, independent users of information”</p> <p>Statements related to project management “The students appear to manage the research tasks in a timely manner” “Students seem to be able to plan their projects” “Students show ability to manage all the articles and papers that they find” “Some students have organised folders for their research projects” “Fourth grade students created and electronic portfolio to meet the state tech benchmark standards”</p>
<p>THINKING-BASED COMPETENCIES KNOWLEDGE-BASED OUTCOMES</p>	<p>In essence: the processes of thinking, analysis and synthesis that create knowledge, and the products the represent the knowledge of students.</p> <p>Intellectual engagement with information 14 references were made relating to thinking-based outcomes</p> <p>Construction and presentation of knowledge 15 references were made to creating knowledge.</p>	<p>Statements related to the intellectual engagement with information “Think through all the information and work out what is needed” “Students have developed some higher order thinking skills, reading strategies, making connections to texts, world and self” “Students show ability to master critical thinking skills applicable to each grade level” “Meeting curriculum standards, test score achievement through critical thinking” “Understanding cross-references in searching for data and critical analysis of information” “Thinking, comprehension and communication skills have been developed” “Students show intellectual curiosity” “Students evaluate information for validity using critical thinking skills”</p> <p>Statements related to demonstrating knowledge and producing representations of knowledge “Able to demonstrate and use skills to write research papers, create projects, etc” “Blending different types of resources for a project” “Demonstrate research organisation, integration of new knowledge, properly crediting sources,</p>

		<p>etc”</p> <p>“See increasing students' attention to detail, increasing ability to organise information and ideas”</p> <p>“Increasing ability to make connections among ideas and information”</p> <p>“mastering the fusion of others' and own ideas”</p> <p>“Mastery of information for fulfilling personal needs (how-to, career, etc.)”</p> <p>“End product for learning activity – ie. PowerPoint presentation, Excel spreadsheet, Publisher booklet, Word document, etc.”</p>
<p>AFFECTIVE, PERSONAL AND INTERPERSONAL COMPETENCIES</p>	<p>Substantive number of references were made to the development of a range of attitudes and values, including:</p> <p>Display interest (158 references)</p> <p>Increased motivation (78 references)</p> <p>Teamwork and interpersonal relationships (12 references) Work effectively in teams; Positive relations to each other and library staff</p> <p>Ethical information use behaviours (40 references) This shows outcomes related to students demonstrating use of accepted protocols to document ideas, with some limited reference to using technology in appropriate and safe ways</p> <p>Ethical behaviours in relation to citation practices, plagiarism, and copyright were identified</p>	<p>Statements related to motivation and interest</p> <p>“Developing awareness of ethical issues in information and communication”</p> <p>“Positive changes in interest and motivation, not just for using the library but schoolwork in general”</p> <p>“They have found new interests to increase motivation in other areas”</p> <p>“Motivation to read widely and seek out information”</p> <p>“Students have better attitudes and increased motivation toward the library and doing research”</p> <p>“Students are more motivated to use the library because they know they are in a friendly environment where they know they will not be judged based upon their queries”</p> <p>“Students are motivated to use the computers for research and reporting alike”</p> <p>“Children are motivated in the library, and leave with the effective use of information technology. They become positive researchers”</p> <p>“My students are very motivated and enjoy coming to the media centre each week”</p> <p>“Motivation to use the library and its facilities; motivated to conduct research”</p> <p>“Motivated and interested in unexplored areas”</p> <p>“Students have come to discover that the school library is the gateway to academic achievement through their exposure to the use of information technologies in the library, such as electronic databases, AVs etc. “These had gone a long way to motivate them to learning”</p> <p>“Students in some cases have achieved a calmer and more efficient attitude to their specific skills. They have found new interests to increase motivation in other areas”</p> <p>“Motivation goes up, goals are easier to reach, curricula is mastered, technology becomes more helpful, and information is gained: resulting in success at tasks and gain of knowledge”</p> <p>“The students' attitudes towards research and literacy have improved this year. What they viewed as frustrating and insurmountable is now viewed as a "do-able" project”</p>

		<p>Statements related to social and person agency “Through the school library students respect different ideas and differences with people and themselves more” “Group research projects have taught some students how to work better together and in teams”</p> <p>Statements related to ethical behaviour “They get it – plagiarism is not on” “Students show increasing use of appropriate citation processes” “The students are initiated, at the library to Turnitin so there is now much less active plagiarism” “Students show evidence of understanding ethical use of information, plagiarism issues and correct citation format” “Students appear to respect intellectual property”</p>
<p>READING TO LEARN AND TO ENJOY</p>	<p>The participants made 198 references to outcomes related to reading. Elementary and middle school librarians were mostly represented. The majority of these referred to:</p> <p>increased interest in reading</p> <p>increased circulation of reading materials</p> <p>development of wider reading interests</p> <p>becoming discriminating readers.</p>	<p>Statements related to reading to learn and reading for enjoyment “Changes in attitudes and interests towards books” “Familiarity with award winning authors/illustrators; knowledge of various genres” “Students are more interested in taking out books for pleasure reading” “Our circulation has each student checking out at least one book per week” “Large increases in borrowing of fiction after our reading promotion” “Students develop both an understanding and an appreciation for different types of fiction and non-fiction This is motivational in that it broadens attitudes and interests” “Increased motivation for informational and pleasure reading” “Students are eager to select books for instructional and recreational needs” “Advancing reading and comprehension levels” “Enhancing reading enjoyment, comprehension, and fluency”</p>

The qualitative responses of participants collectively show the contribution of school libraries to the development of the whole child – developing capabilities that go beyond the traditional scope of information skills. These outcomes do portray the school library as an agency for intellectual development, and for the social and cultural growth of students as they grow up in a complex and diverse information world. According to the evidence of the school librarians represented here, the school librarian works to meet core content standards, to develop a wide range of information handling competencies, and to provide students with the intellectual and technical scaffolds they need to learn and be ethical and productive users and consumers of information in a digitised world.

... responses of participants collectively show the contribution of school libraries to the development of the whole child ...

Two important observations emerge out of this analysis. Firstly, while it is encouraging that school librarians can articulate improvements in terms of reading, information literacy, use of information technology, and improved attitudes towards the library, very few could articulate specific learning outcomes in relation to the students' development of deep knowledge and deep understanding of content areas. At best, outcomes were expressed as 'meet curriculum standards' without more detailed elaboration. While this may be an artefact of the question posed, school librarians appear to have difficulty articulating the outcomes of library initiatives in terms of specific curriculum standards/goals, and provide specific evidence-based claims of specific gains in knowledge and skills. It is a question of precision and specificity.

Secondly, a substantial number of school librarians had difficulty focusing on student outcomes; rather, they articulated in detail what they did, identifying instructional inputs and processes, rather than clarifying outcomes from the perspective of the student. There is an assumption that through articulating what is done, some outcomes are enabled, even if they are not identified. Some illustrative examples of a focus on inputs are presented here:

"I formally teach grades K-4 and have had the opportunity to collaborate on curriculum projects with the classroom teachers in those grades";

"I make sure lessons cover the standards and stress the importance of what type of learner each student is and how best they can succeed mastering skills across the curriculum. Research is taught in small increments and expanded", and

"Throughout the year students are introduced to a wide variety of books, mainly fiction. As a result, every child has read several books by the end of the school year from the media centre. All children utilise technology such as *Microsoft Office* programs, and most are quite proficient by the end of the year, especially in *Word* and *PowerPoint*. They also learn how to use research databases such as *Culture Grams* and *NetTrekker*, and some Web 2.0 applications. All students use the computers for research, and are taught how to cite sources."

Second, there was not strong data to suggest that systematic approaches to gathering evidence of outcomes were used. Unstructured, informal observation was identified by a number of participants as the basis for making claims of outcomes: "Meeting curriculum standards, these I believe are the results of my program, but I do not have the opportunity to evaluate their work, so I can only estimate from my interactions with them as they research in the Library Media Centre with me." Two participants identified some strategies for collecting evidence as a basis for making claims of outcomes: "I give pre- and post-tests in some of my collaborations to track learning outcomes related to standards" and "I look at test score data and see if the classes we have done reading strategies (with) show up in the scores". Five participants indicated that it was impossible to gather evidence due to a range of factors in the schools: "I formally teach grades K-4 and have not had the opportunity to collaborate on projects with the classroom teachers in those grades. I see the children 40 minutes/week. This is a 100% increase over last year, when my predecessor saw grades 2-4 only 20 times per year. Under these conditions, it is not possible to identify specific learning outcomes resulting from library instruction" and "I am too busy running the library without assistants and so it is not possible to determine the specific outcomes".

Where to now?

The above analysis sheds some light on the nature and outcomes of school librarians' instructional role. Such data provide insights into what school librarians do well, and where there are opportunities for continuous improvement. So what? It is acknowledged that there are many challenges confronting school libraries and their role in learning and in the diverse and increasingly digital landscape of the 21st century. What comes out strongly in the data is that the school library is a pedagogical centre, a common place across the school for the development of important pedagogies that enable students to engage the information landscape in all its richness to foster curriculum standards and knowledge outcomes. There is considerable work being done in relation to conceptualising school libraries as 'learning commons' (Loertscher, Koechlin, & Zwaan, 2008) where the central focus is on:

- inquiry-based learning through information;
- intervention and socialisation for learning;
- how to function effectively in the complex informational and technological world beyond school; and
- knowledge-centred outcomes and intellectual engagement.

School librarians need to capitalise on their contribution to the development of intellectual quality, their contribution to the pedagogy of a school, and the library as a rich learning environment for students. It is about positioning the school library as a pedagogical centre where instructional teams engage in innovative design and instruction to access and use information and web tools to empower learning through creativity, discovery, inquiry, cooperation, and collaboration. It is a learning environment fuelled by the development of expertise of learning with and through information and IT tools to create, produce and share knowledge. A key challenge also centres on engaging the information technology expertise as evidenced in this study to position the future school library as a 24/7 learning environment, one which supports the knowledge building process out of school and operates as a central portal for knowledge development.

The study provides opportunities for school librarians to use the findings as a guide to benchmarking in their own schools, and to negotiate and establish continuous school improvement plans that focus on meeting targeted standards of professional and paraprofessional support for school libraries. Each school community should review these findings and tailor a school library improvement plan which is responsive to the context of the particular school. The plan should establish annual improvement goals, (e.g., increases in budget allocations; building collections to recommended levels of resources, increasing paraprofessional support, the opening up of fixed library schedules to more flexible schedules; the initiation of school librarian-teacher collaborations in targeted curriculum areas, and the development of information technology competencies for teaching faculty and students.)

... an extension of the instructional role: moving from instruction centering on 'finding information' to 'doing something with the found information' ...

It is clear that the school librarians in New Jersey engage actively in the development and instruction of an extensive range of information and technical literacies. This instruction primarily centres on knowing about the school library, knowing about different sources and formats, with sound levels related to understanding the different strategies in

doing effective research, learning how to use resources, evaluating information for quality, and learning to use information ethically. It is also pleasing to see that despite issues with staffing in the elementary schools, school librarians, where available, are contributing substantially to this instruction. Overall, there is an information-resource orientation. The focus appears to be on essential skills of accessing and locating information, and evaluating its appropriateness for task and authority. There is no question that these are important competencies. With increasing emphasis in many state and national curriculums on intellectual quality and the development of deep knowledge as key curriculum outcomes, it is suggested that the 'use' dimension of information literacy be strengthened in instructional teams. These are the abilities and dispositions that explicitly focus on knowledge building, critical thinking, problem solving, and the creation, construction and sharing of the products of knowledge that demonstrate deep knowledge and understanding. This is an extension of the instructional role: moving from instruction centering on 'finding information' to 'doing something with the found information' which constitutes individual and collective knowledge building, and clearly embodied in current learning standards of AASL (American Association of School Librarians, 2007). The increasing emphasis on digital literacy and digital citizenship further underscores the opportunities literacy instructional interventions have when linked to collaborative knowledge creation and sharing.

One of the key challenges emerging out of this study is the need for school librarians to be able to state learning outcomes and impacts of school library initiatives with greater precision. It is encouraging that school librarians can articulate improvements in terms of reading, information literacy, use of information technology, and improved attitudes towards the library. However, only a small number could articulate specific learning outcomes in relation to the students' development of deep knowledge and deep understanding of content areas. At best, outcomes were expressed generally as 'meet curriculum standards' in subject areas. This is a case of the elusive outcomes believed to be present, but which are not documented, evaluated, and communicated. The arena of evidence-based practice in school libraries encompasses three dimensions:

- evidence-for-practice, where professional practice has the extensive body of empirical research as its foundation;
- evidence-in-practice, where school librarians actively engage with processes and strategies (formative and summative) to chart the learning progress of students; and
- evidence-of-practice, where outcomes are identified, disseminated and become part of the cycle of continuous improvement (Todd, 2009).

Quality pedagogy is accountable pedagogy, one underpinned by evidence. In the current economic climate and time of substantive education cutbacks, the challenge of documenting learning outcomes and impacts is more urgent now than ever

Quality pedagogy is accountable pedagogy, one underpinned by evidence.

before. It is critical that school librarians continue to develop their skills at identifying, documenting, and disseminating student learning outcomes enabled by the school library, particularly emphasising curriculum outcomes and knowledge outcomes, rather than library-based outcomes.

The study showed that more than half of the school librarians do not speak at parent and community organisations. This suggests a missed opportunity to share with significant audiences the role of the school library in achievement and literacy development. It may be argued that they are not actively invited to participate, or the nature of parent and community organisation meetings do not lend themselves to participation. On the other hand, given multiple calls on budgets across any school, the current climate of educational accountability, and the vital importance of significant audiences knowing the central role of the school library (an essential element in sustained commitment), it is important that school librarians take a proactive stance. This may also signal an opportunity for professional associations to provide some development in terms of how and what to communicate to interested audiences, and to learn how to engage in evidence-based advocacy. The importance of school librarians being proactive in their participation in various school and community forums is stressed here. This pro-action may take several forms such as presentation of reports which highlight the school library's contribution to learning, summaries of learning outcomes of collaboratively taught curriculum units, requests to be on the agenda to raise important library issues and initiatives, and presentations of summaries of significant research findings in relation to information literacy and reading engagement.

The findings show a substantial number of school librarians are involved in cooperations, coordinations and collaborations with classroom teachers. An extensive body of educational research concludes that quality teachers and quality teaching have the most significant effect on student achievement. It is my view that instructional collaborations should be the key feature of the role of the school librarian. The Guided Inquiry based framework, underpinned by the Information Search Process developed by Kuhlthau and explicated in Kuhlthau, Maniotes & Caspari (2007), is recommended as the research-based and research-validated approach to productive pedagogy, and is indeed timely in the context of educational initiatives that are explicitly targeting creative pedagogies centering on inquiry.

The findings also underscore the importance of all school libraries establishing a strong web presence, both within the school and as part of a broader learning-centred advocacy program. Such websites should, in the long term, provide access to electronic resources and databases both on site and remotely. These websites should highlight the collaborative instructional partnerships, identify learning outcomes enabled in the school through the school library, and provide access to research guides, learning techniques and knowledge-building strategies and tools, with guidance and online support for their development.

This web presence is also vital as an instructional environment for the development of digital literacies and fostering digital citizenship. The findings indicate that school librarians are bringing to the school community a unique set of information technology capabilities related to accessing and using information technology, not just for finding and evaluating resources, but for using technology tools to create innovative representation of knowledge. It is particularly encouraging to see the early adoption and integration of a range of Web 2.0 technologies, tools, and techniques to support curriculum content standards. School librarians show considerable capacity to lead this important journey in their schools, and must continue to develop inquiry-centred (rather than tool-centred) pedagogies engaging the diversity of Web 2.0 capabilities for content creation, representation, and assessment.

This study iterates what has gone before: the school library is a vital and necessary part of 21st century schools. The findings of this study show that school libraries and the work of school librarians contribute in rich and diverse ways to the intellectual life of a school, and to the development of students who can learn and function in a rich, complex and increasingly digital information environments. School libraries that are staffed by certified school librarians provide common information grounds for supporting learning across the school through engagement with information, with particular emphasis on developing students' abilities to interact with information and to use it to learn well. This contribution is underpinned by an information and technology infrastructure and enabled through strong instructional, service, and administrative roles of school librarians. It is the instructional role of school librarians that stand out in these findings. As school libraries are reimagined and reengineered, it is my belief that it is the instructional role of an information learning specialist that will substantially define the future of the school library, and indeed, the future school library – one where the school library is portrayed as an agency for intellectual development and for the social and cultural growth of students as they grow up in a complex and diverse information world.

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