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School libraries, teacher-librarians and student outcomes:

Presenting and using the evidence

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Abstract

Evidence is required to ensure the future viability of school libraries and teacher-librarians. Education policy makers and school principals need detailed, reliable evidence to support informed decision-making about school library resourcing and staffing. Teacher-librarians need evidence to guide their professional practice and demonstrate their contribution to student learning outcomes. This review, which arises from recent Australian research (Hughes, 2013), collates international and Australian research about the impacts of school libraries and teacher librarians. It strengthens the evidence base, and recommends how this evidence can be best used to advance school libraries and teacher-librarians and enhance student learning.

Introduction

The future viability of school libraries and teacher-librarians depends in large part upon reliable evidence of their positive impact on student outcomes. Evidence of this kind is essential to securing adequate and continuing funding for school libraries, especially when school budgets are severely stretched and administrators face multiple, competing needs. For school-based management, school principals and leadership teams require this evidence to support informed decision-making about the library. Teacher-librarians also need this evidence to guide their professional practice and demonstrate their contribution to student learning.

Evidence about library practice can take many forms (Gillespie, 2013; Koufogiannakis, 2011). This review presents evidence from formal research that involved purposeful data collection and rigorous analysis. It espouses principles of evidence based practice in seeking to provide:

best available evidence of what works coupled with a focus on evidence of outcomes and impacts of services in relation to the goals of the educational environment in which it is situated (Todd, 2009, p.88).

This review, which arises from recent Australian research (Hughes, 2013) that collates international and Australian research about the impacts of school libraries and teacher librarians. It has two purposes: to strengthen the evidence base; and recommend how this evidence can be best used to advance school libraries and teacher-librarians and enhance student learning. It is in five main parts:

- *Need for evidence*
- *Presenting the evidence: International research*
- *Presenting the evidence: Australian research*
- *Using the evidence to advance school libraries*

- *Appendix: Overview of international and Australian research*

Terminology

The following terms are used consistently in this literature review:

- *school library* includes *resource centre*, *school media centre*, etc.
- *teacher-librarian* denotes a professional with dual teaching and library qualifications, and where applicable includes *school librarian*, *school media specialist*, etc.; *teacher-librarian* is hyphenated to indicate the inter-connected elements of the dual role
- *school library programs* encompass all educational activities provided by a school library, such as *information literacy*, *research support* and *reading promotion*
- *principal* includes *school administrator*
- *literacy*: “listening to, reading, viewing, speaking, writing and creating oral, print, visual and digital texts, and using and modifying language for different purposes in a range of contexts” (ACARA, n.d.c.)
- *information literacy*: “The ability to process and use information effectively [as] a basic survival skill for successful learners in the 21st century ... to find, analyse, evaluate and ethically use information for a given purpose in a variety of formats” (ASLA & ALIA, 2009). It includes *ICT capability* (ACARA, n.d.b) and *digital literacy* since *information literacy* is the most commonly term used in the reviewed literature
- *NAPLAN: National Assessment Program – Literacy and Numeracy* is an Australia-wide annual assessment program for school students in Years 3, 5, 7 and 9 (ACARA, 2012).

Need for evidence

Government departments, employing authorities and school administrators need reliable data to support policy and decision-making about school libraries. Given their responsibility for staffing within schools, it is concerning that school principals are often unaware of the full potential of school libraries and teacher-librarians (Hartzell, 2002; Henri & Boyd, 2002;

Ragle, 2011). This is one likely reason for diminishing library budgets and teacher-librarian positions.

Consequently, there is a critical need for what Ross Todd (2009, p. 89) calls 'evidence for practice' that focuses on "the real results of what school librarians do, rather than on what school librarians do". We need to examine "impacts, going beyond process and activities as outputs" and establish "what has changed for learners as a result of inputs, interventions, activities. Professional journals provide a rich picture of contemporary school libraries. Articles and conference papers offer thoughtful commentaries and informative anecdotes. However, these accounts tend to describe 'inputs' (planning and actions) rather than 'outputs' (evaluated outcomes). The persuasive power of these accounts is often limited by lack of solid evidence demonstrating real differences attributable to school libraries and teacher-librarians.

Need for Australian evidence

The recent parliamentary *Inquiry into school libraries and teacher librarians in Australian schools*. (House of Representatives, 2011) recognised the importance of school libraries and teacher-librarians to students' social well-being and educational outcomes. The Inquiry report highlights the role that they play in supporting learning, literacy and reading. And it acknowledges their contribution to national government initiatives such as Building the Education revolution (BER), Digital Education Revolution (DER) and the new Australian Curriculum.

However, submissions to the Inquiry indicate significant gaps between recommended standards and realities (for example: ALIA, 2010; ASLA, 2010; The Hub, 2010; Kirkland, 2010; SLAQ, 2010). They show that many school libraries in Australia are under-funded and teacher-librarian appointments are declining. Since there are no mandatory standards for school libraries or the employment of teacher-librarians, provision and staffing levels vary

greatly between schools, states and education systems. The problem is compounded by inadequate school funding Australia-wide, documented in the Government's *Review of funding for schooling* (Gonski, et al., 2011)

The Inquiry associates the under-resourcing of school libraries with a lack of solid evidence to demonstrate their value to students, schools and the wider community. Although the Inquiry submissions provide many examples of good practice, they often lack evidence of the differences school libraries and teacher-librarians make. In contrast to extensive research conducted in the US, Canada and Britain about school library impacts on student literacy and learning, only a handful of studies on this topic have been conducted in Australia.

The need for more consistently compiled research about the Australian school library scene was first highlighted in a report commissioned by the Australian School Library Association in 2003, which stated:

If practitioners in Australia are to mount a strong case for recognising the positive impact of school libraries and school librarians on student learning ... it is important to know how applicable the existing research is to an Australian context and what kind of additional research might be needed to demonstrate the positive relationship between school libraries and student achievement (Lonsdale, 2003, p.1).

The Inquiry (House of Representatives, 2011) reiterated the need for research, highlighting serious problems associated with the lack of (a) mandatory standards for school library resourcing and staffing; and (b) regular and consistent nationwide reporting about school libraries. The Inquiry's concluding comment 6.12 states:

There is a fundamental need to collate some hard data to ascertain how many teacher librarians there are in Australia's primary and secondary schools; to identify where the gaps are; and to start to extrapolate the links between library programs, literacy (especially digital

literacy, which is as important as regular literacy and numeracy skills), and student achievement. (House of Representatives, 2011, p. 118)

Presenting the evidence: International research

Research in US, Canada and UK identifies recurring relationships between: (a) student attainment (in terms of test scores or learning outcomes); and (b) variables relating to school libraries such as general staffing levels; presence of a qualified teacher-librarian; extent of library programs; collaboration between teacher-librarian and teachers and/or principal; size of library budget; size and currency of the library collection; and access to information and communication technologies (ICT) and digital resources.

The majority of studies focus on test results for student attainment in specific areas such as reading and language arts. This reflects the widespread practice of standardised testing in the countries where these studies were conducted. However, some studies adopt a qualitative approach to evaluate the nature of the relationships between school libraries/teacher-librarians and students' learning outcomes, for example: Ohio (Todd & Kuhlthau, 2005a; 2005b) and New York State (Small, Shanaham and Stasak, 2010). In Scotland, Williams and Wavell (2001) used focus groups and case study to explore perceptions of school library impacts among teachers, librarians and students. In Ontario researchers developed a rich case study to identify the characteristics of an exemplary elementary school library. (Klinger et al., 2009)

Impacts of school libraries

The first US studies were conducted in the early 1960s (Gaver, 1963). Isolated studies occurred through the 1970s and 1980s (Lance, Welborn & Hamilton-Pennell, 1993) and then gained momentum from the early 1990s onwards. Between 2000 and 2008 more than twenty studies across the United States and Canada repeatedly found positive relationships

between school libraries and student academic achievement (Francis, Lance & Lietzau, 2010; Kachel et al., 2011). These studies included about 10,000 elementary, middle and high schools and more than 3 million students (*School libraries work!*, 2008).

In many cases, analyses were controlled for social and/or school-based variables (for example: Lance & Schwarz, 2012; Small, Snyder & Parker, 2009b; Lance, Rodney & Hamilton-Pennell, 2005). The associated findings suggest that positive impacts of school libraries and teacher-librarians occur independently of particular social and school-based variables, such as students' socio-economic or educational backgrounds, or other aspects of their school environment.

General impacts

Keith Curry Lance of the Colorado Library Research Service has led or contributed to multiple studies that have examined various relationships between student test scores, school libraries and teacher-librarians. These include a recent national report documenting the deleterious effects of cutting librarian positions on of fourth-grade students' reading scores between 2004 and 2009 (Lance & Hofschire, 2011); and four influential Colorado studies (Lance et al. 1993; Lance et al. 2000; Francis, Lance & Lietzau, 2010; Lance & Hofschire, 2012).

The Colorado studies highlight that all of the following school library factors positively influence student achievement:

- more full-time equivalent library staffing
- presence of qualified teacher-librarians
- higher library budgets
- larger library collections, newer resources, varied formats
- networked online resources made accessible via computers in the library as well as in classrooms, labs, and offices

- heavier student use of library, indicated by library visits and circulation

These findings are consistent with the findings of other studies. For example, the impact on student achievement of:

- higher full-time equivalent staffing in: Iowa, (Rodney, Lance & Hamilton-Pennell, 2002), Pennsylvania (Lance, Rodney, Hamilton-Pennell, 2000), Texas (Smith, 2001) and Wisconsin (Smith, 2006)
- larger, newer resource collections in: California (Achterman, 2008), Indiana (Callison, 2004), Iowa, (Rodney, Lance & Hamilton-Pennell, 2002), North Carolina (Burgin & Bracy, 2003), and Texas (Smith, 2001).
- access to online resources and ICT in: Delaware (Todd, 2005), Indiana (Lance, Rodney & Russell, 2007), Ohio (Todd & Kuhlthau, 2005a), Ontario (People for Education, 2011)
- higher total library expenditures in : Illinois ((Lance, Rodney & Hamilton-Pennell, 2005), Minnesota (Baxter & Smalley, 2003), North Carolina (Burgin & Bracy, 2003)
- heavier student use of library in: Michigan (Rodney, Lance & Hamilton-Pennell, 2003), Oregon (Lance, Rodney & Hamilton-Pennell, 2001) and Texas (Smith, 2001).

A more broadly focused UK study (Williams & Wavell, 2001) found that school libraries contribute to students' learning motivation, progression, independence and interaction. Moreover, positive impacts can continue beyond school. For example, at a Californian community college Smalley (2004) found that students from high schools with librarians and library programs achieve higher mid-term scores and final grades for a first year Information Research course (unit) than those from schools without a library and librarian. A recent Pennsylvania study also identifies longer-term impacts on students' lifelong learning:

What students learn is how to learn more effectively, both now and in the future.

According to the three groups of educators surveyed, libraries and librarians make a

difference by teaching students learning skills that will serve them well throughout their lives. (Lance & Schwarz, 2012, p. vii)

Impacts on reading

Reading expert Stephen Krashen (2004) indicates that wide reading and access to reading materials through libraries are critical for literacy development, especially among students from lower socio-economic backgrounds. In addition, the international Programme for International Student Assessment (PISA, OECD, 2010) indicates an association between reading enjoyment and student achievement. Therefore, it is significant that many of the above studies, including Colorado, highlight the impact of school libraries on reading ability and enjoyment. For example: Delaware (Todd, 2005), Idaho (Lance, Rodney & Schwarz, 2009), Ontario (Ontario Library Association, et al.) and Wisconsin (Smith, 2006).

In the Ontario study, Grade 3 and 6 students in schools with a qualified teacher-librarian were more likely to report that they enjoy reading; and Grade 6 students were more likely to attain higher reading test scores. The researchers conclude that based on the PISA results for Canada and this study: “a teacher-librarian supports reading enjoyment, and hence contributes to higher student achievement” (Ontario Library Association et al., p. 10-11).

Similarly, a British study (Clark, 2010, p. 4) showed:

a very strong relationship between reading attainment and school library use, with young people who read below the expected level for their age being almost twice more likely to say that they are not a school library user. Conversely, those who read above the expected level were nearly three times more likely to say that they are school library users.

In addition:

Compared to young people who do not use the school library, school library users were more likely to say that they enjoy reading and to rate themselves as good readers. Young people who use the school library also tended to hold more positive attitudes towards reading than young people who do not use it.

The majority of the students in Clark's study use the school library because it has books that interest them, offers a friendly space and importantly, they think it will help them do better at school.

Consistent with the above findings, a literacy survey conducted in Australian schools (Masters & Forster, 1997) shows that extensive use of the school library is associated with a difference of as many as 27 points to students' literacy achievements when compared with non-use of the library. It also indicates that students in schools where teachers make greater use of the school library with their classes tend to achieve a higher standard of literacy.

Impacts on information literacy

In addition, school libraries contribute to students' information literacy development, through school library programs and individual assistance to students. Again positive outcomes are related to higher school library staffing; involvement of a qualified teacher-librarian; expenditure on information resources; and integration of information resources and technology. For example: New York State (Small, Shanahan & Stasak, 2010); Pennsylvania (Lance, Rodney, Hamilton-Pennell, 2000) and Wisconsin (Smith, 2006).

Impacts of teacher-librarians

While larger total library staff is often related to student achievement, the research emphasises that there is generally greater impact when the staff includes at least one qualified teacher-librarian. As teachers and information specialists, teacher-librarians make an impact by developing library collections to suit the curriculum, and enabling effective use of the resources in that collection to support learning (Lance & Loertscher, 2005).

An Ontario study associates significant benefits with "exemplary teacher-librarians" who are "leaders in their school and outstanding teachers". Exemplary teacher-librarians project a vision of the library as: "a central hub of the school, prominently placed and a central place

of activity and learning” and “a welcoming place of learning”. They are shown to couple “enthusiasm and ingenuity” and maximise teaching and learning opportunities for students. They achieve this by adapting their approach to suit the styles of individual teachers, working collaboratively and supporting the educational outcomes of the school (Klinger et al., 2009, p. 36).

Similarly, other studies show that qualified teacher-librarians influence student achievement through:

- Provision of library and information literacy programs; and assistance to individual students with research information needs. For example: Indiana (Callison, 2004); Minnesota (Baxter & Smalley, 2003); New York State (Small, Shanahan & Stasak, 2010); Wisconsin (Smith, 2006)
- Collaboration with teachers in curriculum development and teaching; and professional development for teachers in these areas. For example: Illinois (Lance, Rodney & Hamilton-Pennell, 2005); Lance, Rodney & Schwarz, 2009; Todd & Kuhthau, 2005a, 2005b).

The Colorado studies provide particularly compelling evidence that relates presence of a qualified teacher-librarian and reading. Lance and Hofschire (2010) demonstrate that:

- schools that either maintained or gained an endorsed librarian (with teaching qualifications) between 2005 and 2011 tended to: have more students scoring advanced in reading in 2011; and increase their performance more since 2005 than schools that either lost their librarians or never had one.

The researchers comment that findings from the first three Colorado studies are remarkably consistent :

Regardless of how rich or poor a community is, students tend to perform better on reading tests where, and when, their library programs are in the hands of endorsed librarians. Furthermore, at

schools where library programs gain or maintain an endorsed librarian when school budgets get tight, students tend to excel. At schools where library programs lose or never had an endorsed librarian, students suffer as a result (Lance & Hofschire, 2010).

Conversely, Lance and Hofschire's (2011) US-wide study using data from the National Center for Education Statistics (NCES) highlights the detrimental effect of cutting teacher-librarian positions. In many cases, fewer librarians translated to lower—or a slower rise—in standardized reading test scores. Their analysis shows that these lower reading scores are not attributable to cuts in other school staff.

Impacts of school principals

School principals can also contribute to a school library's impact on student achievement, especially when there is a strong collaborative relationship between principal and teacher-librarian (Henri, Hay & Oberg, 2002). The Indiana study (Lance, Rodney & Russell, 2007) found that better-performing schools tend to have principals who value regular meetings with teacher-librarians and collaborative planning and teaching by teachers and teacher-librarians. In Idaho the same researchers (Lance, Rodney & Russell, 2007) found that students are more likely to succeed where principals value strong library programs and can see them having a positive effect.

The Ohio study

The Ohio study (Todd & Kuhlthau, 2005a,b) deserves special mention since it provided a model for important research conducted in Australia (Hay, 2005, 2006). It also adopts a different approach to most of the other reviewed studies. Rather than a statistical assessment, this study provides insights through students' and teachers' eyes about effective school libraries.

The Ohio study reveals that effective school libraries help students with their learning in many ways, both in and out of school. This study considered 39 school libraries that were identified as being 'effective' according to set of criteria validated by a panel of experts. In total 13,123 students in Grades 3 to 12 and 879 teachers completed web-based surveys containing 48 statements about how the school library might help students. The respondents ranked each statement on a five point scale and provided additional comments. The resultant qualitative and quantitative data for students and teachers show that school libraries provide help in two important ways:

- *helps-as-inputs* : where school libraries support students in the learning process
- *helps-as-outcomes*: where school libraries enable meaningful learning outcomes, students' individual and academic achievements

The researchers propose that the school library is “an agent for active learning”. They conclude that an effective school library is “not just informational, but transformational and formational, leading to knowledge creation, knowledge production, knowledge dissemination and knowledge use, as well as the development of information values” (Todd & Kuhlthau, 2005a, p. 85). However, the mere presence of a school library does not guarantee positive impact. As the Ohio study highlights, professionally qualified teacher-librarians who take a shared leadership role with teaching colleagues are essential to effective school libraries (Todd & Kuhlthau, 2005b).

Presenting the evidence: Australian research

Turning to Australian research, the first four studies show similar impacts of school libraries and teacher-librarians on student achievement. The following five studies provide further insights about the state of school libraries and the role of teacher-librarians in Australia.

Impacts of school libraries and teacher-librarians

Student learning through Australian school libraries

This study by Hay (2005, 2006) responded to Lonsdale's (2003) call for Australian research showing the impact of school libraries and teacher-librarians. It replicated the previously mentioned study of Ohio schools (Todd & Kuhlthau, 2005a,b) that examined the dynamics of student learning through effective school libraries.

Hay focused on three hallmarks of an effective school library program: i) supporting learning and teaching; ii) resourcing the curriculum; and iii) providing a learning environment of effective school library programs. The study involved 6718 students in Years 5-12 from 46 metropolitan and regional public schools in Queensland and Victoria along with teaching staff (51 teacher-librarians and 525 teachers). As in Ohio, the participants completed a survey where they provided ranked responses to 48 statements concerning school libraries and teacher-librarians; and they responded to open-ended questions asking students to recount a recent experience in which their school library helped them in learning.

The results of this study closely mirror those of the Ohio study. They confirm that the school library and teacher-librarian help students learn by providing access to a range of current resources and technology to meet students' information and reading needs; and by developing information literacy to construct new knowledge. The students' responses confirm the usefulness of access to a well-resourced library and acknowledge the teacher-librarian's knowledge and expertise as a resource specialist. Hay concludes that an effective school library program managed by a dually qualified, full-time teacher-librarian contributes significantly to student learning.

School libraries futures project

This study (Hay and Todd, 2010) centres around a blog which gathered perspectives on the current status and future potential of libraries in New South Wales government schools. The respondents were predominantly teacher-librarians. Their blog posts indicate a strong conviction that school libraries are an important part of current and future school life for a variety of reasons. They provide extensive examples of teacher-librarian activities intended to support information literacy and learning. However, the posts provide quite limited evidence of impacts or outcomes on student learning, despite 2 direct questions, and respondents' frequent claim that school libraries have a 'definite impact'. The researchers raise concern about this failure to make explicit and measure the relationship between inputs, outputs, actions and student outcomes. They suggest that invisibility of outcomes contributes to a wider educational perspective that school libraries do not make a significant contribution.

School libraries, teacher-librarians and their contribution to student literacy in Gold Coast schools

This recent research (Hughes, 2013) addressed the Australian Government inquiry into school libraries and teacher-librarians (House of Representatives, 2011) which identified an urgent need for current data about provision and staffing of school libraries and their influence on student literacy and learning. It presents an evidenced based snapshot, from the principals' perspective, of 27 school libraries in the Gold Coast area of Australia. Findings broadly consistent with international research show a relationship between lower student to library staff ratios and higher average school literacy test (NAPLAN) scores for reading and writing. In addition, schools that employ a teacher-librarian tend to achieve school NAPLAN scores for respective year levels that are higher than the national mean.

Australian school library surveys

Softlink (2012), a supplier of school library management systems, has conducted surveys of school libraries around Australia in 2010, 2011 and 2013. Each survey shows links between: higher school library funding and higher than national average reading scores; and lower funding and lower school library funding and lower than national average reading scores. In addition, the surveys find a significant positive correlation between the number of school librarians employed and the NAPLAN Reading Literacy results for the school. In these respects, the Softlink findings are similar to findings of the US impact studies discussed earlier.

Softlink reports indicate that school resourcing across Australia is inconsistent, with the majority of schools having received no increase in their budgets or staffing levels in the previous twelve months. It states that major challenges facing Australian school libraries and teacher-librarians are associated with: gaining increased funding; balancing online and physical resource collections; collaborating with teaching staff; and gaining recognition for teacher-librarian knowledge and expertise.

State of school libraries and roles of teacher-librarians in Australia

Australian school library research project: A snapshot of Australian school libraries

This report provides preliminary findings of a project (Combes, 2008) initiated by Australian School Library Association (ASLA), Australian Library and Information Association (ALIA) and Edith Cowan University. The findings provide a bleak picture of Australian school libraries in 2007-8:

- dated library facilities: 55% of school libraries were older than 15 years
- inadequate seating and space for ICT
- limited budgets: 40% of school libraries received less than \$10,000

- limited professional staff: 50% of school libraries have less than 1FTE or no teacher-librarian

Teacher-librarians' professional activity is relatively modest. While over 60% indicate that they teach classes in the library, only 47% consider themselves to be leaders in their school. Further analysis and more recent data are needed to indicate trends and implications of these findings.

Submission to Inquiry into school libraries and teacher librarians in Australian schools

This survey of Australian schools formed the basis of the Children's Book Council of Australia's submission (Kirkland, 2010) to the Australian Government's Inquiry into school libraries and teacher-librarians. The 624 responses provide numerical data about school enrolment, school library budget, staffing and library-based programs. The findings indicate that despite the provision of new library buildings for many schools under the Australian Government's *Building the Education Revolution* (BER) many schools experience library staffing and funding cuts that affect their ability to provide adequate services. However, the findings of this study are somewhat more positive than those reported by Combes (2008). In particular:

- median school budget is \$40,000 and median library budget per student is \$60.00
- the majority (90%) of school libraries employ at least one qualified teacher-librarian
- school libraries provide an extensive range of reading, literacy and information literacy activities, as detailed in the submission
-

Untangling the evidence: Teacher- librarians and evidence based practice

This recent qualitative study (Gillespie, 2013) investigates the lived experience of teacher-librarians as evidence based practitioners. The findings show that evidence-based practice

for teacher-librarians is a holistic experience, which involves both purposeful and accidental evidence gathering and use. Evidence for teacher-librarians takes many forms, including professional knowledge, observations, statistics, informal feedback, and personal reflections. The findings provide a foundation for further research about teacher-librarians' potential roles and contribution; and for an evidence based practice framework for teacher-librarians.

Performing hybridity : Impacts of new technologies on the roles of teacher-librarians

This qualitative study (Mallan, Lundin, Elliott Burns, Massey & Russell, 2002) involved principals and teacher-librarians in 30 Queensland schools. The findings reveal ways in which new technologies impact on teacher-librarians. Recommendations include: frequent review of teacher-librarianship courses to ensure relevance and appropriateness regarding new technologies; review and redefinition of teacher-librarian roles in light of new technologies; stronger links between Australian tertiary institutions offering teacher-librarianship courses, education bodies and professional associations to ensure high levels of research, policy development and service outcomes in teacher-librarianship. Although this study is dated, the recommendations remain relevant since teacher-librarians continue to feel the effects of constantly changing technologies.

Voices of experience: Opportunities to influence creatively the designing of school libraries

In this doctoral study Raylee Elliott Burns (2011) further illustrates the nature of school libraries as social and cultural entities and their potential to connect pedagogy and technology. The study demonstrates benefits of including "multiple voices of experience" when designing a school library, to create a learning space that values the needs of all potential users. Real-life perspectives are presented through the *small stories* of key participants in the designing process: teachers and students, as well as architects and

education facility planners. In this way the study has the potential to inform collaborative school library design projects.

Need for more Australian research-based evidence

This review endorses the Australian Government Inquiry call for current, rigorously conducted research about the relationships between school libraries, teacher-librarians, student learning outcomes and literacy development. As shown here, although there is a large body of international research on this general topic, very little concerns Australian schools. Of the Australian studies outlined above, only four consider impacts (Hay, 2005, 2006); Hay & Todd, 2010; Hughes, 2013; Softlink, 2012). While the underlying concerns are similar between Australia and the US, Canada and US, the contexts are quite different, in terms of socio-cultural conditions, school administration and curriculum. Although these four studies are worthwhile, inevitably they have limitations.

Only Hay (2005, 2006) examines school libraries, teacher-librarians and students' learning outcomes in depth. Hughes (2013) demonstrates links between literacy (NAPLAN) scores and school libraries and teacher-librarians, but only for a relatively small group of schools within a limited area. The Softlink (2012) surveys provide useful statistical data showing links between school library budgets and NAPLAN reading test scores, and number of teacher-librarians employed. However, analysis and discussion of their method and findings is limited. Hay and Todd (2010) offer insights, mainly from teacher-librarians, about the current status and future potential of libraries in New South Wales government schools in the 21st century. However, the impacts are more assumed than demonstrated. Notably, the researchers comment on a lack of systematically gathered evidence to support respondents' claims that school libraries have a 'definite impact' on student learning.

There is a need for current, more geographically extensive research that is inclusive of all school types. The Softlink surveys are conducted annually and distributed nationally. Only Softlink and Hughes include private schools. While Hughes identifies variations in literacy results between governments and private schools, the Softlink findings do not distinguish between different school types. Hay's research is becoming dated, having been conducted in 2004-5. It was also limited to 46 public schools in Victoria and Queensland. Hay and Todd's research is more recent, but only focuses on public schools in New South Wales.

There is also a need for school library research that reflects the socio-cultural diversity of Australian school communities, indigenous perspectives and includes the voices of the various stakeholders. While Hay's research includes students, teachers and teacher-librarians, Hughes presents only principals' views, and the other two studies are librarian-centric. Hay and Todd invited a range of participants, but still the responses were mainly from teacher-librarian.

Using the evidence to advance school libraries

The findings of this literature review contribute evidence and understanding about school libraries and teacher-librarians, which are of potential use to a variety of stakeholders. In particular, they can support teacher-librarian practice and indirectly influence student outcomes. However, unless evidence is used strategically, its value is lost. So this last part of the review considers what the evidence means for school libraries and teacher-librarians; and how it can be used effectively to support teacher-librarian practice and enhance student outcomes.

Demonstrating the difference

This literature review presents compelling evidence that school libraries and teacher-librarians make a difference to student outcomes. It echoes the *Libraries work!* conclusion (2008, p. 10) that:

school libraries can have a positive impact on student achievement— whether such achievement is measured in terms of reading scores, literacy, or learning more generally. A school library program that is adequately staffed, resourced, and funded can lead to higher student achievement regardless of the socioeconomic or educational levels of the community.

But what are the consequences of not gathering or attending to evidence? The Australian experience shows that without evidence of impacts or outcomes, school librarians and teacher-librarians are vulnerable to diminishing budgets in ways described by the International Society for Technology in Education (ISTE, 2010, p.2):

In today's difficult economic times, many school districts have chosen to cut non-classroom teaching positions. These cuts run counter to a large body of research that indicates that a strong library program, staffed by certified school librarians, correlates with significantly greater student achievement. Short-term savings are obliterated by long-term consequences of denying students equitable access to educational resources and instruction provided by the school's information literacy specialists and technologists - school librarians. As schools close their libraries or staff them with non-certificated personnel, students lose access to professionally managed print and electronic resources. At an unprecedented time in history when students require development of complex information literacy and technology skills to succeed, a robust school library program is a prerequisite to success.

Therefore, teacher-librarians need to use evidence strategically to:

- manage the school library
- plan, implement and evaluate and their teaching and library programs
- raise awareness of their potential impact on student learning and literacy

No matter how many 'busy' activities teacher-librarians undertake, the value of their role is most clearly demonstrated by learning and literacy outcomes. By using evidence about the school's learning and teaching needs, teacher-librarians can align their school library vision and objectives with those of the school leadership team (Hay and Foley, 2009; Shannon, 2012). By evaluating their teaching and library programs, teacher-librarians gain further evidence to guide their practice and inform the leadership team. In this way, they can demonstrate their practical impact on educational and social outcomes throughout the school (Ash-Argyle & Shoham, 2012; Everhart, 2006; Hay & Todd, 2010).

Evidence often becomes more useful as a shared resource. By developing collaborative partnerships with teaching colleagues and principals, teacher-librarians can gather and disseminate evidence (Everhart, 2006; Hartzell, 2002; Henri, Hay & Oberg, 2002; Oberg, 2006; Shannon, 2012; Small, Shanahan & Stasak, 2010). Through collaboration, teacher-librarians gain useful information about school issues. Meanwhile teachers and principals will develop understanding of information policy issues affecting teachers and students, such as cybersafety and emerging technologies (Hay and Foley, 2009). Respondents in the Ohio study indicated the benefits of sharing and working with evidence in these ways:

many learning opportunities abound in a school library and it takes effort, commitment and shared leadership on the part of the whole school to realise these opportunities and to identify and celebrate the learning outcomes that flow from them. (Todd & Kuhlthau, 2005b).

Evidence for advocacy

Continuing support for school libraries and advancement of the teacher-librarianship profession requires active evidence-based advocacy. Whether advocating for increased school-based funding or a change of government policy, evidence gives teacher-librarians confidence and credibility since:

advocacy has to be accompanied by demonstrable actions and evidences which give substance and power to advocacy. Advocacy alone without being centred on core work actions and evidences has limited sustainability (Hay and Todd, 2010, p. 28).

Advocacy involves not only assembling evidence but ensuring that it is presented in a suitable format for the intended audience and distributed through reliable channels. Teacher-librarian advocates need to go beyond “preaching to the choir” of fellow professionals since:

Research on school library impacts will have its greatest effect when it reaches the ears of school administrators (school boards, superintendents, principals), other educators (classroom teachers, technology specialists) and parents and students. (Lance & Russell (2004, p. 16).

No matter how passionate and persistent the advocacy, it will have limited potency without ‘actionable evidence’ (Todd, 2009, p. 89) that is systematically gathered, evaluated and applied. This is the essence of evidence-based practice.

Evidence based practice for teacher-librarians

Evidence-based practice enables teacher-librarians to put evidence to work. It supports professional aspiration and continuing viability of school libraries and teacher-librarians. Within the school library field, evidence based practice is becoming well established as an effective approach to support routine and innovative school library activities and demonstrate their outcomes (DiScala & Subramaniam, 2011; Gillespie, 2013; Small, Shanahan & Stasak, 2010; Todd, 2009). While there are variations in thinking and implementation, Ross Todd (2009) proposes a holistic evidence-based practice model that integrates three iterative dimensions: evidence for practice, evidence in practice, and evidence of practice:

This holistic approach to evidence clearly seeks to establish what has changed for learners as a result of inputs, interventions, activities, processes through the school library and work of school librarians, and charting the nature and extent and quality of effect. It is a timely

approach, given the broader context of educational accountability and calls for quality measures and data-driven decision making in which school librarianship operates. (Todd, 2009, p. 93)

Evidence based practitioners have a wide range of tools and methods at their disposal.

Evidence comes in many forms, including statistics, observations and written feedback. If teacher-librarians are alert to evidence, they may come across it purposefully or accidentally (Gillespie, 2013). The research reviewed here provides examples of more formal research approaches, but small-scale in-house projects can also yield valuable context-rich evidence.

In addition to carrying out practical investigations, evidence based practitioners can draw on the literature to research different theoretical models or exemplary case studies.

Recommended Australian resources include:

- case studies of innovative school libraries and practices: Carmichael, 2007; Lee & Twomey, 2011; Mancell, 2005; Ryan, 2004; Whisken, 2012
- capacity building framework for principal and teacher-librarian teams (Hay & Foley, 2009)
- self-reflective School Improvement Framework for resource centres (Ryan, 2012)
- manual for developing school resource centre policies and procedures (ALIA & VCTL, 2007)

In summary, practical strategies for teacher-librarians as evidence based practitioners include:

- using evidence to guide and enhance practice; conduct research to evaluate impacts and outcomes
- supporting advocacy with solid evidence that demonstrates added value, and positive impacts on student learning, literacy and reading
- developing demonstrable objectives for the school library that align with school vision

- maintaining collaborative relationships with teachers and school leadership
- promoting the positive contribution of the school library and teacher-librarian role via multiple internal and external channels, including: performance review interviews; school newsletters; professional and academic journals and conferences that reach school principals, education authorities, parents and the wider community as well as teacher-librarians and library-information specialists; social media
- sharing this literature widely with principals, teachers and teacher-librarian colleagues

Research approaches

This review demonstrates the benefit of applying various research approaches according to the problem and intended outcomes. Most of the reviewed studies provide numerical data, which allow comparison between school sites (for example: Lance & Hofschire, 2012; Hughes, 2013). They identify relationships and describe patterns in the data, focusing on **what** the impacts are. Some studies provide qualitative data which contribute to understanding about the nature of particular impacts (for example: Todd & Kuhlthau, 2005a,b). These data help explain **how** and **why** these impacts occur within particular school libraries; and they enable evaluation of students' learning experience and outcomes (Chan, 2008).

In Australia, the Inquiry report specifically recommends that the Commonwealth Government initiate a nation-wide longitudinal study into:

the links between library programs, literacy (including digital literacy) and student achievement, including their impact on improving outcomes for socioeconomically disadvantaged students. (House of Representatives, 2011, p. xix).

Such a study would require significant funding and collaborative research initiatives.

Potential partners could include universities, government departments, education authorities,

schools and professional associations. State or regional studies would be useful alternative or foundation studies for a national initiative.

Large-scale research of this kind is ideally complemented by smaller school-based studies that provide evidence and examples of good practice in real-life settings. These might take the form of focused qualitative studies using methodologies such as case study, action research, questionnaires and interview. Such methods would suit studies that:

attempt to measure the difference that school libraries and librarians can make in an Australian setting, particularly on more intangible outcomes such as autonomy, confidence and self-esteem, or on particular subgroups, such as non-English-speaking students, indigenous students, low achieving students or those at risk. (Lonsdale, 2003, p. 28)

Recommendations

To teacher-librarians and professional associations we offer this key message:

- use evidence to demonstrate outcomes and support anecdotes: While descriptions of practice are informative, evidence of outcomes is persuasive

To researchers and all stakeholders, we recommend further research of varying scope about relationships between school libraries, teacher-librarians and student learning and literacy development that is:

- current and updated regularly
- inclusive of all school types, government and non-government
- inclusive of a wider range of stakeholders, i.e. students, teachers, teacher-librarians; and especially principals as school-based managers responsible for school library provision and staffing
- focused on positive outcomes rather than inputs
- responsive to socio-cultural diversity

- rigorously and transparently conducted
- reported in refereed journals
- and for Australia, nation-wide, state-wide or regional; especially States that have received limited attention to date (ie. South Australia, Western Australia, Tasmania, Australian Capital Territory and Northern Territory)

Conclusion

In collating the findings of extensive international and Australian research, the review has revealed significant positive relationships between school libraries and teacher-librarians, and students' literacy development and learning outcomes. This array of qualitative and quantitative research provides an evidence base to inform policy and school-based management of school libraries. However, it also highlights the urgent need for further research. Above all, it calls on teacher-librarians to adopt an evidence based approach to enhance professional practice and advocacy.

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Appendix: Overview of reviewed research: Impacts of school libraries, teacher-librarians on literacy and learning

The ticks indicate the variables considered by each study. For example, Lance et al.'s Colorado study (2000) considered the relationship between students' reading test scores and teacher-librarian's collaboration with teachers; while Callison's (2004) Indiana study considered the relationship between students' test scores and teacher-librarian presence and collaboration, school library program and resource and ICT provision.

Acknowledgement: This summary draws on and updates the useful research digests presented in *School Libraries work!* (2008) and the Mansfield University graduate class project (Kachel & Graduate Students, 2011).

International Studies	Indicators of positive impact				Contributors to positive impact									
	Test scores	Learning outcomes	Reading	Info literacy	Qualified TL	Supportive school principal	Collaboration & PD	Library program	Student library visits	EFT library staff	Library budget	Flexible library hours	Collection/Resources/Equipment	Access to ICT/network
US – all states (Lance & Hofschire, 2011)														
Alaska (Lance, Hamilton-Pennell, Rodney, Petersen & Sitter, 1999)	✓			✓	✓									
California (Achterteman, 2008)	✓				✓		✓			✓	✓	✓	✓	✓
Colorado (Lance, Welborn & Hamilton-Pennell, 1993)	✓		✓		✓									
Colorado (Lance, Rodney & Hamilton-Pennell, 2000)	✓		✓				✓							
Colorado (Lance, Francis & Lietzau, 2010)	✓		✓		✓				✓		✓		✓	
Colorado (Lance & Hofschire, 2012)	✓		✓		✓									
Delaware (Todd, 2005)		✓	✓	✓	✓									✓
Florida (Baumbach, 2002)	✓											✓		
Idaho (Lance, Rodney & Schwarz, 2009)			✓		✓	✓	✓					✓		
Illinois (Lance, Rodney & Hamilton-Pennell, 2005)	✓		✓				✓			✓	✓	✓	✓	
Indiana (Callison, 2004)	✓		✓		✓									✓
Indiana (Lance, Rodney & Russell, 2007)	✓				✓	✓	✓	✓		✓	✓		✓	
Iowa (Rodney, Lance & Hamilton-Pennell, 2002)	✓		✓				✓	✓		✓	✓		✓	
Massachusetts (Baughman, 2002)	✓							✓				✓		

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	Test scores	Learning outcomes	Reading	Info literacy	Qualified TL	Supportive school principal	Collaboration & PD	Library program	Student library visits	EFT library staff	Library budget	Flexible library hours	Collection/Resources/Equipment	Access to ICT/network
Michigan (Rodney, Lance & Hamilton-Pennell, 2003)	✓		✓		✓				✓					
Minnesota (Baxter & Smalley, 2003)	✓		✓		✓			✓			✓		✓	
Missouri (Quantitative Resources, LLC, 2003)	✓		✓					✓						✓
New Jersey (Todd, Gordon & Lu, 2010, 2012)		✓	✓	✓	✓	✓	✓	✓						✓
New Mexico (Lance, Rodney, Hamilton-Pennell, 2002)	✓							✓						✓
New York State (Small, Shanahan & Stasak, 2010)	✓	✓		✓	✓		✓	✓						
North Carolina (Burgin, Bracy & Brown, 2003)	✓		✓									✓	✓	
Ohio (Todd & Kuhlthau, 2005 a & b)		✓			✓	✓	✓							✓
Oregon (Lance, Rodney & Hamilton-Pennell, 2001)	✓						✓		✓					
Pennsylvania (Lance, Rodney, Hamilton-Pennell, 2000b)	✓		✓	✓	✓		✓			✓	✓		✓	✓
Pennsylvania (Lance & Schwarz, 2012)	✓		✓		✓					✓	✓		✓	
Texas (Smith, 2001)	✓		✓		✓		✓		✓	✓			✓	✓
Wisconsin (Smith, 2006)	✓		✓	✓	✓		✓			✓				
UK (Clark, 2010)	✓		✓											
UK (Williams & Wavell, 2001)		✓												
Ontario (Klinger et al., 2009)	✓		✓		✓									
Ontario (Ontario Library Association, Queen's University, People for Education, 2006)	✓		✓		✓									
Ontario (People for Education, 2011)				✓	✓									✓

Australian studies	Indicators of positive impact				Contributors to positive impact									
	Test scores	Learning outcomes	Reading & Literacy	Info literacy	Qualified TL	Supportive school principal	Collaboration & PD	Library program	Student library visits	EFT library staff	Library budget	Flexible library hours	Collection/Resources/Equipment	Access to ICT/network
Queensland & Victoria (Hay, 2005, 2006)		✓			✓								✓	
Queensland- Gold Coast (Author, 2013)	✓		✓		✓			✓		✓				
Australia-wide (Softlink, 2012 – covers surveys in 2012, 2011, 2010)	✓		✓							✓	✓			

Australian studies	Indicators of positive impact				Contributors to positive impact									
	Test scores	Learning outcomes	Reading & Literacy	Info literacy	Qualified TL	Supportive school principal	Collaboration & PD	Library program	Student library visits	EFT library staff	Library budget	Flexible library hours	Collection/ Resources/ Equipment	Access to ICT/ network
<p>New South Wales (Hay and Todd, 2010) TL & teacher perspectives on current status & future potential of libraries in NSW government schools. Findings indicate a strong conviction about importance of school libraries; evidence of many TL activities but limited evidence of impacts on student learning</p>														
<p>Australia-wide (Combes, 2008) Provides a snapshot of Australian school library provision and staffing, rather than outputs.</p>														
<p>Australia-wide (Kirkland, 2010) Provides a snapshot of Australian school library provision and staffing, rather than outputs.</p>														
<p>Australia-wide (Gillespie, 2013). Lived experience of teacher-librarians as evidence based practitioners. Findings provide a foundation for further research about teacher-librarians' roles and contribution.</p>														