The Status of Statewide Subscription Databases

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Abstract

This qualitative content analysis presents subscription databases available to school libraries through statewide purchases. The results may help school librarians evaluate grade and subject-area coverage, make comparisons to recommended databases, and note potential suggestions for their states to include in future contracts or for local purchase. All states had similar periodicals' indexing vendors; therefore, this study's focus was online subject reference databases. Results portrayed seventy-nine unique databases across thirty-three states analyzed. Most states studied (81 percent) had a wide variety of online reference subject content; twenty states (61 percent) included one or more general reference databases; seven states with no general reference had a range of titles in health, literary criticism, science, history, biography, and/or art. However, not all content areas were equally represented: examples: health (61 percent), literary criticism (55 percent), science (42 percent), history (39 percent), biography (33 percent), and arts (15 percent). There was disparity in six states with no general reference and gaps in subject coverage. In one state, the only secondary reference tool available was NoveList for readers' advisory. Another state's only secondary subject reference title was HeritageQuest. Additionally, pro/con databases, readers' advisory, and elementary general reference online databases were available in just over half of the states (51 percent); access to general encyclopedias online was offered by only 48 percent of states surveyed.

Literature Review

Growing Demand for Complex Text

The Common Core State Standards (CCSS) have impacted the school curriculum, including information literacy. Rebecca Hill explained that complex texts span the curriculum from math and science to literature and history with subtle, but important, differences among texts from various genres. Six elements comprise a complex text, in the " 'RSVP' definition:

    1) Relationships [are] subtle...among ideas and character
    2) Sophisticated information
    3) Structured organization

4) Style, tone and use of language are often intricate
5) Vocabulary is demanding and highly contextual
6) Purpose of the text is implicit though sometimes ambiguous (ACT Educational Services 2006)" (Hill 2011, 43)

Complex texts expose students to complex ideas and often require multiple readings and scaffolding to develop deeper understanding.

The Common Core State Standards' reading standards specify that text complexity should increase throughout each year so that texts of benchmark grade levels are achieved by the year end. The definition incorporates a "range of text types, with texts selected from a broad range of cultures and periods," to include literature and informational texts such as "exposition, argument, and functional text in the form of personal essays, speeches, opinion pieces, essays about art or literature, biographies, memoirs, journalism, and historical, scientific, technical, or economic accounts (including digital sources)" (NGACBP and CCSSO, 2010, 57).

AASL's Standards for the 21st-Century Learner (2007) have been aligned with the Common Core State Standards (CCSS) through the Crosswalk of the Common Core Standards and the Standards for the 21st-Century Learner (2012) available on the AASL website. For example, in the crosswalk AASL standard 1.1.6 "Read, view, and listen for information presented in any format (e.g., textual, visual, media, digital) in order to make inferences and gather meaning" is matched with Common Core Standard CC.3.R.I.7 "Integration of Knowledge and Ideas: Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur)."

Digital Content Complexity

The above CCSS definition of complex text suggests inclusion of "digital sources" (2010, 57). Hill explored ways in which digital sources for complex text might be identified. Hill described digital content as a sort of textbook that uses nonfiction as a springboard to include links to video and primary source documents. She noted that no textbooks made the CCSS list of "exemplar texts" (2011, 44), and that schools lack the "time and the necessary expertise to identify resources that will enhance their curriculum" (2011, 45). She concluded that school librarians have the necessary skill set to do intelligent online searching, to assess student readers, and "to determine what a valid useful tool is and what is junk" (2011, 45). Thus, the school librarian's unique awareness of resource materials nicely merges with the intersection of technology and literacy in the tasks of building digital curriculum resources such as pathfinders and online guides that organize the best complex texts available in a manner useful for meeting the CCSS.

School librarians commonly access and organize a variety of digital content. Doug Johnson's definition of digital resources provided a concrete outline of seven varieties of sources that may be part of school library collection management through purchase or subscription:

- Online databases such as full-text periodicals (EBSCO, ProQuest, InfoTrac)
- Online reference sources (ABC-CLIO, Facts on File, H.W. Wilson, World Book Online, Encyclopaedia Britannica Online)
- Streaming video collections (United Streaming, PowerMediaPlus)
- Commercial search engines (netTrekker, C.E.R.F)
- E-books (Thomson Gale, NetLibrary, Follett)

- Online tutorial services (Atomic Learning)
- Software licenses for productivity and curriculum programs (Microsoft Office, Inspiration, Accelerated Reader). (2007, 46)

Although this definition expresses librarians' understanding of digital content, the line between digital subscriptions and free Web content is often unclear to teachers, a circumstance which further emphasizes the need for school librarians to be specialists involved in digital content organization. Theresa D. Williams, Bonnie J. Grimble, and Marilyn Irwin (2004) found that if teachers were unfamiliar with subscription content, they resisted requiring students to use it. Williams et al. explored 164 high school teachers' opinions of electronic resources and how these opinions influenced their students' use of electronic resources in the high school library. These researchers found that if teachers were more familiar with library electronic databases, they were more likely to direct their students to use electronic databases instead of the Web. Accordingly, teachers encouraged use of the Web first if they felt more comfortable with the Web than they did with the databases, even though respondents said they knew databases had more reliable and focused information. These teachers said they found the Web to be "faster, more current, easier to use, and greater in scope of information than electronic databases."

Williams et al. concluded by calling upon school librarians to design instruction for teachers to help them figure out when and how to direct their students to use electronic resources; to share specifics of how sources differ in scope, currency of information, credibility, reliability, and ease of use; to deliver personal instruction to teachers rather than rely on online tutorials; and to assess database holdings to ensure they meet curricular needs.

Whereas Williams et al. found limitations in teachers' expectations for digital content and an overreliance on the free Web, Bettina Fabos studied the actual Web content itself and observed how students navigated the commercial environment of the Web, an area of research she said had not yet be adequately studied, in contrast to the plethora of studies about the process of teaching with technology. From a communications-studies perspective, she interviewed and observed elementary, middle, and high school librarians, teachers, and students in one large school district in the Midwest. She learned that despite the conscious efforts of school librarians and collaborating teachers, their diligent instruction in Boolean and advanced searching did not deter students from using only the first page or two of the search results list, which "contained redundant and heavily commercialized Web content—not 'the whole Web,' as students supposed" (2002, 60). Moreover, teaching webpage-evaluation skills was "pointless in helping students determine the legitimacy of polished corporate sites that are hugely invested in having an online presence, in appealing to target audiences, and in seeming as credible and trustworthy as possible" (2002, 60). She concluded most students were "more comfortable wading through ads, shopping pages, and redundant sites than they were wading through more comprehensive texts on particular topics" (2002, 58).

Likewise, Lucy Holman Rector's content analysis of Wikipedia articles in comparison with comparable ones in encyclopedias used empirical data to support concerns about Wikipedia's accuracy. Wikipedia was less accurate (80 percent compared with 95–96 percent for other reference sources) and had troubling quotations and "verbatim text from other sources with no citations" (2008, 7). In spite of this research, however, librarians reported elementary students (Fontichiaro and Harvey 2010) through college scholars (East 2010) have relied increasingly on Wikipedia for their research.

The above reports of inconsistent use and quality of online sources further validated Hill's (2011) call for school librarians' involvement in identification of digital content for helping students meet the CCSS. Finally, the following CCSS and AASL standards resonate with research about the commercialization and political influence on the free Web. CCSS standard CC.8.SL.2 states students should "analyze the purpose of information presented in diverse media and formats (e.g., visually, quantitatively, orally) and evaluate the motives (e.g., social, commercial, political) behind its presentation" (NGACBP and CCSSO 2010, 49). Likewise AASL standard 1.3.2 touts student responsibility to "seek divergent perspectives during information gathering and assessment" (AASL 2007, 4). Fabos argued that however well-intentioned educators may be about having students evaluate the motives and bias behind information, the commercialized Web prohibits student researchers from simply gathering sources with a range of perspectives. She concluded:

> *...students and researchers looking for noncommercial, or at least nonmainstream, content, trying to gather a wide range of information containing as many disparate viewpoints as possible, or trying to access research that is controversial will not be successful, ultimately, in a research environment controlled by commercial interests. (2005, 521)*

Thus, school librarians will benefit from in-depth knowledge of statewide subscription databases of their own and other states as they consider ways to identify and organize content and to increase text complexity to support learning.

Libraries Shifting from Print to Digital

Surveys have shown that school libraries increasingly rely on funding outside the library, especially for periodicals and technology materials (Farmer 2011), and 55 percent expect budget lines will shift (AASL 2010). The national survey School Libraries Count! AASL's National Longitudinal Survey of School Library Programs: Supplemental Report on Digital Content and Resources tracked movement of print to digital contents (AASL 2010). Although 72 percent of respondents "moved less than five percent of previous hard copy materials to digital content," 4 percent of schools "report moving 25 percent or more of their materials to digital content." Most of those reporting extensive reliance on digital content were high schools and schools with over 2,000 enrolled. Elementary schools and other schools with enrollment of less than 999 students were the least likely to have moved their materials to digital formats.

Unfortunately, according to School Library Journal's Spending Survey, one-third of school libraries showed decreased budgets, and half stayed the same; only an eighth showed an increase. High schools were hardest hit with 40 percent showing decreased budgets; high schools were also most likely to have out-of-date collections (Farmer 2011).

Digital Collection Development

The process of reference-collection management for a school library has always been challenging. The process involves weighing the quality and scope of similar subject reference tools across publishers to select those that best meet curricular needs, while staying within the budget. However recent trends have further complicated the process.

One complicating trend is the merging of reference content into database groupings and providing content in seemingly duplicative ways. For example, global-issues information may be purchased as individual e-books available in a cross-searchable database platform, as a global-issues mega-database, and/or as an interactive portal for global issues—all for the same age level, and all from the same vendor. Mary Ellen Quinn, editor of Booklist's Reference Books Bulletin, described this confusion over these trends in the subscription database model: "There seems to be much less emphasis on creating content than on serving up existing content in different ways" (2011). Another confusing factor is the frequency of buyouts and mergers of major reference publishers, a circumstance that eventually blurs the line between publisher and vendor.

Another trend in reference-collection management is the shifting of at least a portion of collection purchasing to statewide agencies. In 2011, School Library Journal's Spending Survey showed that two-thirds of all school libraries reported statewide access to digital resources. Additionally, a quarter of elementary and middle school libraries and just over half of high school libraries purchased digital sources beyond statewide or district purchases. Survey respondents' spending on "Web-based resources" averaged $3,153 (median of $238), which was 27 percent of the average total budget of $11,384; however, spending on "Web-based resources" was only 3 percent of the median total budget of $7,350 (Farmer 2011, 43) due to the disparity in the budgets. "More than 70 digital products, such as reference titles, database aggregators, and ebooks...were identified by respondents as part of their collections—or subscribed by them" (Farmer 2011, 45). Suppliers of reference titles most frequently mentioned were (in alphabetical order) EBSCO, Gale, ProQuest, SIRS, InfoTrac, JSTOR, Project MUSE, and netTrekker.

School Libraries Count! showed similar trends in schools' digital subscriptions: "nearly one in two schools (49%) report that their libraries have more than five database subscriptions. This trend is stronger among schools with high enrollment, private schools, the Northeast, Midwest and areas with high poverty" (AASL 2010, 14).

Nancy Everhart, Melissa Johnston, and Marcia A. Mardis also showed a need for digital-resource collection management in their survey of National Board Certified school librarians' technology leadership. While 76 percent of respondents were involved in collection management for digital resources and 72 percent ensured that students could access these resources beyond school, librarians were less likely to apply evaluative criteria in selection of digital resources (64 percent) or to assess the "effectiveness of digital resources" (56 percent) (2011). Thus, the authors recommended school librarians continue to develop leadership in "processes to systematically collect, manage, and assess the effectiveness of digital resources" (2011).

Summary

In summary, the growing need for complex text identified in the CCSS coincides with an era of increased demand for digital content and potential abandonment of traditional textbooks (Hill 2011). Yet, teachers are constrained for time to develop needed curricular resources. Further, teachers often lack knowledge of electronic databases, a circumstance which increases their likelihood to consent to students citing less-reliable sources from the free Web (Williams, Grimble, and Irwin 2004). The commercialization and political messages on the Web prevent students from being successful when purposely seeking out multiple perspectives (Fabos 2002, 2005). Library budgets are decreasing, and collections are shifting toward more digital content (AASL 2010; Farmer 2011). As a result, school librarians must take on new roles in technology

leadership related to digital-collection management and organization (Everhart, Johnston, and Mardis 2011; Hill 2011). The context of school libraries shows a need for school librarians to be immersed in understanding of the CCSS, collaborative practice, and the Standards for the 21st-Century Learner. Additionally, school librarians need to be vigilant in their understanding of current digital content to support these standards.

Despite these studies pointing to evidence for the need to integrate quality digital resources in the school curricula, empirical research about the contents of those library digital resources—especially online reference and databases that are dividing and combining content in new and sometimes duplicative and confusing ways—is lacking. This study aims to shed light on the contents of those statewide subscription databases and online reference materials.

Method

This qualitative content analysis responds to the overarching research question: What subscription databases and online reference tools should be considered in collection-management decisions at the local school library level, beyond content already provided to schools through statewide purchasing? Specifically, this study examines and portrays data from thirty-three states to help librarians 1) comprehend the status of statewide subscription databases; 2) evaluate the range of grade levels and subject areas covered; and 3) compare state subscriptions to recommended lists of databases.

Qualitative content analysis is explained in "Content Analysis: A Flexible Methodology" by Marilyn Domas White and Emily E. Marsh. Consistent with their depiction, this study makes inferences from a cohesive set of texts within a context. In this case, the texts are the webpages that list each state's statewide subscription library databases, and the context is the relationship to a local school library's process for reference-collection management. The text and context are "logically independent" (2006, 27), requiring an analytical construct or inference to connect them—in this case, the curricular use of digital content for supporting K–12 students' research and learning of complex text (Hill 2011). Thus, the analysis of statewide databases is useful for collection management, which is driven by the local school curriculum. Understanding the subject and grade-level contents of databases that are widely used nationwide and of recommended databases is important for making collection-management decisions to support the curriculum.

White and Marsh (2006) offered selected examples of content analysis in library and information science research, which included prior analyses of webpages for purposes of classifying the contents. Lucy Holman Rector (2007) and Leila June Rod-Welch (2012) have also employed content analysis to analyze Web contents.

In early 2011, in response to a request she had from a U.S. Senator's staffer, a member of the AASL Forum asked which other states were providing access to online databases. Forum members responded, followed by AASL's compiling the list of thirty-six states' links in the Informal Survey on the Availability of Statewide Databases (Habley 2011). A total of thirty-eight states reported the presence of statewide database purchasing. (In addition to the thirty-six initial replies, school librarians from two more states reported links to me during an Exploratorium table session at the 2011 AASL fall conference.) Responses from five of the states were unusable due to a broken link or the inability to even view the list of database titles

without authenticating with a login and password. It is also notable that no reply was received from eight states, and respondents from four states replied that they had no statewide databases. (Three states had recently lost them due to budget cuts, and a California respondent said an attempt to institute a program had been unsuccessful.) Thus, thirty-three usable states' webpage links to statewide subscription databases were available for this research; the number of databases counted per state ranged from one to thirty-four (see **Appendix A**).

Data collection and analysis were completed between October 2011 and February 2012, with all states' links visited a minimum of two times. Initial coding began with a table of popular database vendors and several well-known popular databases. As states' database lists were viewed, more databases were added to the initial list. Tallies of databases by state were maintained in an Excel spreadsheet.

Lists of recommended databases were gathered from the following online databases: Children's Core Collection, Middle and Junior High School Core, and the Senior High Core Collection (H.W. Wilson 2007, 2009, 2010); the Nonbook Materials Core Collection (H.W. Wilson 2011). Other lists consulted were School Library Journal's lists of top databases (Brisco 2008, 2009, 2010) and a Library Journal "best databases" feature (Guz et al. 2011). These database awards notations and product reviews were integrated into the data analysis.

Finally, to supplement reviews or for products on the list that were not included in a recommended or award list, product descriptions were gathered from vendor websites.

Thus, this study triangulates data from state database lists, core recommended lists, and library periodicals' awards lists, and from library vendor websites.

Limitations

This research has several limitations. First, this discussion includes only those databases purchased statewide and does not attempt to include purchases at the local level. A second limitation is that not all fifty states' statewide subscriptions were included; only those who responded to the AASL Forum by providing a link were located and analyzed for this study. A third limitation is that the recommended core lists of databases were undergoing some revision during the time of this study. Over the past few years, H.W. Wilson, publisher of the Children's Core Collection, Middle and Junior High School Core, and the Senior High Core Collection, has been gradually phasing out inclusion of recommended databases in these long-standing professional collection-management tools. H.W. Wilson has created a new database Nonbook Materials Core Collection to include recommendations of non-book materials for all levels of libraries. Thus, during this study all four core lists were cross-checked for recommended electronic resources. In July 2011 H.W. Wilson merged with EBSCO Publishing.

Results

This qualitative content analysis asked: What subscription databases and online reference tools should be considered in collection-management decisions at the local school library level, beyond content already provided to schools through statewide purchasing? Three sections below outline the results of data analysis, which included three stages: 1) "Status of Statewide Subscription Databases" showed a composite of state subscriptions databases; 2) "Grade Levels

and Subject Coverage" categorized databases in ways applicable to school curricula; and 3) "Comparison to Recommended Lists" aligned statewide databases with those reviewers highly recommended for youth.

1: Status of Statewide Subscription Databases

I condensed data representing hundreds of subscriptions across thirty-three states into a list of seventy-nine databases useful for schools. **Appendix A** is the complete data set of the seventy-nine databases categorized for this study.

Coding began with a table containing a list of popular databases; notes were made to indicate which states made each database available to students within the state.

An early decision was made to exclude from the counts databases that were primarily indexes to periodicals. The rationale was that all thirty-three states analyzed provided access to periodicals indexing from one or more of three well-known periodicals vendors: twenty-one EBSCO, seventeen Gale, nine ProQuest. Twelve states' lists included two or more indexes to periodicals. Moreover, the purpose of this study was to analyze states' access to subject-specific online reference contents, not to compare the quality or details of the many periodicals-indexing tools provided by each vendor. If a database included both periodicals and reference content, the database was kept in the count only if the vendor's description indicated greater prominence to the online reference content (example: Gale's General Reference Center Gold), or if the focus was on historical or ethnic news (example: ProQuest's Ethnic Newswatch).

This research also excluded those electronic subscriptions that were primarily for professional use (examples: Books in Print and Book Review Index).

Public-domain online resources such as state government or historical archives were also excluded from the counts because the research purpose centered upon collection management, and free content does not require a purchasing decision.

The initial list of popular databases expanded in three ways and contracted in one way during the research. First, the list expanded as more states' links were visited and new databases were encountered. Second, the list expanded as I refined the definitions of the online reference tools using descriptions from reviews and publishers' websites. For example, Health and Wellness Resource Center was initially considered primarily a periodical database; however, an investigation of its description revealed it to be an online reference source with full-text contents from the Gale Encyclopedia of Medicine, the U. X. L. medical encyclopedia Sick!, and many additional reference titles. Third, the list expanded as I encountered database contents broken into sub-databases. For example, the database Literature Resources from Gale includes contents from other Gale databases that are also available separately, such as Contemporary Authors and Literary Criticism Online. These separately available databases were listed separately in the coding because a state may have had one or more of them. Finally, the list contracted as I discovered databases such as World Data Analyst and Annals of American History that were listed separately by some states but were available within every subscription to Britannica Online School Edition. Additionally, all subscriptions to Grolier Online included three versions of the encyclopedia, and Lands and Peoples, America the Beautiful, Amazing Animals, and New Book of Popular Science. In these cases, the list was compacted, and those integrated resources were placed under the umbrella of broader titles and were removed from the coding.

Table 1 shows the ten databases found in ten or more states, in order of prevalence. Additionally, thirty-five databases (44 percent) were found in five or more states, twenty-three (29 percent) were in two to four states, and twenty-one (26 percent) were in only one state (see **Appendix A**).

Table 1. Databases in Ten or More States in Order of Prevalence

Database Title [Award (grades)*]	**Total States**	**Percent States**
Gale Virtual Reference Library [MC (6-12)]	15	46
EBSCO-Funk & Wagnalls New Encyclopedia (all)	14	42
MedlinePlus [MC, SC (7-12)]	14	42
EBSCO-Book Collection: Nonfiction [NBC (4-12)]	12	36
EBSCO-GreenFILE (sec)	12	36
EBSCO-NoveList [MC, SC, NBC (9-12)]	12	36
ProQuest-HeritageQuest (sec)	11	33
Britannica Online School Edition [NBC, SLJ'09 (K-12)]	10	30
EBSCO-Auto Repair Reference Center [LJ'11 (sec)]	10	30
Gale-Health & Wellness Resource Ctr. [NBC (9-12)]	10	30

*Grade ranges, e.g., (3-12), are from the core collections; publisher indications are represented as (all) or (sec). CC=Children's Core; MC=Middle School and Junior High Core; SC=Senior High Core; NBC=Nonbook Materials Core; SLJ=School Library Journal award; LJ =Library Journal award.

States were generally independent and had a wide variety in their selections. No states had identical selections. The highest percent of states having the same database was less than half (46 percent). Among the most popular, Gale Virtual Reference Library offers a database format for searching reference e-book contents. Libraries may vary widely in depth and breadth of e-books; no attempt was made to assess the number of e-book titles for each state. Also prevalent, Funk and Wagnalls was often included with states' EBSCO periodicals indexing.

Notably, most statewide database subscriptions were provided through a state library consortium. Only four states (Delaware, Iowa, North Carolina, and Oregon) had consortiums composed of educational organizations. Reflective of the overall public structure, MedlinePlus, GreenFILE, and Health and Wellness Resource Center meet the need for authoritative information about health and the environment. Other popular topics for public libraries include genealogical research (HeritageQuest) and automotive repair and vehicle ownership information (see **Table 1**).

Fiction and nonfiction interests both made appearances in the list of ten most popular reference databases. Book Collection Nonfiction is a searchable database of nonfiction book contents for

grades 4 through 12 in core subject areas; this database includes popular series from a variety of publishers. NoveList, and Books and Authors are readers' advisory tools for fiction readers.

Britannica Online School Edition was the most popular of the three comprehensive encyclopedias purchased by 30 percent of states. Like World Book and Grolier Online, Britannica includes multiple levels of encyclopedias within the product. Preschool through primary grades use The Learning Zone, and versions are available for elementary, middle, and high school/academic students. Britannica Online School Edition also includes Merriam-Webster Unabridged Dictionary, Annals of America, an atlas, and other reference tools.

2: Grade Levels and Subject Coverage

This phase of the research categorized databases in ways applicable to school curricula by grade-level and subject-area coverage. Of the seventy-nine databases analyzed, twenty-two (28 percent) included elementary-level content, usually in combination with secondary content; two sources (BookFlix and NoveList K–8) were specifically for the elementary level.

Coverage of subject areas was determined using reviews and/or publisher descriptions. Subject determinations were somewhat ambiguous when a database included content for multiple subjects. Based upon the number of items in any one category and the intended curricular use, decisions were made about which subject codes to split into subcategories. For example, databases covering virtually all subject areas were designated simply "all." This coding category was subdivided several times to group those resources that were encyclopedias, biography, images, streaming video, general-subject reference, and issues or perspectives tools.

Table 2. Databases with Content for Elementary Level and Up

Subject	Database Title [Award (grades)*]	Total States	Unique States
all	Annenberg Media (all)	1	
all	LEARN360 (all)	1	
all	Soundzabound (all)	2	
all	World Almanac Online [SC (6-12)]	6	
all-books	EBSCO-Book Collection: Nonfiction [NBC (4-12)]	12	
all-encyclopedia	EBSCO-Funk & Wagnalls New Encyclopedia (all)	14	
all-encyclopedia	Britannica Online School Edition [NBC, SLJ'09 (K-12)]	10	
all-encyclopedia	Grolier Online [CC, MC, SC (3-12)]	5	**17** (52%)
all-encyclopedia	World Book Online [CC, MC, SC (all)]	6	
all-gen reference	Gale-Junior Reference Collection [CC, MC, NBC (K-8)]	4	
all-images	AP Images (Associated Press) (all)	2	

all-images	iCLIPART For Schools (all)	1	
all-images	OCLC-CAMIO (all)	4	
all-issues	ProQuest-SIRS Discoverer [CC, MC, NBC (3-9)]	9	
for language	Mango Languages (all)	4	
language arts	BookFlix [SLJ'08 (PK-3)]	2	
language arts	EBSCO-NoveList K-8 [CC, MC, NBC, SLJ'09 (K-8)]	7	
language arts	Fiction Connection (Bowker) (all)	1	
science	AccuWeather (all)	1	
social studies	ProQuest-CultureGrams (all)	5	
social studies	ProQuest-SIRS Interactive Citizenship [MC, SC (4-12)]	1	
technical	Atomic Learning [SLJ'08 (all)]	1	

*Grade ranges, e.g., (3-12), are from the core collections; publisher indications are represented as (all) or (sec). CC=Children's Core; MC=Middle School and Junior High Core; SC=Senior High Core; NBC=Nonbook Materials Core; SLJ=School Library Journal award; LJ =Library Journal award.

Table 2 shows databases that include content for the elementary-age level and indicates subject areas of coverage. More important than the number of databases having elementary content is the number of states that provide elementary content statewide. The unique states column in table 2 shows how many different states had one or more of the sources grouped in the merged category. For example, just over half of the states (seventeen) had comprehensive subject coverage for the elementary level. Most of these (sixteen) had one of the three encyclopedia packages, while only four states had the Junior Reference Collection that includes contents such as countries, science, authors, and biographical and multicultural information. Three states were well covered, overlapping junior reference content with the encyclopedias. The Book Collection Nonfiction also provided elementary content in twelve states, eight of which did not have other general-reference resources or online encyclopedias. SIRS Discoverer (nine states) and CultureGrams (five states) also supplemented reference content; however, in all but one case, SIRS Discoverer and CultureGrams supplemented content in states already having other elementary-level reference tools. Unfortunately, six of the thirty-three states analyzed (18 percent) had little or no content for elementary students.

In addition to sources for all grade levels included in **Table 2**, secondary-level databases for general reference and social studies topics are in **Table 3**. For a statewide subscription service, perhaps one of the most important goals is to provide subject coverage for a wide variety of general-reference areas. The most prevalent general-reference digital tools adopted in twenty states (61 percent) included Gale Virtual Reference Library, Discovering Collection, General Reference Center Gold, Student Resources in Context, and Oxford Reference Online-Premium. Databases for pro/con issues research were found in seventeen states (52 percent). History sources (thirteen states) and biographical research sources (eleven states) were less common.

Two states had ten databases in this secondary-level category, and seven had five or more. On the lower end of the spectrum, however, eight states had none of the general-reference databases appropriate for secondary students. Moreover, three of those states also had no specific databases from the categories of issues, social studies, or biography. Nine states had specific databases; and nine states had two. For example, one of the states had only Biography Reference Bank; one had only History Reference Center, and another had only Points of View.

Table 3. Databases with Secondary-Level Content in Reference and Social Studies

Subject	Database Title [Award (grades)*]	Total States	Unique States
all	Infobase-Ferguson's Career Guidance Ctr.[NBC (9-12)]	1	
all	Oxford English Dictionary [NBC (9-12)]	3	
all	Reference USA (sec)	3	
all-biography	EBSCO-Biography Reference Bank [MC, SC (7-12)]	5	**11** (33%)
all-biography	Gale-Biography in Context [MC, NBC (8-12)]	6	
all-biography	ProQuest-African American Biographical Database (sec)	1	
all-gen reference	Gale Virtual Reference Library [MC (6-12)]	15	**20** (61%)
all-gen reference	Gale-Discovering Collection [MC (6-12)]	6	
all-gen reference	Gale-General Reference Center Gold (sec)	8	
all-gen reference	Gale-Student Resources in Context (sec)	1	
all-gen reference	Oxford Reference Online-Premium Collection. [SC (11-12)]	3	
all-issues	CQ Researcher (Congressional Quarterly)[LJ'11 (sec)]	1	**17** (52%)
all-issues	EBSCO-Points of View [NBC (11-12)]	7	
all-issues	Gale-Global Issues in Context [NBC, SLJ'09 (7-12)]	1	
all-issues	Gale-Opposing Viewpoints in Context [MC, SC (sec)]	5	
all-issues	Infobase-Issues and Controversies (sec)	2	
all-issues	Infobase-The Reference Suite@facts.com [MC (6-12)]	1	
all-issues	ProQuest-SIRS Issues Researcher [NBC (7-12)]	6	
all-issues	ProQuest-SIRS Knowledge	4	

	Source [NBC (4-12)]		
social studies	EBSCO-History Reference Center [NBC (4-12)	8	**13** (39%)
social studies	Gale-U.S. History in Context (sec)	5	
social studies	Gale-World History in Context (sec)	5	
social studies	ProQuest-History Study Center (sec)	2	
social studies	Infobase-World News Digest [NBC (7-12)]	2	**4** (12%)
social studies	ProQuest - Ethnic NewsWatch [NBC (7-12)]	2	
social studies	ProQuest-HeritageQuest (sec)	11	
social studies	ProQuest-Historic Map Works (sec)	1	
social studies	ProQuest-History Makers (sec)	1	

*Grade ranges, e.g., (3-12), are from the core collections; publisher indications are represented as (all) or (sec). CC=Children's Core; MC=Middle School and Junior High Core; SC=Senior High Core; NBC=Nonbook Materials Core; SLJ=School Library Journal award; LJ =Library Journal award.

Table 4 shows databases with secondary-level content in arts, language arts, science, and health areas. The most prevalent databases were NoveList and GreenFILE (twelve states each) and Health and Wellness Resource Center, and Auto Repair Reference Center (ten states each). On the opposite end of the spectrum, the arts were the least represented in the database holdings.

Table 4. Databases with Secondary-Level Content in Arts and Sciences

Subject	Database Title [Award (grades)*]	Total States	Unique States
arts	Art Collection [LJ'11 (sec)]	1	**5** (15%)
arts	Oxford Art Online [LJ'11 (sec)]	1	
arts	ProQuest-SIRS Renaissance (sec)	3	
language arts-books	EBSCO-NoveList [MC, SC, NBC (9-12)]	12	**17** (52%)
language arts-books	Gale-Books & Authors [NBC, SLJ'09 (9-12)]	7	
language arts-lit	EBSCO-Literary Reference Center [LJ'11 (sec)]	6	**18** (55%)
language arts-lit	Gale-Contemporary Authors [SC (11-12)]	3	
language arts-lit	Gale-Literary Criticism Online [SC (11-12)]	3	
language	Gale-Literature Resource Center	5	

arts-lit	(sec)		
language arts-lit	Gale-Literature Resources from Gale (sec)	4	
language arts-lit	Gale-LitFinder for Schools [MC (6-12)]	9	
language arts-lit	Gale-Scribner's Writers Online (sec)	5	
language arts-lit	Gale-Twayne's Author Series (sec)	5	
language arts-lit	Literature Online from Chadwyck Healy (sec)	2	
language arts-lit	ProQuest-Learning Literature (sec)	1	
science	EBSCO Animals [NBC (6-9)]	7	
science	Gale-Grzimeks [MC, SC (6-12)]	2	
science	EBSCO-Science Reference Ctr. [MC, SC, NBC (7-12)]	6	**14** (42%)
science	Gale-Science In Context [SC (9-12)]	5	
science	Infobase-Science Online [MC, SC, NBC (6-12)]	2	
science	Infobase-Today's Science [MC (6-12)]	2	
science/s. studies	EBSCO-GreenFILE (sec)	12	**13** (39%)
science/s. studies	Gale-GREENR [NBC (10-12)]	1	
science-health	Gale-Health & Wellness Resource Ctr. [NBC (9-12)]	10	**20** (61%)
science-health	MedlinePlus [MC, SC (7-12)]	14	
science-health	PubMed (sec)	3	
science-health	Teen Health & Wellness [NBC, SLJ'08 (9-12)]	1	
technical	EBSCO-Auto Repair Reference Center [LJ'11 (sec)]	10	
technical	Hoover's Company Profiles (sec)	1	

*Grade ranges, e.g., (3-12), are from the core collections; publisher indications are represented as (all) or (sec). CC=Children's Core; MC=Middle School and Junior High Core; SC=Senior High Core; NBC=Nonbook Materials Core; SLJ=School Library Journal award; LJ =Library Journal award.

The unique states tally shows how many of the similar topical databases were held in different states. Health and wellness sources were most prevalent among online sources provided by twenty states (61 percent). Second most prevalent were online sources for literary essays and criticism, provided by eighteen states (55 percent). Readers' advisory sources trailed slightly: seventeen states (52 percent). General science databases were found in only fourteen unique states (42 percent).

One state with the greatest content in the arts and sciences had fourteen different databases in these categories. Another state had slightly fewer with ten databases in these areas. Another twelve states had five or more of these databases. On the lower end of the spectrum, however, four states had no databases in the arts and sciences category, and six states had only one or two of these databases. For example, one state had both Health and Wellness Resource Center, and Teen Health and Wellness, but had no content in literary criticism or science content areas.

3: Comparison to Recommended and Awards Lists

This phase of the research aligned statewide databases with highly recommended and awards lists of databases for youth that include content on social issues, social studies, or biographical content. First, awards lists were aligned with statewide databases, noting both the percent of databases available statewide that have won awards, as well as the percent of awards databases represented in the state subscriptions. Additionally, I noted which recommended databases were not included in any of the statewide subscriptions.

Children's Core Collection, Middle and Junior High School Core, and the Senior High Core (H.W. Wilson 2007, 2009, 2010) were searched simultaneously using the Recommendation Level limiter of "Core Collection," which is the main level, more inclusive than the "Most Highly Recommended List." The search in the Wilson Web format was limited simply by document type, "Electronic resources;" this search produced 168 records. Of those, fifty-one were recommended electronic database subscription sources for K–12 students; others that were professional tools, free websites, and primarily periodicals indexes were not used. The Nonbook Materials Core Collection (2011) was searched separately using the same technique; this search produced seventy records for student databases. School Library Journal's top database lists (Brisco 2008, 2009, 2010) and a Library Journal "best databases" feature (Guz et al. 2011) were also consulted to align award-winning databases with the statewide subscription list.

The combined core collections had a total of ninety-seven unique recommended databases. School Library Journal (SLJ) added sixteen award-winning databases, after removal of databases that were duplicated in the core collections. Although Library Journal's "best" databases were noted in **Appendix A**, not all were at the K–12 levels; the LJ-recommended databases not suitable for K–12 researchers were not included in the combined total of eighty-eight recommended/award-winning databases for students. This study showed that forty-six (58 percent) of the seventy-nine state subscription databases were databases also recognized in the core collections or SLJ awards. Recommended core collections databases that were not in any state subscriptions included fifty-one titles such as American Government, American Indian Experience, Daily Life in America (all from ABC-CLIO), Columbia Granger's Poetry Database (EBSCO), Something about the Author (Gale), Bloom's Literary Reference Online (Infobase), and PebbleGo (Capstone).

Summary and Conclusions

This qualitative content analysis presented a national representation of subscription databases and online reference sources available to school libraries through statewide purchases. The results may help school librarians comprehend the status of statewide purchases, evaluate grade-level and subject-area coverage, compare available databases with recommended databases on

awards lists, and note potential suggestions for their states to include in future contracts or for local purchase.

The national representation of subscription databases included hundreds of subscriptions throughout the thirty-three states analyzed ranging from one to thirty-four databases per state. Overall, seventy-nine unique databases were identified across the states; these databases were categorized by grade level and subject usage for the K–12 curricula. The states' databases were aligned with a set of eighty-eight databases on recommended and awards lists. All states in this study had periodicals indexing through one or more of three dominant vendors, so this analysis focused instead on the online reference content provided through databases for generalized reference and resources in specific areas of curricula.

Perhaps one of the most important functions of a statewide subscription service is to provide subject coverage for a wide variety of general-reference areas. Most states (twenty-seven of the thirty-three or 81 percent of those analyzed) had a wide variety of online reference subject content to support secondary curricular areas. Twenty states (61 percent) included one or more general-reference online databases such as Discovering Collection or Oxford Reference Online: Premium Collection. However, those were not the only states to cover diverse subject topics with online reference. Seven of the states with no general reference online instead purchased a range of individual-subject online reference titles in health, literary criticism, science, history, biography, and/or art. Moreover, among those states that included a variety of subject-specific resources, not all content areas were treated equally: health (twenty states or 61 percent), literary criticism (eighteen states or 55 percent), comprehensive science (fourteen states or 42 percent), history (thirteen states or 39 percent), biography (eleven states or 33 percent), and arts (five states or 15 percent). More states may need to add sources in these lesser-represented areas of art, biographical reference, history, and science.

The disparity was evident, however, in six of the states with no general reference online. Obvious gaps were evident in these states' online reference coverage. In one state, the only secondary reference tool available was the readers' advisory resource NoveList. Another state's only secondary-subject reference title was the genealogical-research resource HeritageQuest.

Beyond the need to have a variety of subject-specific online reference as discussed above, it is equally important for all states to have databases for students to use for assignments to research an issue or controversy. A variety of pro/con type of databases are available, and given the nature of students' inquiry research and the commercialization of the Web that Fabos (2002, 2005) said prevented students from finding multiple perspectives on free sites, it is essential for school librarians to provide access to as many of the issues-related databases as possible. Yet, only seventeen states (52 percent) had one or more databases devoted primarily to issues and controversies.

Another area of need in every school library is readers' advisory. However, only seventeen states (52 percent) had online reference for matching secondary readers with fiction books, and only seven had this support for elementary students.

At the elementary level, just over half of the states (seventeen) had comprehensive subject coverage, which at the elementary level included online encyclopedias. Most of these (sixteen) had one of the three encyclopedia packages, while only four states had the Junior Reference

Collection that included contents such as information about countries, science, and authors, and biographical and multicultural information. Nine states (27 percent) provided elementary-level resources on issues, and elementary nonfiction books were included in twelve states (36 percent). CultureGrams (five states) also supplemented reference content. In contrast to the states that made available the above sources, six of the thirty-three states analyzed (18 percent), unfortunately, had little or no content for elementary students.

Finally, these findings and conclusions have implications for school librarians considering collection-management decisions. Potential suggestions for their states to include in future contracts or for local purchase may be identified using **Tables 2 through 4.** These tables note database groupings in a variety of grade-level and content-subject areas. For example, a school librarian may be seeking databases for these diverse subject areas: science, social studies, pro/con issues, literary criticism, readers' advisory, the arts, health, technical areas, general encyclopedias, nonfiction and reference e-books, biography, foreign language, images, video, sounds, and more. Using knowledge of a state's existing subscriptions and the curriculum, school librarians must first consider sources needed to fill the gaps in the digital collection. In addition to using tables 2 through 4, school librarians may also want to consult those core lists and reviewers' "bests" lists outlined in this paper for recommended sources that were not included in any statewide purchases. Examples include sources such as ABC-CLIO titles for American History and American Government, Capstone's PebbleGo database, and Facts on File Bloom's Literary Reference Online.

Questions for Further Research

Future studies could explore the following questions that arose through this research.

- Are statewide subscription databases meeting the needs of schools, especially in teaching the Common Core curriculum?
- In what ways might school librarians organize digital content through "building archives beyond those suggested as text exemplars in the national core using their own ideas and knowledge of the materials necessary to assure compliance"? (Hill 2011, 46)
- In what ways might "finding ways to catalog and integrate" digital materials into the current curriculum maps allow school librarians to gain support of teachers in collaboration around the CCSS? (Hill 2011, 46)
- How might a state's page of statewide databases best be organized (alphabetical and/or categorical) to facilitate use by all library users?
- In what ways might online reference sources, such as topical overviews, continue to be used to prepare students for inquiry, and provide background for confusing topics?
- Do libraries' encyclopedia databases have a new role in providing privacy of online search (especially for medical or sensitive issues) not possible in commercialized search engines?

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APPENDIX A. Database Awards by State

Database Title [Award (grades)*]	Total	AL	AK	AZ	AR	DE	FL	GA	ID	IN	IA	KY	MD	MA	MI	MN	MS	MO	NE	NM	NY	NC	OH	OR	PN	RI	SC	SD	TN	VA	WA	WV	WI	WY
AccuWeather (all)	1										X																							
Annenberg Media (all)	1																	X																
AP Images (Associated Press) (all)	2										X														X									
Art Collection [LJ'11 (sec)]	1																						X											
Atomic Learning [SLJ'08 (all)]	1										X																							
Britannica Online School Edition [NBC, SLJ'09 (K-12)]	10	X		X	X			X			X					X						X				X							X	X
BookFlix [SLJ'08 (PK-3)]	2										X																							X
CQ Researcher (Congressional Quarterly)[LJ'11(sec)]	1																																	X
EBSCO Animals [NBC (6-9)]	7		X		X					X						X					X	X	X											
EBSCO-Auto Repair Reference Center [LJ'11 (sec)]	10	X	X	X	X			X					X		X							X			X								X	
EBSCO-Biography Reference Bank [MC, SC (7-12)]	5	X		X				X											X			X												
EBSCO-Book Collection: Nonfiction [NBC (4-12)]	12	X	X	X				X		X				X	X	X	X					X					X						X	
EBSCO-Funk & Wagnalls New Encyclopedia (all)	14		X		X			X		X	X	X					X	X			X	X				X						X	X	X
EBSCO-GreenFILE (sec)	12	X	X				X	X		X			X						X			X			X	X						X	X	
EBSCO-History Reference Center [NBC (4-12)]	8	X		X				X					X			X									X							X	X	
EBSCO-Literary Reference Center [LJ'11 (sec)]	6			X				X										X				X			X							X		
EBSCO-NoveList [MC, SC, NBC (9-12)]	12		X	X				X	X			X			X			X				X			X							X	X	X
EBSCO-NoveList K-8 [CC, MC, NBC, SLJ'09 (K-8)]	7		X					X														X			X							X	X	X
EBSCO-Points of View [NBC (11-12)]	7	X		X												X						X			X			X				X		
EBSCO-Science Reference Ctr. [MC, SC, NBC(7-12)]	6			X								X				X		X				X										X		
Fiction Connection (Bowker) (all)	1																		X															

Resource	#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Gale-Biography in Context [MC, NBC (8-12)]	6		X	X			X		X						X					X
Gale-Books & Authors [NBC, SLJ'09 (9-12)]	7			X	X				X	X					X		X			X
Gale-Contemporary Authors [SC (11-12)]	3	X					X									X				
Gale-Discovering Collection [MC (6-12)]	6		X	X				X			X		X				X			
Gale-General Reference Center Gold (sec)	8		X	X	X				X	X		X							X	X
Gale-Global Issues in Context [NBC, SLJ'09 (7-12)]	1								X											
Gale-GREENR [NBC (10-12)]	1				X															
Gale-Grzimeks [MC, SC (6-12)]	2														X					X
Gale-Health & Wellness Resource Ctr. [NBC (9-12)]	10		X	X	X		X	X	X	X					X		X			X
Gale-Junior Reference Collection [CC, MC, NBC(K-8)]	4				X						X				X			X		
Gale-Literary Criticism Online [SC (11-12)]	3	X							X						X					
Gale-Literature Resource Center (sec)	5		X			X			X								X			X
Gale-Literature Resources from Gale (sec)	4	X							X						X					X
Gale-LitFinder for Schools [MC (6-12)]	9	X	X			X	X		X						X	X			X	X
Gale-Opposing Viewpoints in Context [MC, SC (sec)]	5	X			X				X						X					X
Gale-Science In Context [SC (9-12)]	5				X		X		X						X					X
Gale-Scribner's Writers Online (sec)	5	X											X		X	X				X
Gale-Student Resources in Context (sec)	1				X															
Gale-Twayne's Author Series (sec)	5	X										X			X	X				X
Gale-U.S. History in Context (sec)	5				X				X					X	X					X
Gale Virtual Reference Library [MC (6-12)]	15	X	X	X	X		X	X	X	X		X		X	X		X	X	X	X
Gale-World History in Context (sec)	5				X				X					X	X					X
Grolier Online [CC, MC, SC (3-12)]	5		X					X						X	X				X	

Resource	#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Hoover's Company Profiles (sec)	1									X																		
iCLIPART For Schools (all)	1												X															
Infobase-Issues and Controversies (sec)	2			X		X																						
Infobase-Ferguson's Career Guidance Ctr[NBC(9-12)]	1																					X						
Infobase-The Reference Suite@facts.com [MC (6-12)]	1			X																								
Infobase-Science Online [MC, SC, NBC (6-12)]	2						X													X								
Infobase-Today's Science [MC (6-12)]	2			X		X																						
Infobase-World News Digest [NBC (7-12)]	2			X		X																						
LEARN360 (all)	1												X															
Literature Online from Chadwyck Healy (sec)	2																			X								X
Mango Languages (all)	4			X																X	X							X
MedlinePlus [MC, SC (7-12)]	14	X	X	X	X			X		X	X	X		X		X		X		X	X		X					X
OCLC-CAMIO (all)	4								X	X							X						X					
Oxford Art Online [LJ'11 (sec)]	1									X																		
Oxford Reference Online-Premium Coll. [SC (11-12)]	3	X	X																	X								
Oxford English Dictionary [NBC (9-12)]	3	X			X					X																		
ProQuest-African American Biog. Database (sec)	1									X																		
ProQuest-CultureGrams (all)	5												X			X					X					X		X
ProQuest - Ethnic NewsWatch [NBC (7-12)]	2	X								X																		
ProQuest-HeritageQuest (sec)	11		X							X		X			X	X			X		X			X	X		X	X
ProQuest-Historic Map Works (sec)	1																											X
ProQuest-History Makers (sec)	1																											X
ProQuest-History Study Center (sec)	2																									X		X
ProQuest-Learning Literature (sec)	1																									X		

		AL	AK	AZ	AR	DE	FL	GA	ID	IN	IA	KY	MD	MA	MI	MN	MS	MO	NE	NM	NY	NC	OH	OR	PN	RI	SC	SD	TN	VA	WV	WI	WY
ProQuest-SIRS Discoverer [CC, MC, NBC (3-9)]	9	X			X		X								X								X			X	X				X		X
ProQuest-SIRS Interactive Citizenship [MC,SC (4-12)]	1						X																										
ProQuest-SIRS Issues Researcher [NBC (7-12)]	6				X		X			X																	X			X			X
ProQuest-SIRS Knowledge Source [NBC (4-12)]	4				X		X																				X						X
ProQuest-SIRS Renaissance (sec)	3				X										X																		X
PubMed (sec)	3	X																									X						X
Reference USA (sec)	3			X																						X	X						
Soundzabound (all)	2									X																						X	
Teen Health & Wellness [NBC, SLJ'08 (9-12)]	1									X																							
World Almanac Online [SC (6-12)]	6			X			X	X						X	X			X															
World Book Online [CC, MC, SC (9-12)]	6				X			X														X				X		X	X				
Award Totals by State		21	15	9	19	19	9	22	7	10	13	5	5	14	13	9	6	7	4	2	4	18	9	1	6	12	17	13	10	1	5	6	13
*Grade ranges, e.g., (3-12), are from the core collections;		AL	AK	AZ	AR	DE	FL	GA	ID	IN	IA	KY	MD	MA	MI	MN	MS	MO	NE	NM	NY	NC	OH	OR	PN	RI	SC	SD	TN	VA	WV	WI	WY

*Publisher level indications are (all) or (sec); CC=*Children's Core*; MC=*Middle School & Jr High Core*; SC=*Senior High Core*; NBC=*Nonbook Materials Core*; SLJ/LJ=*School/Library Journal* award.

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