



*Preparing 21<sup>st</sup> Century Ohio Learners for Success:  
The Role of Information Literacy and Libraries*

*A report by the INFOhio and OhioLINK Special Task Force  
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## *Executive Summary*

***A 2006 study done by the Educational Testing Service (ETS) found that both college-bound high school students and college students “sorely” lacked the skills needed to retrieve, analyze, and communicate information online.<sup>1</sup>***

In order to be successful in school, college, and the workforce, Ohio's 21<sup>st</sup> century students must be equipped with the necessary skills to explore and exploit new information. Students must be able to: identify what information they need to be successful in life and work, know how to find information efficiently, evaluate the quality of information, and use information effectively and ethically.

Ohio's school and academic librarians already work within their individual organizations to prepare young people for an information-intensive world and are uniquely positioned to influence student success. INFOhio, the PreK-12 school library information network, and OhioLINK, the academic library network, currently support teaching and learning by providing quality information that serves student needs across PreK-20. However, an even greater effort to teach students to use these resources effectively must be coordinated if Ohio is to return to its place as an economically competitive giant in the global marketplace.

State decision makers need to ensure that all Ohio students, regardless of economic means or geographic location, have access to a robust, high quality information infrastructure that prepares students to be astute and productive consumers of information. To properly prepare Ohio's students for success in college and to grow and maintain a strong 21<sup>st</sup> century workforce, Ohio must mandate that information literacy is a critical lifelong skill that every Ohio student needs. As the first step toward that future, INFOhio and OhioLINK urge the Ohio Department of Education and Board of Regents to endorse the six goals identified in this report.

### *Goals Ensuring Ohio's Information Literate Future*

1. **Teach all Ohio high school students the 21<sup>st</sup> century information literacy skills** needed for transition from high school to college and into the world of work.
2. **Incorporate robust research experiences into classroom teaching strategies** to better prepare Ohio's juniors and seniors for college-level research.
3. **Provide students and educators with free and equitable access to an essential academic core collection of online and physical library materials** appropriate to PreK-20 research.
4. Inform Ohio's education faculty that the **preparation of student teachers must include 21<sup>st</sup> century information literacy skills** and how collaboration with school librarians can contribute to these instructional objectives.
5. **Partner with state initiatives and advocacy groups** to encourage them to incorporate information literacy skills within their own goals.
6. **Provide school and academic librarians with opportunities to work together to develop collaborations** supporting the transition of secondary school students to college-level research.

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<sup>1</sup> Foster, A. L. (2006). Students fall short on 'information literacy,' Educational Testing Service's study finds. *Chronicle Higher Education*, 53(10), A36.

## Introduction

Today's secondary school students must have information literacy skills to ensure a successful future in a technology rich work environment or to pursue a successful post-secondary education. Coupled with the Governor's "Seniors to Sophomores" initiative, this situation compels Ohio's school and academic librarians to take action. School and academic librarians already work within their individual organizations to prepare young people for an information-intensive world and are uniquely positioned to influence student success. INFOhio, the PreK-12 school library information network, and OhioLINK, the academic library consortium, currently support teaching and learning by providing quality information that serves student needs across PreK-20. However, an even greater effort to teach students to use these resources effectively must be coordinated if Ohio is to return to its place as an economically competitive giant in the global marketplace. This white paper outlines six goals that will enable INFOhio and OhioLINK to move to the next level of cooperation to help Ohio achieve global economic competitiveness through the development of an educated, talented, and creative workforce.

### ***The Challenges of Today's Information Environment***

***"One of the most important changes of the last 30 years is that digital technology has transformed almost everyone into an information worker."***

*Bill Gates, BBC NEWS (12/14/2007)<sup>2</sup>*

A recent national poll conducted by Public Opinion Strategies and Peter D. Hart Research Associates on behalf of the Partnership for 21<sup>st</sup> Century Skills confirms the need for new skills. Ninety-nine percent of the registered voters surveyed said that in addition to teaching students basic skills, it is equally important to the future of the U.S. economy for students to learn the fundamental skills of critical thinking and problem-solving, as well as computer and communication skills. Eighty percent believed that the skills needed to compete today differ from those of 20 years ago.<sup>3</sup> As a recent UNESCO document states, "Increasingly, the concept of information literacy is considered as crucially important to enable people to deal with the challenge of making good use of information and communication technology."<sup>4</sup> In "Are They Really Ready to Work?" researchers report that:

*Creativity/Innovation is projected to 'increase in importance' for future workforce entrants, according to more than 70 percent (73.6 percent) of employer respondents. Currently, however, more than half of employer respondents (54.2 percent) report new workforce entrants with a high school diploma to be 'deficient' in this skill set, and relatively few consider two-year and four-year college-educated entrants to be 'excellent' (4.1 percent and 21.5 percent, respectively).<sup>5</sup>*

In other words, textbooks alone do not adequately prepare young people for coping with the dramatic technological changes that are impacting today's workforce. It is imperative, therefore, that when young people leave the educational process, they are prepared for lifelong learning.

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<sup>2</sup> Gates, Bill. (2007, December 14). Bill Gates: The skills you need to succeed. *BBC News*. Retrieved from <http://news.bbc.co.uk/go/pr/fr/-/2/hi/business/7142073.stm>.

<sup>3</sup> Partnership for 21<sup>st</sup> Century Skills. (2007). *Beyond the Three Rs: Voter attitudes toward 21<sup>st</sup> Century skills*. Retrieved from [http://www.21stcenturyskills.org/documents/p21\\_pollreport\\_2pg.pdf](http://www.21stcenturyskills.org/documents/p21_pollreport_2pg.pdf).

<sup>4</sup> Horton, Forest Woody, Jr. (2008). *Understanding information literacy: A primer*. Retrieved from <http://unesdoc.unesco.org/images/0015/001570/157020e.pdf>.

<sup>5</sup> Conference Board, Partnership for 21<sup>st</sup> Century Skills, Corporate Voices for Working Families, and Society for Human Resource Management. (2006). *Are they really ready to work?: Employers' perspectives on the basic knowledge and applied skills of new entrants to the 21<sup>st</sup> century U.S. workforce*. Retrieved from [http://www.21stcenturyskills.org/documents/FINAL\\_REPORT\\_PDF09-29-06.pdf](http://www.21stcenturyskills.org/documents/FINAL_REPORT_PDF09-29-06.pdf). p10.

This means that they must be equipped with the necessary skills to explore and exploit new information. Students must be able to: identify what information they need to be successful in life and work, know how to find information efficiently, evaluate the quality of information, and use information effectively and ethically.

Not only do today's students require skills that differ from those of their parents, but more students today will need education beyond high school to succeed in the new economy. George D. Kuh, Director of the Center for Postsecondary Research at Indiana University, makes the case that "[a]s many as four-fifths of high-school graduates will need some form of postsecondary education if they are to become self-sufficient and the nation is to remain economically competitive."<sup>6</sup> High-school graduates must be better prepared when they enter post-secondary education and should be capable of doing college-level research.

### ***How Students Are Performing***

It cannot be assumed that because today's students have grown up in a digital age they are competent information seekers and users. In a recent, extensive study of the information seeking behavior of young people born after 1993, the University College London found several consistent themes: young people spend little time evaluating information, have poor understanding of their information needs, and find it difficult to develop effective search strategies.<sup>7</sup>

These findings are supported by a study done by the Educational Testing Service (ETS) in 2006 that found both college-bound high school students and college students "sorely" lacked the skills needed to retrieve, analyze, and communicate information online. The study was based on student scores on a new ETS test that measures both information literacy and computer fluency. Specific findings indicated that when doing online searches, students were poor at identifying bias and irrelevance.<sup>8</sup>

### ***Information Literacy: What It Is***

Information literacy is the skill set that enables an individual to be a competent information user. It is a component of critical thinking that goes beyond proficiency in using computer technology. Computer skills serve as tools for finding and conveying information, but computer skills, in and of themselves, do not address the intellectual competencies needed to find, use, and evaluate information.

***The information literate person is able to:***

- *Define an information need*
- *Develop an effective search strategy*
- *Evaluate the results critically*
- *Use information results effectively and ethically*

Both school and academic librarians are guided by national standards that have been developed by their professional organizations.<sup>9,10</sup> Librarians offer guided instruction based on these standards and

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<sup>6</sup> Kuh, G. D. (2007). How to help students achieve. *Chronicle of Higher Education*, 53(41), B12.

<sup>7</sup> University College London. (2008). Information behaviour of the researcher of the future. Retrieved from <http://www.bl.uk/news/pdf/googlegen.pdf>.

<sup>8</sup> Foster, A. L. (2006). Students fall short on 'information literacy,' Educational Testing Service's study finds. *Chronicle of Higher Education*, 53(10), A36.

<sup>9</sup> American Association of School Librarians. Standards for the 21st-century learner. Retrieved from [http://www.ala.org/ala/aasl/aaslproftools/learningstandards/ALA\\_print\\_layout\\_1\\_248674\\_248674.cfm](http://www.ala.org/ala/aasl/aaslproftools/learningstandards/ALA_print_layout_1_248674_248674.cfm).

<sup>10</sup> Association of College and Research Libraries. Information literacy competency standards for higher education. Retrieved from <http://www.ala.org/ala/acrl/acrlstandards/informationliteracycompetency.cfm>.

provide the necessary support to learners as they develop the skills they need to navigate and use information successfully and appropriately.

Ohio's librarians not only teach information literacy, they also support other educators in providing information literacy instruction in the content areas. Expectations regarding what the information literate Ohio student should be able to do are found in the Ohio Academic Content Standards and appear in many other contexts as well. For instance, in "English Expectations for College Readiness 2007," the Ohio Board of Regents indicated that first among the specific skills entering college students are expected to possess is the ability to "apply a wide range of strategies to select, comprehend, interpret, and evaluate print and non-print texts."<sup>11</sup>

Likewise, an Ohio Academy of Science White Paper, "The Ohio Core Curriculum: What's Required for Science?" addresses programmatic changes that will need to be made by the beginning of the 2010 school year. In order to implement the Ohio Core's "inquiry-based laboratory experience" requirements for science instruction, the legislation calls for "inquiry-based laboratory experience that engages students in asking valid scientific questions and gathering and analyzing information." This paper points out that in demonstrating science, teachers already include "examining books and other sources of information" and "reviewing what is already known in light of experimental evidence" as two elements of the inquiry process.<sup>12</sup> The new legislation will force a paradigm shift from teachers demonstrating science *to students doing science*.

Referring readers to another Ohio Academy of Science online document, "What is Science?" OAS shows that "doing science" requires the application of the scientific method, a core tenet of which is to "do literature search to see if the question has been previously answered" [sic].<sup>13</sup> Educators and librarians work together to provide the necessary resources and to teach the essential skills to ensure that students not only learn to do literature searches, but also become information literate.

### ***Today: The Role Ohio's School and Academic Libraries Play***

Research shows that school libraries already play a significant role in student success. The landmark Ohio Study, conducted in 2003 by Dr. Ross Todd and Dr. Carol Kuhlthau of Rutgers University, quantified the results of 13,000 Ohio students who provided strong evidence that "an effective school library program led by a credentialed library media specialist plays a critical role in facilitating learning, in general, and information literacy, in particular."<sup>14</sup> "Clearly helpful is the library's part in engaging students in an active process of building their own understanding and knowledge with the library as an *agent for individualized learning, knowledge construction and academic achievement*."<sup>15</sup> In addition, "more than 60 studies have shown clear evidence of this connection between student achievement and the presence of school libraries with qualified school library media specialists."<sup>16</sup> Why is this so? Libraries offer access to the most authoritative content. All material available through the library is there because it has been selected by professionals and has met criteria of quality, authoritative subject

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<sup>11</sup> Ohio Board of Regents. (2007). English expectations for college readiness 2007. Retrieved from [http://regents.ohio.gov/placement\\_summit/presentations/EnglishCollegeReadiness07.pdf](http://regents.ohio.gov/placement_summit/presentations/EnglishCollegeReadiness07.pdf).

<sup>12</sup> Ohio Academy of Science. (2007). The Ohio core curriculum: What's required for science? Retrieved from <http://www.ohiosci.org/TheOhioCoreCurriculumWhat'sRequiredforScience.pdf>.

<sup>13</sup> Shrake, D. L., L.E. Elfner, W. Hummon, R.W. Janson, and M. Free. (2006). What is science? *Ohio Journal of Science*, 106 (4):130-135. Retrieved from [http://www.ohiosci.org/WhatIsScienceOJS106\(4\)130-135.pdf](http://www.ohiosci.org/WhatIsScienceOJS106(4)130-135.pdf).

<sup>14</sup> School Libraries Work! 3<sup>rd</sup> ed. (2008). Research foundation paper. Retrieved from [http://librarypublishing.scholastic.com/content/stores/LibraryStore/pages/images/slsw\\_04.pdf](http://librarypublishing.scholastic.com/content/stores/LibraryStore/pages/images/slsw_04.pdf). p. 22.

<sup>15</sup> Todd, R.J., C.C. Kuhlthau, and OELMA. (2003). Student learning through Ohio school libraries: The Ohio research study fact sheet. Retrieved from <http://www.oelma.org/StudentLearning/documents/OELMAResearchStudy2page.pdf>.

<sup>16</sup> School Libraries Work! 3<sup>rd</sup> ed. (2008). Research foundation paper. Retrieved from [http://librarypublishing.scholastic.com/content/stores/LibraryStore/pages/images/slsw\\_04.pdf](http://librarypublishing.scholastic.com/content/stores/LibraryStore/pages/images/slsw_04.pdf). p. 4.

matter, appropriateness of presentation, and ease of use. This material is organized and accessible through search interfaces that are suitable for the intended clientele – students and educators. Guided by qualified and knowledgeable librarians, students learn through exploration and utilization of information.

Information found in library resources can often be productively supplemented by quality content on the free Web. However, in order for students to successfully use this free content as well as the quality materials selected by librarians, they need to apply the information literacy skills they have learned efficiently and effectively. Additionally, libraries are safe, make no distinctions among users, and serve all students 24/7, making them ideal learning environments.

Working together, Ohio's statewide library networks—INFOhio and OhioLINK—have built a common, online set of core research resources to serve both their constituencies. This collaboration results in cost economies and significantly increases what is available at any given school or institution. It also provides educators and librarians the opportunity to introduce resources and skills to students in PreK-12 that will serve as a foundation as those students transition to college.

### ***The Future: Supporting the Transition to College***

Beyond providing statewide access to electronic resources and related services for students in PreK-20, INFOhio and OhioLINK are now prepared to collaborate further to ensure a seamless information transition from school to college to the workplace. The Information Age is upon us, and now is the time to act. By adopting and supporting the following goals, Ohio's leaders will set the stage for INFOhio and OhioLINK to further the development of an information literate workforce who utilizes critical thinking skills and information effectively and ethically.

#### ***Goals Ensuring Ohio's Information Literate Future***

1. **Teach all Ohio high school students the 21<sup>st</sup> century information literacy skills** needed for transition from high school to college and into the world of work.
2. **Incorporate robust research experiences into classroom teaching strategies** to better prepare Ohio's juniors and seniors for college-level research.
3. **Provide students and educators with free and equitable access to an essential academic core collection of online and physical library materials** appropriate to PreK-20 research.
4. Inform Ohio's education faculty that the **preparation of student teachers must include 21<sup>st</sup> century information literacy skills** and how collaboration with school librarians can contribute to these instructional objectives.
5. **Partner with state initiatives and advocacy groups** to encourage them to incorporate information literacy skills within their own goals.
6. **Provide school and academic librarians with opportunities to work together to develop collaborations** supporting the transition of secondary school students to college-level research.

# Goals & Action Steps

Goals	Action Steps	Deadlines
<p><b>1. Developing 21<sup>st</sup> Century Skills</b></p> <p>Teach all Ohio high school students the 21<sup>st</sup> century information literacy skills needed for transition from high school to college and into the world of work.</p>	<p><b>Audit process in place statewide for preparing students for the transition to college and rigorous research that reflects 21<sup>st</sup> century information literacy skills.</b></p>	<p>Survey: <b>January 2009</b> Results: <b>March 2009</b></p>
	<p><b>Develop guidelines for information research processes</b> required to make successful transition from high school to college and work. Identify necessary 21<sup>st</sup> century information literacy skills.</p>	<p><b>March 2009</b></p>
	<p><b>Create awareness campaign and develop best practice plan</b> to promote importance of information literacy skills and ensure all students are introduced to them.</p>	<p><b>Fall 2009</b></p>
	<p><b>Develop inquiry-based program to teach high school students,</b> particularly those in STEM, to move beyond free Internet sources for research and utilize scholarly journals and primary source materials offered via the networks and Internet2.</p>	<p><b>Fall 2009</b></p>
<p><b>2. Incorporate Research Experiences</b></p> <p>Incorporate robust research experiences into classroom teaching strategies to better prepare Ohio's juniors and seniors for college-level research</p>	<p><b>Create professional development opportunities</b> which allow classroom teachers to work collaboratively with school and academic librarians to develop robust research assignments that help develop students' research skills.</p>	<p><i>Institute for Inquiry Learning through Information Literacy:</i> <b>Summer 2009</b></p>
	<p><b>Design collaborative research projects between high school and college classrooms</b> to prepare students for the rigors of college research and the world of work.</p>	<p><b>TBD</b></p>
<p><b>3. Deliver Research Resources</b></p> <p>Provide students and educators with free and equitable access to an essential academic core collection of online and physical library materials appropriate to PreK-20 research.</p>	<p><b>Appoint joint INFOhio/OhioLINK group</b> to recommend list of research resources needed to support a world-class PreK-20 Ohio education system and Ohio's 21<sup>st</sup> century libraries. These will be resources that: help students draw conclusions, make informed decisions, apply knowledge to new situations and create new knowledge; are appropriate for PreK-20 students, and meet the research needs of teachers and faculty.</p>	<p><b>January 2010</b></p>
<p><b>4. Prepare Student Teachers</b></p> <p>Inform Ohio's education faculty that the preparation of student teachers must include 21<sup>st</sup> century information literacy skills and how collaboration with school librarians can contribute to these instructional objectives.</p>	<p><b>Determine what Ohio's education faculty currently deliver</b> pertaining to 21<sup>st</sup> century information literacy skills and the preparation of student teachers.</p> <ul style="list-style-type: none"> <li>• Create workshops to support the development of information literacy skills for student teachers.</li> </ul>	<p><b>January 2010</b></p>
<p><b>5. Partner with Groups Statewide</b></p> <p>Partner with state initiatives and advocacy groups to encourage them to incorporate information literacy skills within their own goals.</p>	<p><b>Implement <i>Preparing 21<sup>st</sup> Century Ohio Learners for Success</i></b> white paper and action plan.</p> <ul style="list-style-type: none"> <li>• Ascertain which state initiatives and advocacy groups to contact and begin developing a partnership of collaboration for increasing information skills knowledge for Ohio's global economy.</li> </ul>	<p><b>TBD</b></p>
<p><b>6. Enable Collaboration</b></p> <p>Provide school and academic librarians with opportunities to work together to develop collaborations supporting the transition of secondary school students to college-level research.</p>	<p><b>Determine all possible cross-meeting linkages and develop others</b> that will create this collaborative partnership for consistent resource sharing across PreK-20. Inform communities of white paper and action plan via conferences, regional meetings, workshops, etc.</p>	<p>First conference Presentations: <b>October 2008</b></p> <p>Meetings: <b>Fall/Spring 2009 – Spring 2010</b></p>

## *Conclusion*

The 21<sup>st</sup> century, with its burgeoning glut of information is here and now. Currently, Ohio's 21<sup>st</sup> century learners are trying to navigate this environment without an essential set of skills to formulate new knowledge, to hone critical thinking skills, and to make decisions that will affect future generations. This situation can be remedied through the collaborative efforts of Ohio's school and academic librarians. Working together to achieve the goals outlined in this report, Ohio's librarians can ensure that students will receive the essential instructional guidance and resources necessary to develop the information literacy skills key to a successful transition from high school to college and into the workforce. In addition, these goals will: foster a collaborative partnership between our teaching communities, encourage continued discussion on how to best help all Ohioans become savvy users of quality information resources, and use state and local resources more effectively.

State decision makers need to ensure that all Ohio students, PreK-20, regardless of their economic means or geographic location, have access to a robust, high quality information infrastructure that prepares them to be astute and productive consumers of information. To grow and maintain a strong 21<sup>st</sup> century workforce, Ohio must mandate that information literacy is a critical lifelong skill that every Ohio student needs. As the first step toward that future, INFOhio and OhioLINK urge the Ohio Department of Education and Board of Regents to endorse the goals identified in this white paper.

## *Special INFOhio and OhioLINK Task Force*

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