



Preparing Teachers and Librarians to Collaborate to Teach 21st Century Skills: Views of LIS and Education Faculty

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Abstract

This article discusses the results of an exploratory research project in which library and information studies (LIS) faculty and education faculty were asked about their views on teaching pre-service school librarians and teachers 21st Century Skills (as defined by the Partnership for 21st Century Skills) and librarian-teacher collaboration. Researchers used a case-study approach to investigate and compare the views and experiences of LIS faculty and education faculty at a research institution. Participants indicated their sense of which skills were taught in each discipline. In addition, they described their own experiences in collaborating with teachers and/or librarians, as well as their views on where collaboration was taught in their respective curricula, where it could be taught, and how it might be taught most effectively. Findings indicate that while education faculty members tend to have a broader view of LIS than do LIS faculty and see education and LIS as having largely overlapping concerns, collaboration is more likely to be a topic of discussion in LIS classes than in education classes. Faculty in both disciplines acknowledged that, while collaboration is desirable, it is often difficult to achieve in practice.

Introduction

While the library and information science (LIS) literature touts collaboration with teachers as a way for school librarians to contribute to the overall educational mission of their institutions, evidence suggests that achieving successful collaborative relationships in the field is fraught with challenges (Hartzell 1997; Lance 2010; Miller and Shontz 1993; Williams 1996). This circumstance raises several important questions. In their pre-service studies, to what extent are teachers and school librarians being taught to collaborate? Does the extent vary between LIS and education courses? While students are in training, do they have opportunities in both disciplines to foster a culture of collaboration that will extend to their practices in the field?

This article discusses the results of an exploratory research project in which members of the LIS and education faculties were asked about their views on teaching pre-service librarians and teachers 21st Century Skills (defined in this context as thinking, learning, technology, and information-literacy, life, and career skills essential for success in this century; more below) and librarian-teacher collaboration. Researchers used a case-study approach to investigate the views and experiences of members of the LIS and education faculties at a research institution. Participants indicated their sense of which skills were taught in each discipline. In addition, they described their own experiences in collaborating with teachers and/or librarians, as well as their views on where collaboration was taught in their respective curricula, where it could be taught, and how it might be taught most effectively. Findings indicate that while education faculty tend to have a broader view of LIS than do LIS faculty and see education and LIS as having largely overlapping concerns, collaboration is more likely to be a topic of discussion in LIS classes than in education classes. Faculty in both disciplines acknowledged that, while collaboration is desirable, it is often difficult to achieve in practice.

The issue is an important one for several reasons. Increasing emphasis is being placed on student learning outcomes, student performance on standardized tests, and accountability of schools and teachers. In particular, the focus on helping students acquire specific skill sets needed for life and work can be seen in such initiatives as the Partnership for 21st Century Skills (n.d.-b) and the Common Core State Standards (NGACBP and CCSSO 2012), both of which are discussed below. Developing collaborative partnerships between teachers and school librarians is one way of addressing these educational mandates. Given the complexity of what schools are expected to achieve, it may be unrealistic to think that one teacher in one class can do it all.

Related Literature

In considering the potential role of teacher-librarian collaboration in promoting the acquisition of 21st Century Skills among students, it is necessary to examine the literature on teacher-librarian collaboration and the literature on 21st Century Skills. Considerably more attention is given to teacher-librarian collaboration in the LIS literature than in the education literature, whereas the interest in 21st Century Skills is evident in the literature of both disciplines.

Teacher-Librarian Collaboration

In *Empowering Learners: Guidelines for School Library Programs*, the American Association of School Librarians (AASL) has emphasized the role of collaboration: “The school library program promotes collaboration among members of the learning community and encourages learners to be independent, lifelong users and producers of ideas and information” (2009, 19). While the focus here may be on students as learners, the “learning community” referenced also includes teachers and school librarians as key players. The education literature contains reports of studies on teacher-teacher collaboration. Cynthia A. Lassonde and Susan E. Israel (2010), for example, have argued for the benefits of establishing collaborative learning communities among teachers. Cordie E. Wimberley (2011) has reported on a positive correlation between effective collaboration by teachers and students’ scores on achievement tests. Also, Roni Jo Draper (2008), a content-area literacy teacher, has described her successful collaboration with content-area specialists through an action-research project. Interestingly, in the education literature teacher-librarian collaboration has received far less attention than has teacher-teacher collaboration.

Teacher-librarian collaboration, does, however, appear in the LIS literature. Reports of school librarians successfully collaborating with teachers abound in the LIS literature, including reports of collaboration to implement 21st Century Skills education (for example, see McGriff 2012; Schmidt, Kowalski, and Nevins 2010; Schultz-Jones 2010; O’Sullivan and Dallas 2010). Some research projects, such as Violet H. Harada’s (2001) professional development course, have brought teachers and school librarians together to learn and practice collaboration skills. As early as 2002, Ruth Small reported on the efforts at Syracuse University to bring together faculty from LIS and faculty from education to develop effective educational programs for pre-service librarians and teachers. Through a series of projects, Patricia Montiel-Overall developed a model of teacher-librarian collaboration (2008; 2010). This model can apply in various subject areas. Elsewhere, Montiel-Overall (2012) has argued that teachers and librarians can collaborate to develop lesson plans to teach such global issues as globalization, ecology, technology, and policy. In addition, Patricia Montiel-Overall and Kim Grimes (2013) reported on how teachers and school librarians have collaborated to develop inquiry-based science lessons for Latino elementary school students.

However, widespread success in achieving teacher-librarian collaboration has been limited at best. Over the last two decades a number of articles have appeared in the LIS literature documenting the challenges school librarians encounter in trying to collaborate with teachers (Hartzell 1997; Lance 2010; Miller and Shontz 1993; Williams 1996). Research indicates that part of the challenge may lie in the perceptions of teachers and others in the field of education. As Montiel-Overall (2010) noted, very little attention is given in the education literature to the issue of teacher-librarian collaboration. O. P. Cooper and Marty Bray observed that “the vision of Information Power has remained within the school library media community itself” (2011, 48). Keith Curry Lance, Marcia J. Rodney, and Bill Schwarz noted the disconnect between what most school administrators say that they want and what actually occurs in practice: “Administrators value librarian-teacher collaboration but both classroom teachers and teacher-librarians indicate that it is far from commonplace” (2010, 31). Montiel-Overall (2010; 2013) has argued that the issue is teachers’ fundamental lack of understanding of the potential role school librarians could play as collaborators in integrating skills instruction into the curriculum.

21st Century Skills

Now is a particularly crucial time for teachers and school librarians to be working together to educate students in the skills needed to be successful in the digital age. The growing emphasis on 21st-century skills is evident in the initiatives of several national organizations. The Partnership for 21st Century Skills was formed in 2002 as a result of the combined efforts of the U.S. Department of Education, the National Education Association, and several corporations and individuals. The goal of this partnership, which now includes several state governments, is to promote the acquisition of 21st-century skills in K–12 through the collaboration of schools, businesses, communities, and government (Partnership for 21st Century Skills n.d.-a). The framework of skills defined by the Partnership is quite comprehensive and includes information literacy, media literacy, and information and communication technology (ICT) literacy. The Framework for 21st Century Learning defines “information literacy” as the ability to successfully access, evaluate, use, and manage information; “media literacy” as the ability to successfully analyze media and create media products; and “ICT literacy” as the ability to successfully apply technology. All three literacies involve an understanding of the legal and ethical issues surrounding information, media, and technology (Partnership for 21st Century Skills 2009).

The Institute of Museum and Library Services 21st Century Skills Initiative uses a subset of the Partnership's 21st Century Skills framework and focuses on the "role our nation's museums and libraries play in helping citizens build...21st century skills" (2009). This project works to help these organizations, through a strategic-planning process, to respond to the needs of their communities to build such skills as "information, communications and technology literacy, critical thinking, problem solving, creativity, civic literacy, and global awareness" (2009).

AASL defines similar key literacies in *Standards for the 21st-Century Learner*: "Information literacy has progressed from the simple definition of using reference resources to find information. Multiple literacies, including digital, visual, textual, and technological, have now joined information literacy as crucial skills for this century" (2007, 3). Also, the National Council of Teachers of English developed a 21st Century Curriculum Literacies Framework, which states, "Active, successful participants in this 21st century global society must be able to:

- Develop proficiency and fluency with the tools of technology;
- Build intentional cross-cultural connections and relationships with others so to pose and solve problems collaboratively and strengthen independent thought;
- Design and share information for global communities to meet a variety of purposes;
- Manage, analyze, and synthesize multiple streams of simultaneous information;
- Create, critique, analyze, and evaluate multimedia texts;
- Attend to the ethical responsibilities required by these complex environments" (2013).

Similarly, the *Common Core State Standards* (NGACBP and CCSSO 2012), which currently have been adopted by forty-five states and three territories, emphasize 21st-century skills, including those specifically related to research and writing. The *Common Core State Standards* state that students should be able to successfully engage in "Research to Build and Present Knowledge." Specifically, they should demonstrate the ability to:

- "Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation."
- "Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism."
- "Draw evidence from literary or informational texts to support analysis, reflection, and research."

It is not clear, however, the extent to which curricula to educate teachers and school librarians incorporate applying these skills—and learning to teach them—nor is it clear the extent to which these curricula incorporate the promotion of and strategies for teacher-librarian collaboration. The purpose of this case study was to investigate those questions in the curricula at a research institution.

Research Questions

The project consisted of three main data-collection activities: an assessment of the information-literacy skill levels of pre-service teachers and librarians, a content analysis of syllabi from education courses and library and information studies (LIS) courses and interviews with faculty

members in the School of Teacher Education and instructors in the School of Library and Information Studies who teach courses taken by students who plan to become school librarians. This paper reports on the interviews with members of the education and LIS faculties and on data gathered from those interviews. This portion of the project sought to address two primary research questions:

1. How do faculty in LIS and education perceive the relationship of 21st Century Skills to their disciplines?
2. What are the attitudes of faculty in LIS and education toward teacher-librarian collaboration?

Methodology

Location

To address the research questions, the authors conducted a case study at a research university in the United States.

Participants

Overview

Semi-structured interviews were performed with twelve members of the full-time faculty—six in education and six in library and information studies. (Part-time faculty members were not included because they generally do not have a voice in the curriculum-development process.) The participants were chosen to ensure representation from core courses that all students in each discipline are required to take, as well as representation from special programs in education and from the group of LIS instructors who teach courses in school librarianship. (Other fields of librarianship are also taught at the university.)

Table 1 summarizes the participants’ characteristics.

Table 1. Summary of participants’ characteristics.

Participant	Gender	Years in Practice (teacher and/or librarian)	Years in Academia
LIS–Core 1	M	0	10
LIS–Core 2	F	0	7
LIS–Core 3	F	7	9
LIS–Core 4	F	11	20
LIS–School Librarianship	F	12	16
LIS–School Librarianship	F	5	13
ED–English	F	12	5
ED–Reading	F	7	28
ED–Social Studies	F	0	30
ED–Mathematics	F	7	17
ED–Core	F	4	15
ED–Foreign/Second Lang	F	8	5

Education Participants

All six participants from the education faculty are female. Their years in practice ranged from zero to twelve; at some point, each participant from the education faculty had been a teacher at the middle and/or high school level. None had been a librarian. The education participants' years in academia ranged from five to thirty. Professors of core education courses were included; special areas in education represented include TSL (teaching English as a second language) and the secondary-education subject areas of social studies, math, science, English and reading, and foreign and second languages.

LIS Participants

Five of the LIS participants are female, and one is male. Their years in practice ranged from zero to twelve. One LIS faculty had previous experience as a middle and high school teacher, and one had previous experience as a substitute teacher in K–12. Two LIS faculty members had previous experience as school librarians; one had been a children's services librarian in a public library; and one had been a corporate and academic librarian. The LIS participants' years in academia ranged from seven to twenty. Among the six participants from LIS, the following subjects were represented: school library courses and core LIS courses.

Interview Process

The interviews opened with a discussion of the four major skill areas on which the Framework for 21st Century Learning focuses and with a review of the four key elements of student outcomes: "Core Subjects and 21st Century Themes," "Life and Career Skills," "Learning and Innovation Skills," and "Information Media and Technology Skills."

Each interviewee was then given a copy of a graphic model of the framework, asked to consider the elements in the framework, and to draw circles on the graphic model to indicate his or her perception of which student outcomes are addressed in the participant's specific subject area, which student outcomes belong to the domain of education, and which student outcomes belong to the domain of library and information studies. This graphic model is in Appendix A and is also available at

www.p21.org/index.php?option=com_content&task=view&id=254&Itemid=120. Participants were provided with pens with various colors of ink; these pens were used when drawing the different circles. Participants were asked to circle in red the domain(s) on the chart where they felt their subject areas fit, to circle in blue the domain(s) where they felt education fit, and to circle in green the domain(s) where they felt LIS fit.

Participants were then asked open-ended questions. They were asked where in their curricula they thought 21st Century Skills were being taught and also where in the curricula they believed these skills could be incorporated and how this incorporation could best be accomplished. They were also asked about their collaboration experiences with teachers or librarians and how they felt teacher-librarian collaboration could best be fostered. The interview questions are in Appendix B. Each semi-structured interview was recorded and lasted approximately half an hour.

Analysis

For each participant, the graphic model of the Framework for 21st Century Learning was analyzed to identify the areas circled in each color, and then the data was coded using SPSS statistical-analysis software. Frequency counts were tabulated, and cross-tabulations by discipline were produced. The results were analyzed looking at individual responses within disciplines, by discipline, and for all participants in the aggregate.

Interview data were coded and then analyzed for convergent and divergent themes to understand LIS and education instructors' perceptions of the relationship of 21st Century Skills to their disciplines and their attitudes toward teacher-librarian collaboration.

Findings

Chart-Circling Activity

Perceptions of 21st Century Student Outcomes in Specific Subject Areas

In response to the instruction to use red ink to circle the area(s) on the graphic model where their specific subjects fit into the framework, five (83.3 percent) of the faculty members interviewed from education said that their specific subjects relate to all four elements of the 21st Century Student Outcomes; one education faculty member (16.7 percent) described her own specific subject as related only to "Core Subjects and 21st Century Themes" and to the critical-thinking and problem-solving skills categorized under "Learning and Innovation Skills" student outcomes.

In contrast, three (50 percent) of the LIS participants said that their specific subject relates to all four areas of the 21st Century Student Outcomes, two (33.3 percent) indicated that their specific subjects relate to student outcomes in every area except for "Core Subjects and 21st Century Themes," and one (16.7 percent) indicated that the interviewee's own subject area focuses on "Information, Media, and Technology Skills."

The next two questions related to the graphic model directed interviewees to circle the area(s) on the chart where the domains of education and library and information studies best fit with 21st Century Student Outcomes.

Perceptions of 21st Century Student Outcomes in the Domain of Education

All faculty participants were asked to use blue ink to circle the area(s) on the graphic model where the domain of education best fits. There was general agreement among participants that student outcomes related to "Core Subjects and 21st Century Themes" are related to the domain of education. This agreement was indicated by five (83.3 percent) education participants and four (66.7 percent) LIS participants. Together, these interviewees represent 75 percent of all participants.

All of the participating education faculty members perceived "Life and Career Skills" as an outcome addressed in their domain. Only about a third of LIS participants (two or 33.3 percent) felt that this was an area that education addresses. Together these interviewees represent 66.7 percent of all participants.

All participants from the education faculty perceived "Learning and Innovation Skills" to be addressed in their domain. A majority of LIS faculty (four or 66.7 percent) also believed

education addresses these student outcomes. Together these interviewees represent 83.3 percent of all participants.

All participants from the education faculty perceived “Information, Media, and Technology Skills” as an area where they affect student outcomes. About a third of LIS participants (two or 33.3 percent) perceived education in this way. Together these interviewees represent 66.7 percent of all participants.

These results are summarized in table 2.

Table 2. Faculty perceptions of 21st Century Student Outcomes as being within the domain of education.

Outcome Categories	Education Faculty	LIS Faculty	Combined Total
Core Subjects and 21st Century Themes	5 (83.3%)	4 (66.7%)	9 (75%)
Life and Career Skills	6 (100%)	2 (33.3%)	8 (66.7%)
Learning and Innovation Skills	6 (100%)	4 (66.7%)	10 (83.3%)
Information, Media, and Technology Skills	6 (100%)	2 (33.3%)	8 (66.7%)

Perceptions of 21st Century Student Outcomes in the Domain of LIS

All faculty participants were asked to use green ink to circle the area(s) on the graphic model where the domain of LIS best fits. Half of the participants from the education faculty indicated that LIS affects student outcomes in the area of “Core Subjects and 21st Century Themes.” About a third (two or 33.3 percent) of LIS faculty participants agreed with this perception. Together they represent 41.7 percent of all participants

All of the education faculty members in the study perceived “Life and Career Skills” as an outcome addressed in the domain of LIS. About a third (two or 33.3 percent) of LIS participants agreed with this perception. Together these interviewees represent 66.7 percent of all participants.

All education participants perceived LIS as addressing student outcomes in the area of “Learning and Innovation Skills.” Half of the participating LIS faculty agreed with this perception. Together these interviewees represent 75.0 percent of all participants.

All participants (100.0 percent of both education and LIS interviewees) perceived “Information, Media, and Technology Skills” as being an area of student outcomes for LIS.

These results are summarized in table 3.

Table 3. Faculty perceptions of 21st Century Student Outcomes as being within the domain of LIS.

Outcome Categories	Education Faculty	LIS Faculty	Combined Total
Core Subjects and 21st Century Themes	3 (50%)	2 (33.3%)	5 (41.7%)

Life and Career Skills	6 (100%)	2 (33.3%)	8 (66.7%)
Learning and Innovation Skills	6 (100%)	3 (50%)	9 (75%)
Information, Media and Technology Skills	6 (100%)	6 (100%)	12 (100%)

General Perceptions of 21st Century Student Outcomes in Education and LIS

Analysis of the data reveals that four (33.3 percent) of the interviewees indicated that both education and LIS address all four student outcome areas related to the 21st Century Framework. This view was held by three (50.0 percent) education participants and one (16.7 percent) LIS participant.

Two (33.3 percent) faculty members, both from LIS, described the two disciplines as relating to completely different student outcomes. One of these interviewees limited education to outcomes related to “Core Subjects and 21st Century Themes” and limited LIS outcomes to “Information, Media, and Technology Skills.” The other interviewee in this category limited education to outcomes related to “Learning and Innovation Skills” and limited LIS to “Life and Career Skills” and “Information, Media, and Technology Skills.”

The largest proportion of interviewees (six or 50.0 percent) saw the two domains as overlapping in regard to the four elements of student outcomes. Half (three) of these respondents were from education and half (three) were from LIS. These results are summarized in table 4.

Table 4: Faculty perceptions of 21st Century Student Outcomes and domains.

Perception of Domains Relating to 21st Century Student Outcomes	Education Faculty	LIS Faculty	Combined Total
Both	3 (50.0%)	1 (16.7%)	4 (33.3 %)
Different	0 (0%)	2 (33.3%)	2 (16.7%)
Overlapping	3 (50.0%)	3 (50.0%)	6 (50.0%)
Total within Domain	6 (100%)	6 (100%)	
			12 (100%)

Interview Responses

Strategies for Teaching 21st Century Skills

When asked about the best strategies to ensure that 21st Century Skills are being taught to pre-service teachers and librarians, interviewees mentioned both in-class and out-of-class activities. Within classes, students could gain knowledge of and experience with 21st Century Skills through specific assignments and activities, and a number of participants noted that these kinds of assignments/activities should be incorporated across the curriculum, rather than within one or two courses. In addition, it was noted that instructors should model 21st Century Skills for students by sharing instructors’ own practices with students.

Interviewees believed that, outside of class, internships and service-learning opportunities could be used to foster pre-service teachers' and librarians' development of 21st Century Skills. Further, interviewees expressed the belief that, beyond graduation, these skills could be enhanced through professional development activities and continuing education.

Instructors' Own Experience

When asked about previous experience collaborating with teachers or librarians, interviewees offered a wide variety of responses. Some frankly admitted that they had experienced "very little" collaboration with teachers and/or librarians in their previous jobs. In general, it was observed that teacher-librarian collaboration had been nonexistent in their experience or had been, at best, challenging to accomplish. Several who had been teachers described the school library in their former institutions as places for student detentions, student work groups, faculty meetings, etc., rather than resource centers. There were some exceptions, to be sure. Some education faculty recalled working with school librarians on developing assignments or resource collections, and some LIS faculty reported having established fruitful collaborations with teachers—again focused on developing assignments or resource collections.

To determine whether there were any differences among experiences with collaboration outside of the K–12 arena, participants were asked about their experiences, as university faculty, working with librarians. Participants reported more active collaborations in their current positions. Education faculty had worked with the education liaison librarian, while LIS faculty had worked with LIS librarians. The types of collaboration included developing assignments, having university librarians conduct research workshops for classes, and having librarians serve as guest speakers in classes (to discuss the nature of librarianship as a profession, for example). Faculty had also used librarians to help develop resource lists and locate resources for their own research projects, and some faculty had even included librarians as partners when developing grant proposals.

Courses in which Collaboration Is Taught

When asked where teacher-librarian collaboration was currently being taught in their respective curricula, LIS faculty identified two courses: School Collection Development and Instructional Role of the Information Professional. They noted that collaboration, more broadly defined, is taught in several core LIS courses, including Foundations of the Information Professions, Marketing of Library and Information Services, and Management of Information Organizations. Those courses, it was noted, require students to collaborate with one another on group projects, and collaboration with other stakeholders in the community is discussed in class.

Interviewees from the education faculty stated that various classes in their curriculum require students to make use of library resources to complete assignments. In addition, the value of library resources within a school setting is emphasized in numerous courses. However, none of the education interviewees could provide specific examples of courses where teacher-librarian collaboration is taught or discussed.

Courses in which Collaboration Could Be Taught

Interviewees in both disciplines were also asked where they felt teacher-librarian collaboration *could be* taught in their respective curricula.

Interviewees from the LIS faculty identified the foundations and management courses as the most likely candidates, although some faculty indicated that collaboration was already taught in these courses. It was noted that in these courses, core courses taken by students with a wide range of career goals, discussion of collaboration could not be limited specifically to teacher-librarian collaboration.

Interviewees from the education faculty stated that collaboration could be incorporated in their Methods course, Introduction to Education, Introduction to Technology, and reading and writing courses.

Faculty in both disciplines mentioned that perhaps a course could be developed jointly that would enroll both LIS and education students and would, thus, facilitate instruction and practice in teacher-librarian collaboration.

Strategies for Teaching Collaboration Skills

When asked about the best strategies for teaching skills for teacher-librarian collaboration, interviewees from both disciplines offered a number of possibilities. Students in both disciplines could complete assignments of simulated collaborative activities. Class projects could be developed that would involve LIS and education students working together. It was suggested, for example, that 21st Century Skills could provide a unifying framework for teaching pre-service teachers and school librarians to collaborate to achieve a particular set of goals. Such projects, it was noted, should encourage students to identify the strengths of the various collaborators, develop clearly defined roles for each member of a group, and emphasize the complementary nature of teacher-librarian collaboration.

An appreciation for the powerful potential of teacher-librarian collaboration could be fostered among students by having education faculty serve as guest speakers in LIS courses and LIS faculty serve as guest speakers in education courses.

Beyond the classroom, students could complete field experiences focusing specifically on teacher-librarian collaboration, and models of best practices could be identified and publicized.

Challenges Identified

Faculty also noted a number of challenges to fostering teacher-librarian collaboration, both in pre-service training and in practice. For one thing, pre-service teacher training is accomplished at the undergraduate level, while pre-service librarian training at this university is at the graduate level, and not all classes can be easily cross-listed as undergraduate/graduate.

Moreover, in the case of the particular university where the interviews were conducted, the education program is a face-to-face program, whereas the LIS program is online. Education faculty members have the opportunity to teach teacher-librarian collaboration across the curriculum because all students presumably are planning to become teachers. In contrast, school library students take many courses with other nonschool library students—courses in which collaboration cannot be limited to a discussion of teacher-librarian collaboration.

Other challenges, noted by both education and school library faculty, relate to the issue of territoriality and current educational policies. Once in the field, LIS students may find that teachers are resistant to any implication that they need assistance. Interviewees in both education and in school librarianship felt that the current emphasis on student performance on standardized tests—and the evaluation of teachers based on student performance—makes it less likely that

teachers will engage in collaboration unless they foresee a tangible reward in the form of improved test scores. Faculty in both education and LIS observed that, in a climate where there are powerful incentives to “teach to the test,” little opportunity may be available for a discussion of, or collaboration on, promoting 21st Century Skills among students.

Another challenge is the very broad, all-inclusive definition of 21st Century Skills. Some interviewees felt that the framework itself was too general and amorphous to provide an adequate focus for collaborative activities.

Discussion

Overview

Generally speaking, faculty members in both disciplines expressed the belief that education in 21st Century Skills and teacher-librarian collaboration are important. Neither discipline seems to focus on teaching pre-service teachers and school librarians how to help students develop 21st Century Skills. However, LIS faculty members do appear to be addressing collaboration in their courses more often than education faculty members do.

How Do Faculty in LIS and Education Perceive the Relationship between 21st Century Skills and Their Disciplines?

All but one of the faculty participants from education see their domain as contributing to student outcomes in all four key areas. The majority of participants from the education faculty see their specific subject areas in the same way. A majority of LIS interviewees see the domain of education as encompassing only two areas: “Core Subjects and 21st Century Themes” and “Learning and Innovation Skills.” About a third of LIS interviewees see education as contributing to outcomes in the areas of “Life and Career Skills” and “Information, Media, and Technology Skills.”

As the data in table 3 indicates, participants from the education faculty have a more expansive view of the student outcomes possible from LIS instruction than do LIS faculty. All faculty participants from LIS agreed that LIS affects “Information, Media, and Technology Skills,” and half of LIS respondents see the field as addressing student outcomes in the area of “Learning and Innovation Skills.” However, only a third of the LIS faculty participants saw their particular subject area as encompassing all of the 21st Century Student Outcomes. These data may suggest that instructors in the field of education see LIS as very compatible in their efforts to provide students with 21st Century Skills.

On the other hand, LIS faculty members, while seeing the two fields as having overlapping concerns, have a more polarized view of the two domains. LIS faculty interviewed perceive education as primarily interested in “Core Subjects and 21st Century Themes,” and LIS as primarily interested in “Information, Media, and Technology Skills.” This is an interesting outcome given that the LIS literature, particularly in the areas of academic and school libraries, reflects concern with collaboration between librarians and teachers and that almost no literature in the field of education is focused on teacher-librarian collaboration.

What Are the Attitudes of Faculty in LIS and Education toward Teacher-Librarian Collaboration?

What the Responses Revealed

No doubt, faculty views of teacher-librarian collaboration are colored by their own experiences with collaboration. For the most part, interviewees reported that they had experienced little effective teacher-librarian collaboration in their “previous careers” (as teachers and/or librarians). School libraries were not even necessarily seen as resource centers, but rather as extra space where student detentions or faculty meetings could be held. Faculty in both disciplines characterized collaboration as nonexistent or difficult to achieve.

However, exceptions were mentioned, a circumstance that indicated that fruitful teacher-librarian collaboration can and does occur. Both education and LIS faculty members interviewed remembered teacher-librarian collaborations for the purpose of developing assignments and/or resource collections. It seemed that these collaborations were generally course-specific and even assignment-specific.

No one mentioned broader involvement of the school librarian in the educational process, for example, through participating in curriculum development or coordinating integration of 21st Century Skills across the curriculum. These findings suggest that opportunities exist for greater teacher-librarian collaboration and greater librarian involvement overall.

Generally speaking, interviewees reported more consistent successful collaboration with librarians in their current academic positions. In particular, both groups of faculty had worked with their subject-area liaison librarians on everything from developing assignments and conducting workshops for classes to developing grant proposals and assisting with literature reviews.

Implications of the Responses

These success stories raise the question of why such collaborations are more difficult to achieve in the K–12 environment. Are there things inherent in the institutional culture of K–12 schools that impede teacher-librarian collaboration? If so, what are these things, and can the culture be changed? Is it significant that the academic librarians with whom faculty had collaborated were subject specialists, while librarians in the school environment are often seen as generalists? Does the difficulty arise from the emphasis on standardized testing in K–12 school and the concomitant disincentives for creative collaboration?

Any or all of these factors may be responsible for the differences noted in teacher-librarian collaboration in the two environments. Interestingly, no participants stated that their collaboration with librarians in their current positions had influenced their inclusion of teacher-librarian collaboration as a topic in their classes (although instructors teaching school librarianship regularly include it as a topic in their classes).

Courses That Include Collaboration Skills

LIS faculty were able to identify easily where teacher-librarian collaboration was taught in the school library curriculum, namely in two particular school library courses. These LIS instructors had a fairly good sense of where collaboration, more broadly speaking, was taught in the LIS curriculum, although two of the three courses that they mentioned are not necessarily taken by all students studying school librarianship. Foundations of Information Studies was one of the courses mentioned, but students may elect to take that course or Information Policy. Another course mentioned, Marketing of Information Services, is not a required course. Because the

state's department of education requirements are rigid, pre-service school librarians have only one free elective at this university, and they may or may not choose to take marketing as their elective. Nevertheless, it is safe to assume that pre-service school librarians are provided with instruction in collaboration in at least three classes that they all must take: School Collection Development, Instructional Role of the Information Professional, and Management of Information Organizations (a core course that every LIS student must take).

Education faculty had a much harder time coming up with courses in the education curriculum where teacher-librarian collaboration was taught. While interviewees noted that several courses emphasized the value of school library resources for teachers and students, teacher-librarian collaboration was not a specific topic that was discussed.

This lack may be due, in part, to the fact that few of the education faculty interviewed recalled successful teacher-librarian collaboration experiences in their previous jobs as secondary school teachers. It may also be due to the fact that collaboration with other education professionals in general is not emphasized in the education curriculum. One interviewee, for example, stated, "We don't teach students to work with school psychologists or guidance counselors either."

Faculty in both disciplines had specific ideas about where teacher-librarian collaboration could be taught in their curricula. The variety of courses mentioned suggests that faculty see collaboration as an important enough topic that it could (and should) be taught across the curriculum. On the LIS side, collaboration is typically taught more broadly and is not limited to discussions of teacher-librarian collaboration, except in the school librarianship courses. This broad approach is understandable given that most LIS courses enroll students representing a range of career interests. On the education side, discussions of collaboration can be more focused since almost all students are planning to become teachers, at least initially. However, responses from education faculty indicate that discussions of collaboration might include not only collaboration with school librarians, but also with guidance counselors, school psychologists, etc.

Strategies for Teaching Collaboration Skills

Faculty in both disciplines offered very similar suggestions when asked about the best strategies for teaching skills for teacher-librarian collaboration. Their responses were characterized not only by their similarity, but also by their variety. Clearly, there is a sense that collaboration can and should be taught through different methods and in different places. Participants mentioned classroom assignments, group activities, guest speakers from across the two disciplines, and class projects that would involve students in education working with students in LIS.

The idea of offering a course in which both education and LIS students could enroll and work together came up more than once, suggesting that the time may be ripe for trying such an approach. As several faculty commented, a course focused on 21st Century Skills might be an appropriate venue for this kind of collaborative class.

What Are Barriers to On-the-Job Collaboration?

Faculty from both disciplines also recognize that, while collaboration can certainly be incorporated into classes and other experiences, such as field work, ongoing collaboration between teachers and librarians on the job can be difficult to achieve due to a variety of factors. Interviewees expressed the beliefs that the issue of "territoriality," the emphasis on standardized testing, and rigid measures of accountability can discourage collaboration.

More research is needed to determine whether these perceptions are, in fact, hampering teacher-librarian collaboration and, if so, how these challenges can be overcome. Dealing with such challenges would likely involve changing institutional cultures and also state and national policies toward education.

But on a more local level, part of the challenge may also involve changing teacher, librarian, and administrator perceptions of the role school librarians can play and the benefits of teacher-librarian collaboration in promoting student learning. Developing assessments of teacher-librarian collaboration and implementing rewards for successful collaboration will help foster engagement in collaborative activities that will ultimately benefit students.

Incorporating instruction in teacher-librarian collaboration into education and LIS curricula, and, in particular, developing cross-disciplinary courses that model and facilitate such collaboration for pre-service teachers and school librarians are important steps in overcoming these challenges and achieving these goals.

What Strategies Would Be Effective in Teaching 21st Century Skills to Educators, Including School Librarians?

Faculty members interviewed were in agreement that a variety of strategies can be used to ensure that LIS and education students receive a thorough grounding in 21st Century Skills. In addition to the idea of a standalone course focused on 21st Century Skills that both education and LIS students could take, participants also suggested that such skills should be taught in all courses in the curriculum and through various means. This suggestion indicates that faculty members believe these skills are important enough to be included across the curriculum.

No single strategy was identified as being the best way to ensure that these skills are being covered. Instead, faculty identified individual assignments and activities, as well as group activities, as being potentially effective ways to incorporate 21st Century Skills into coursework.

Again, the implication is that these skills are important enough to warrant inclusion in a number of different course assignments. However, a related implication may be that faculty members consider these skills to be so broadly defined that almost any assignment would involve their use. Indeed, how could an assignment be developed that did not require students to employ one or more of these skills?

Though faculty did not explicitly state this conclusion, it seems reasonable to conclude that individual courses and individual assignments must include a clear sense of what skills are being fostered. Not every course, and certainly not every assignment, can cover all of these skills. By the same token, it is important to recognize that there is a difference between developing an assignment that requires students to use certain skills and actually providing instruction in those skills through readings, lectures, and class discussions, for example.

Several participants also mentioned the importance of instructors modeling 21st Century Skills for students. Indeed, research has shown that college freshmen, particularly those with below-proficient information-literacy skill levels, find demonstration of skills, as well as opportunities to practice new skills, to be effective instructional strategies (Latham and Gross, in press). More research is needed to determine if such modeling of skills would be helpful for pre-service teachers and librarians.

Faculty members interviewed also expressed the belief that the facilitation of 21st Century Skills must extend beyond the classroom. Several participants mentioned field experiences, such as

internships and service-learning activities, as ways of enhancing skill development. Several also mentioned that many practicing teachers and school librarians could benefit from skill enhancement and suggested professional development and continuing education as ways of accomplishing that enhancement. These suggestions may also indicate a belief among faculty that in their pre-service education many practicing teachers and school librarians have not received much training on 21st Century Skills. Professional development opportunities would provide a way of compensating for that lack. The suggestion may also indicate recognition that skills needed in the twenty-first century are ever-evolving and that, to be effective teachers and school librarians, practicing professionals need to update their skills and knowledge on an ongoing basis.

In particular, interviewees noted that a course focused on teaching 21st Century Skills could provide a framework for also teaching collaboration to LIS and education students. More than one faculty member mentioned the possibility of having a course (or courses) that both LIS and education students would take that would allow them to collaborate on activities related to 21st Century Skills. This approach could have an important impact on practice and, arguably, could expand the role of the school librarian to the role of coordinator and facilitator of skills instruction and support across the curriculum, moving beyond providing support only through collection development and course-specific instruction. In this model, the school librarian could become the expert in the breadth of 21st Century Skills, while teachers could become the experts in specific skill sets related to their subject areas.

At the same time, participants recognized that challenges abound. Most notable, perhaps, is faculty members' perception that the emphasis on standardized testing in K–12 schools has had a pernicious effect of discouraging instruction and collaboration that are not directly related to improving students' test scores. Another challenge lies in the fact that, while (as one faculty member commented) 21st Century Skills are “the bridges between the core subject silos,” measuring the strength of those bridges is very difficult. Mapping current tests to 21st Century Skills assessment is one approach to addressing this issue, and developing additional—and more effective—assessment of skills is another.

Limitations

Because of the small sample size and the qualitative nature of the study, the results are not generalizable. There is always the risk when using a case-study approach that the case being studied may not be representative. The School of Teacher Education and/or the School of Library and Information Studies at this particular institution may or may not be representative of similar schools at other institutions.

In addition, the fact that participants were interviewed by other faculty, i.e., their peers, may have influenced how they framed their responses. Participants' recollections of previous collaborative experiences may have been hazy, depending on how long ago those experiences occurred.

Conclusion

In this case study, most participating faculty members in education and LIS stated either explicitly or implicitly that collaboration between teachers and school librarians is a worthy goal. They offered a variety of methods by which such collaboration might be achieved, beginning

with the education of pre-service teachers and school librarians. Clearly, more research is needed to identify and develop best practices for teaching collaboration to pre-service librarians and teachers. Additional data collection among education and LIS faculty could be done using not only interviews, but also focus groups and even a large-scale survey.

Research should also be conducted among practicing teachers and school librarians to determine their educational experiences relating to collaboration and 21st Century Skills, as well as their professional experiences collaborating with one another to teach 21st Century Skills. When best practices are identified, the context should be examined more closely, looking at the teachers' and librarians' educational preparation and current institutional factors to determine what fosters a "culture of collaboration."

Another important question is how are collaborative best practices being evaluated, and how are they being encouraged? Perhaps the first step is to promote collaboration among LIS faculty and education faculty themselves, focusing on the fact that both groups are working toward a similar goal: the education of professionals who, in turn, will educate students, promote the acquisition of 21st Century Skills, and facilitate the development of lifelong learning skills. Changing institutional cultures is a tall order, and a goal that will not be achieved over night. However, if this change is to happen at all, it must begin with the academic disciplines themselves. The collaborative development of a course (or courses) that both LIS students and education students take is one way to learn more about how the two disciplines complement each other, to facilitate the development of best practices in librarian-teacher collaboration, and to begin to establish a culture of collaboration among teachers and librarians.

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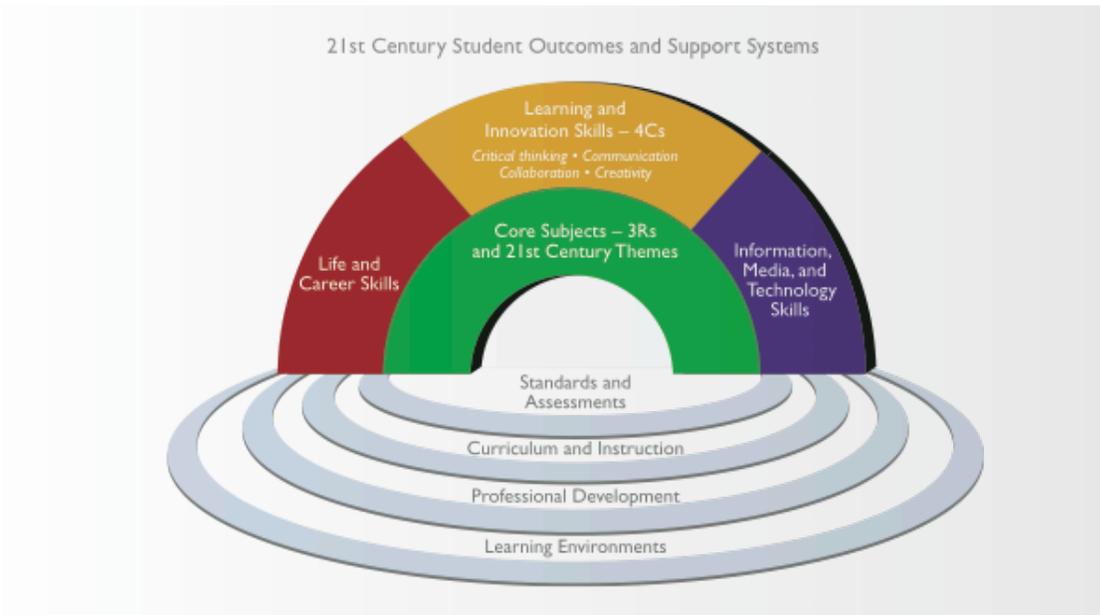
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Appendix A: Framework for 21st Century Learning



The Partnership for 21st Century Skills has developed a vision for student success in the new global economy.



21ST CENTURY STUDENT OUTCOMES

To help practitioners integrate skills into the teaching of core academic subjects, the Partnership has developed a unified, collective vision for learning known as the Framework for 21st Century Learning. This Framework describes the skills, knowledge and expertise students must master to succeed in work and life; it is a blend of content knowledge, specific skills, expertise and literacies.

Every 21st century skills implementation requires the development of core academic subject knowledge and understanding among all students. Those who can think critically and communicate effectively must build on a base of core academic subject knowledge.

Within the context of core knowledge instruction, **students must also learn the essential skills for success in today's world, such as critical thinking, problem solving, communication and collaboration.**

When a school or district builds on this foundation, combining the entire Framework with the necessary support systems—standards, assessments, curriculum and instruction, professional development and learning environments—students are more engaged in the learning process and graduate better prepared to thrive in today's global economy.

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Core Subjects and 21st Century Themes

Mastery of **core subjects and 21st century themes** is essential to student success. Core subjects include English, reading or language arts, world languages, arts, mathematics, economics, science, geography, history, government and civics.

In addition, schools must promote an understanding of academic content at much higher levels by weaving **21st century interdisciplinary themes** into core subjects:

- **Global Awareness**
- **Financial, Economic, Business and Entrepreneurial Literacy**
- **Civic Literacy**
- **Health Literacy**
- **Environmental Literacy**

Learning and Innovation Skills

Learning and innovation skills are what separate students who are prepared for increasingly complex life and work environments in today's world and those who are not. They include:

- **Creativity and Innovation**
- **Critical Thinking and Problem Solving**
- **Communication and Collaboration**

Information, Media and Technology Skills

Today, we live in a technology and media-driven environment, marked by access to an abundance of information, rapid changes in technology tools and the ability to collaborate and make individual contributions on an unprecedented scale. Effective citizens and workers must be able to exhibit a range of functional and critical thinking skills, such as:

- **Information Literacy**
- **Media Literacy**
- **ICT (Information, Communications and Technology) Literacy**

Life and Career Skills

Today's life and work environments require far more than thinking skills and content knowledge. The ability to navigate the complex life and work environments in the globally competitive information age requires students to pay rigorous attention to developing adequate life and career skills, such as:

- **Flexibility and Adaptability**
- **Initiative and Self-Direction**
- **Social and Cross-Cultural Skills**
- **Productivity and Accountability**
- **Leadership and Responsibility**

21ST CENTURY SUPPORT SYSTEMS

Developing a comprehensive framework for 21st century learning requires more than identifying specific skills, content knowledge, expertise and literacies. An innovative support system must be created to help students master the multi-dimensional abilities that will be required of them. The Partnership has identified five critical support systems to ensure student mastery of 21st century skills:

- **21st Century Standards**
- **Assessments of 21st Century Skills**
- **21st Century Curriculum and Instruction**
- **21st Century Professional Development**
- **21st Century Learning Environments**

For more information, visit the Partnership's website at www.P21.org.



Member Organizations

- American Association of School Librarians
- Adobe Systems Incorporated
- Apple Inc.
- Blackboard
- Cable in the Classroom
- Cengage Learning
- Cisco Systems
- Crayola
- Dell
- Education Networks of America
- ETS
- EF Education
- GlobalScholar
- Houghton Mifflin Harcourt
- Hewlett Packard
- Intel® Corporation
- JA Worldwide
- KnowledgeWorks Foundation
- Learning Point Associates
- LEGO Group
- McGraw-Hill
- Measured Progress
- MHz Networks
- Microsoft Corporation
- National Academy Foundation
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Appendix B: Interview Questions for Faculty

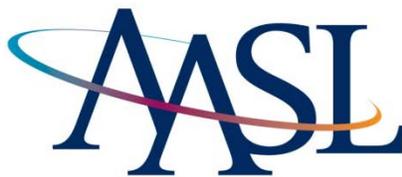
1. Begin by showing the interviewee a printout of the chart of 21st Century Skills, available at:
http://www.p21.org/index.php?option=com_content&task=view&id=254&Itemid=119
A pdf is available for printing out (see Appendix A). Talk through the four major skill areas that make up the Framework for 21st Century Learning: Core subjects and 21st-century themes; learning and innovation skills; information, media, and technology skills; and life and career skills.
2. Can you circle the area(s) where your specific subject(s) best fits in the framework? [use red pen]
3. Can you circle the area(s) where the domain of education best fits? [use blue pen]
4. Can you circle the area(s) where the domain of library and information studies (LIS) best fits? [use green pen]
5. In your opinion, what is the best way to ensure that librarians and teachers have 21st Century Skills and are equipped to help the students they teach develop them?
6. Have you had any previous professional experience working as a teacher and/or a librarian? If so, please describe.
 - a. Did you collaborate with librarians and/or teachers as part of this professional experience? If so, please describe.
7. What are your experiences as a faculty member working (collaborating) with librarians and/or teachers?
8. Can you think of examples where teacher-librarian collaboration is taught in your program's curriculum?
 - a. Where do you feel strategies for collaboration could be taught in your curriculum?
 - b. What, in your opinion, is the best way to teach strategies for collaboration?
9. What other information about teaching 21st Century Skills and/or strategies for teaching teacher-librarian collaboration would you like to share?

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