The Effect of Professional Development on Teacher and Librarian Collaboration: Preliminary Findings Using a Revised Instrument, TLC-III

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Abstract

This study describes preliminary results of a study with elementary school teachers and librarians. Professional-development intervention workshops were conducted to improve teacher and school librarian collaboration to integrate library and subject content. A revised 24-item teacher and school librarian collaboration instrument (TLC-III) was used as a pre- and post-workshop measure to evaluate teachers' and librarians' perceptions of their collaborative endeavors. The instrument was used with intervention and control teachers and school librarians to assess their perceptions about how frequently they collaborated and how important their collaboration was to student learning. Participants included librarians from six elementary schools, and third-grade and fourth-grade teachers attending intervention workshops, and a control group who did not attend the workshops. Findings indicate that professional-development workshops can significantly change teachers' perceptions about collaborating with school librarians. Of particular interest are changed perceptions in the intervention group regarding high-end collaborative endeavors involving integrated jointly planned and taught lessons.

Key terms: teacher and school librarian collaboration, survey for teachers and school librarians, TLC-III, levels of collaboration, teachers' perceptions of teacher and school librarian collaboration, teachers' perceptions of importance of collaboration to student learning

Introduction

For over thirty years, school library and information science professionals[1] have attempted to become integral players in the education of students by participating more fully in the teaching and learning process. To address growing concerns in the twenty-first century that students must become more information-literate and proficient information seekers and users, school librarians have recommended greater communication and collaboration with teachers. School library professionals consider collaboration with teachers to be an essential responsibility of 21st-century librarians (AASL and AECT 1998; AASL 2007, 2009); and teacher and librarian collaboration (TLC) is considered a critical means of improving teaching and learning. National studies indicate that school libraries are an important factor in improved student academic achievement (Lance 1994; Lance, Rodney, Hamilton-Pennell 2000, 2002; Lance and Russell 2004; Rodney, Lance, and Hamilton-Pennell 2002), and although findings from studies have not specifically focused on teacher and school librarian collaboration, the connection between school librarians and improved student achievement is apparent. For decades, multiple models (Chisholm and Ely 1979; Cleaver and Taylor 1983, 1989; Eisenberg and Berkowitz 1990) and guidelines (Loertscher 1988; Callison and Preddy 2006) have described methods and procedures to guide school librarians in their work as collaborators with teachers (Turner and Naumer 1983; Turner and Riedling 2003). However, there is a paucity of information about the extent to which prescribed models and procedures are implemented by teachers and school librarians, and how teachers and school librarians learn to collaborate on instructional activities recommended by school library professional guidelines (e.g., teaching essential learning skills, jointly creating classroom projects).

Considerable evidence from library and information science professionals about school librarians collaborating with teachers exists (Callison 1997; Callison and Preddy, 2006; Donham 1999, 2008; Harada 2002; Haycock 2003), and research exists on various aspects of collaboration, including student motivation (Small, Synder, and Parker 2009), the role of principals (Farmer 2007; Oberg 2006; Shannon 2009), pitfalls of collaboration (Branch 2006), improved instruction (Chu et al. 2011), and teachers' perceptions of TLC (Montiel-Overall and Jones 2011), but there is a paucity of empirical data on how teachers and school librarians learn to collaborate and on how to assess this collaboration. This information is critical to advance school librarians' agenda to collaborate with teachers to improve teaching and learning (AASL 2007, 2009).

This paper reports on the first phase of a two-year study involving professional-development intervention workshops for teachers and school librarians at six elementary schools. The intervention workshops included instructional modules related to TLC and teaching inquiry-based science to Spanish-speaking and Latino students. The TLC module was designed to teach teachers and school librarians about collaborating to link information-literacy standards and science standards. Using a revised instrument to evaluate TLC, data were collected to determine how often teachers and school librarians collaborated, and how important they perceived their collaboration to be to student learning. This study adds to an understanding of teacher and school librarian collaborative practices and makes a significant contribution to the literature on teacher and school librarian collaboration for several reasons. First, it provides valuable information about the role of professional development to improve teachers' and school librarians'

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[1] Other terms used are school librarian, school library media specialist, instructional specialist, technology specialist, and teacher-librarian. "School librarian" will be used throughout this paper to avoid confusion.

understanding of high-level collaboration. Second, it provides further validation of an instrument to assess types of collaborative activities in which teachers and school librarians engage. Results from this study provide additional evidence that library professionals as well as teachers benefit from instruction on what it means to collaborate to improve students' ability to access and use library resources within the context of classroom lessons.

Research Questions
Four main research questions are addressed in this study:

- To what extent do professional-development intervention workshops change teachers' and school librarians' perceptions of how frequently they engage in collaborative activities?

- To what extent do professional-development intervention workshops change teachers' and school librarians' perceptions of the importance to student learning of their collaborative activities?

- To what extent does professional development help align teachers' and school librarians' perceptions about the frequency of their collaborative activities?

- To what extent does professional development help align teachers' and school librarians' perceptions about the importance of their collaborative activities to student learning?

Literature Review

Professional Development
While collaboration between teachers and school librarians has been promoted for decades among school librarians, teachers are not well-informed about TLC. Teachers appear to agree that collaboration is important to improve student achievement (Met Life 2012). As with all initiatives involving educational strategies that are new to teachers, improved understanding among those expected to implement strategies requires well-planned professional learning workshops and adequate time for implementation to ensuring success (Ferguson 2006). For example, Kwang Suk Yoon et al. (2007) found that intensive professional development was more successful than short-term workshops. Long-term sessions of fourteen hours or more were found to show more positive effects on student achievement than short-term professional development. Professional development has also been shown to be more successful when local facilitators are involved in the training rather than outside consultants (Guskey 2003; Wayne et al. 200 (Yoon et al. 2007). Workshops that focus on the specific needs of teachers and involve authentic classroom environments have also been found to be more successful in developing teaching strategies (Glazer, Hannafin, and Song 2005). And professional development has been found to be more successful when training sessions are based on a strong theoretical framework (Brown, Dotson, and Yontz 2011). Finally, professional development is an important vehicle to identify gaps in knowledge that can be addressed in future professional-development workshops.

Methods
A two-year study of collaboration between teachers and school librarians was initiated in 2008 to examine the effect of this collaboration on students' academic achievement. The mixed-methods study, funded by the Institute of Museum and Library Services, was designed to examine

multiple aspects of teacher and school librarian collaboration, and student achievement. This preliminary report focuses on quantitative results from the first year of the two-year study in which six elementary school third-grade and fourth-grade teachers and their school librarians collaborated on science instruction, and participated in professional-development intervention workshops, which included a module focused on preparing teachers and school librarians to collaborate on instruction. The content of the TLC module included discussions about information literacy standards in *Information Power: Building Partnerships for Learning* (AASL and AECT 1998) and AASL's *Standards for the 21st-Century Learne*r (2007); discussions on the purpose of TLC and research on TLC; an examination of the TLC Model (Montiel-Overall 2005) and types of activities included in each of the four facets of the model; demonstrations by expert school librarians of planning sessions with a teacher to integrate science content and library instruction (e.g., finding reliable science resources on the Web for a science report); and preparation of science lessons that linked standards (e.g., information-literacy standards, science standards, structured English-immersion standards). Each participating teacher and school librarian received a copy of *Information Power, Standards for the 21st-Century Learner,* and science-content standards for third and fourth grades. Research articles and other professional literature were used to guide instruction and discussions at the workshops. (A complete discussion of the study is under review).[2]

To assess collaboration between teachers and school librarians, an evaluative tool designed to measure teachers' and school librarians' perceptions of the extent to which they collaborated with each other, and their perceptions about the importance of their collaboration to student learning was used as a pre- and post-intervention assessment. The instrument, revised from an earlier version to include a broader range of collaborative activities, was distributed to participants at the beginning of the school year prior to initiating professional-development intervention workshops and at the end of the school year. The intervention workshops focused on developing high-end collaboration among participating third-grade and fourth-grade teachers and their school librarian. High-end collaboration was defined as collaborative endeavors that integrated library instruction and subject content. An example of high-end TLC would be a jointly planned unit in science in which the school librarian carried out instruction including (but not limited to) activities such as the following: inventory contents of a science kit on a topic appropriate for these grades (e.g., water cycle), discuss the topic and elicit student questions, create a K-W-L (know-want-learn) for the unit, identify vocabulary words that students don't know and show them where to find definitions, make a word wall to be referred to throughout the unit, and provide informational texts for students to examine and use for research. The school librarian would report results of instruction to the teacher.

Professional-Development Intervention Workshops
Prior to initiating the two-year study, the principal investigator formed a research team of experts identified by school-district administrators, school principals, teachers, and school librarians. The expertise of individuals selected was in science, technology, language and culture, and school librarianship (e.g., one of the school librarians was the recipient of a national award for her expertise as an educator). The experts helped plan and teach various modules for the

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[2] Montiel-Overall, P., and K. Grimes. "Teachers and Librarians Collaborating on Inquiry-Based Science Instruction: A Longitudinal Study."

professional-development intervention workshops, which focused on TLC and inquiry-based science instruction. The experts also served as peer mentors for study participants.

The intervention workshops included theoretical framework for collaboration between teachers and school librarians (Montiel-Overall 2005). Participants were asked to strive for high-end collaboration suggested in the model. Discussions about articles on collaboration between teachers and school librarians and on inquiry-based science were distributed to participants prior to meeting. The workshops included role-playing by peer mentors who modeled teachers' and school librarians' planning sessions, and participants presented examples of collaboratively planned instruction in which they were engaged throughout the year.

Professional-development intervention workshops were held monthly after school at a centrally located school library. Each workshop was approximately four hours long. Intervention workshops began in late August 2008, and ended in early May of 2010. The focus of this report is on the first year of the study and on results of the TLC module.

Participants

A total of thirty individuals from six schools in two public school districts in a large urban area of southwestern United States participated in the study. The intervention group consisted of twelve teachers and six school librarians. A school librarian, a third-grade teacher, and a fourth-grade teacher formed a cohort at each school. The six participating cohorts attended the monthly intervention workshops during the school year, focusing on collaborative instruction in science. At each school, a third-grade and fourth-grade teacher served as a control (n = 12) for teachers who participated in the intervention workshops. Of the thirty participants, four were male teachers (three Anglo and one African American), and twenty-six were females (sixteen Anglo, eight Latinas, and two Asian Americans). All six librarians were female; five were Latina. Two school librarians had a Master's degree in library and information science. Four librarians had earned a state endorsement to be a school librarian. Two school librarians indicated they had some experience collaborating with teachers. Although some attempt was made to match the control teachers with intervention teachers, considerable variability in years of experience, age, and ethnicity existed between the groups. At the two smaller schools, only one class was available as the control for each grade level.

Instrumentation

The revised survey on teacher and school librarian collaboration (hereafter "TLC-III") consisted of four scales of six items each. Each scale represented a facet described in the TLC Model (Facets A, B, C, D). The facets represent levels, which range from low to high on a continuum of collaborative activities described briefly below.

- Facet A: Coordination—This facet is at the low end of the continuum and involves activities in which teachers and school librarians work together to schedule or arrange time for students to participate in library activities or events (e.g. book fairs).

- Facet B: Cooperation—This facet reflects traditional collaborative endeavors in which teachers request school librarians' assistance in finding resources for instruction.

- Facet C: Integrated Instruction—This facet involves high-level collaboration between teachers and school librarians in which jointly planned and implemented instruction occurs.

- Facet D: Integrated Curriculum—This facet is at the high end of the continuum and reflects school librarians' involvement with teachers in curriculum planning and in assessment of students.

In TLC-II, the earlier version of the survey, each item on the survey was rated twice: first, on a 4-point Likert-type scale on how *frequently* the activity occurred (1 = Never, 2 = Rarely, 3 = Frequently, 4 = Always) and second, on its *importance to student learning* (1 = Not at All Important, 2 = Somewhat Important, 3 = Important, 4 = Always Important) (Montiel-Overall and Jones 2011). The scale demonstrated good reliability and validity. The internal consistency was estimated by calculating alpha reliability coefficients. The reliability of the instrument for the Frequency and Importance to Student Learning rating scales was relatively high (0.92 and 0.93, respectively). Exploratory factor analysis (EFA) procedures were carried out to identify the underlying structure of items in the survey. A four-factor solution that aligned with the TLC Model (Facet A, Facet B, Facet C, and Facet D) was obtained. The internal consistency for the four factors, which emerged from an EFA, also had relatively high alpha reliability coefficients ranging from 0.81 to 0.93. Thus, items that grouped together were perceived as similar types of endeavors defining the same construct (Montiel-Overall 2008; Montiel-Overall and Jones 2011).

In TLC-III, the revised instrument used in this study, items were reworded for clarification and the pool of items was expanded from sixteen to twenty-four to improve validity and reliability. The additional eight items described a broader range of collaborative activities within each facet of the TLC Model. The initial analysis of the items in TLC-III, the revised version of the instrument, also exhibited high reliability coefficients on the Frequency and Importance to Student Learning ratings and the four facet subscales (Cronbach's alpha ranged from .84–.94 on the Frequency ratings and .81–.95 on the Importance to Student Learning ratings).

The self-administered TLC-III asked teachers and school librarians to rate twenty-four items on a survey by marking an analogue scale for a Frequency scale and an Importance to Student Learning scale to indicate how *frequently* they engaged in specific collaborative activities with the school librarian, as described in four facets of the TLC Model, and how *important to student learning* the activity was perceived to be. The value used for the analysis varied from 0 to 1, which was the proportion of the left of the scale to the marking divided by the total length of the scale. The survey is in Appendix B.

Findings

Analysis of Full Scale (TLC-III)
Participants' responses on the 24-item TLC-III instrument were summed to create a composite score. The composite score was computed by averaging across the twenty-four items. The composite score means and standard deviations by group for pre- and post-test measures for the Frequency and Importance to Student Learning ratings are presented in table 1.

Table 1. Composite score means (and standard deviations) for Frequency and Importance to Student Learning scales by group (n = 30, 6 per group).

Group	Frequency Ratings Means (SD)		Importance to Student Learning Ratings Means (SD)	
	Pre	Post	Pre	Post
third-grade intervention	0.49 (0.28)	0.77 (0.18)	0.76 (0.15)	0.87 (0.08)
third-grade control	0.32 (0.14)	0.28 (0.14)	0.70 (0.16)	0.68 (0.13)
fourth-grade intervention	0.24 (0.08)	0.60 (0.22)	0.62 (0.09)	0.72 (0.12)
fourth-grade control	0.30 (0.22)	0.37 (0.19)	0.57 (0.24)	0.48 (0.26)
school librarians	0.45 (0.21)	0.56 (0.24)	0.78 (0.08)	0.80 (0.14)

Note: Standard deviations are in parentheses.

Composite scores for both intervention groups and for the school librarians rose from pre- to post-test for both the Frequency and Importance to Student Learning ratings, while scores in the control groups declined slightly. To test the significance of the change, a mixed-design ANOVA (analysis of variance) with one between-subjects factor (Group) and one within-subjects factor (Time of Assessment) was obtained for the Frequency and Importance to Student Learning rating variables. Analysis of variance results are presented in table 2.

Table 2. Mixed-design ANOVA F-test for Frequency and Importance to Student Learning ratings.

	Frequency Ratings	Importance Rating
group	3.27***	3.99***
time	19.06***	1.45
time x group	7.98***	3.26*

* $p < .05$; *** $p < .001$

A significant main effect of group, $F_{(4, 25)} = 3.27$, and a main effect of time, $F_{(1, 25)} = 19.06$, were evident on the Frequency ratings. A statistically significant time-by-group interaction, $F_{(1, 25)} = 7.98$, was also present. On Importance to Student Learning a statistically significant main effect of group was present, $F_{(4, 25)} = 3.99$. A statistically significant time-by-group interaction was also present, $F_{(1, 25)} = 3.26$. To identify the source of the effects, post-hoc mean comparisons using a Bonferroni approach that adjusts for Type I error in repeated tests were computed. The significance level for each test was set at .01 (α/# of tests=.05/5). The results of the multiple mean tests are presented in table 3.

Table 3. Pre- and post-test mean comparisons for Frequency and Importance to Student Learning.

Group	Frequency Ratings Means			Importance to Student Learning Ratings Means		
	Pre	Post	Post-Pre	Pre	Post	Post-Pre
third-grade intervention	0.49	0.77	0.28***	0.76	0.87	0.11***
third-grade control	0.32	0.28	-0.04	0.70	0.68	-0.02
fourth-grade intervention	0.24	0.60	0.36***	0.62	0.72	0.10*
fourth-grade control	0.30	0.37	0.07	0.57	0.48	-0.91
school librarians	0.45	0.56	0.11	0.78	0.80	0.02

* $p < .05$, ***$p < .001$

On the Frequency ratings, the change from pre- to post-intervention was significant for both the third-grade and fourth-grade intervention groups. The change was not statistically significant for any of the other groups. However, school librarians did show a small but non-significant gain. On Importance to Student Learning, on the other hand, a significant change over time was evident in the third-grade intervention group, but not in the fourth-grade intervention group ($p = .037$), because of the Bonferroni adjustment (alpha was set at .01). A statistically significant change was not evident for the school librarians, nor for the third-grade and fourth-grade control groups.

In addition, the pre- and post-test Frequency rating means for each group are presented in figure 1. The pre- and post-test Importance to Student Learning rating means for each group are presented in figure 2.

Figure 1. Mean ratings for Frequency rating for school librarians, and intervention and control teachers (pre- and post-test).
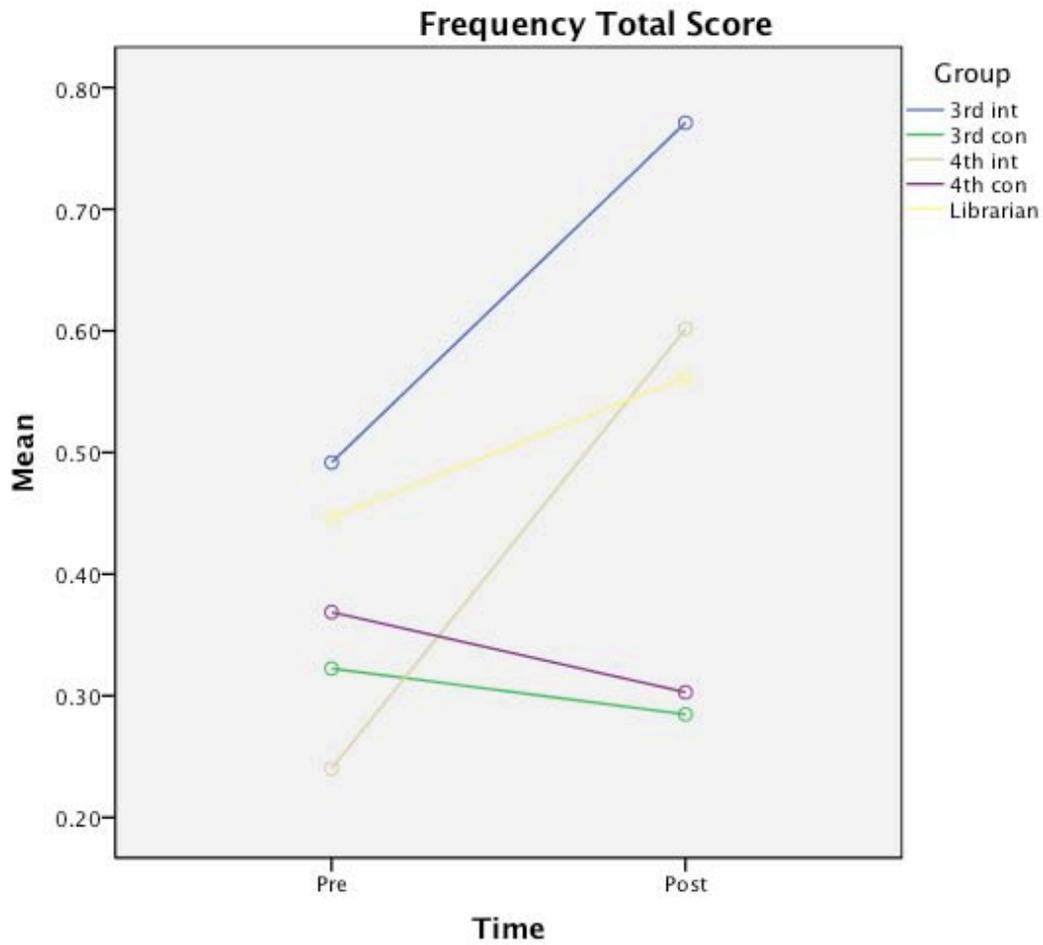
Figure 2. Mean ratings for Importance to Student Learning rating for school librarians, and intervention and control teachers (pre- and post-test).
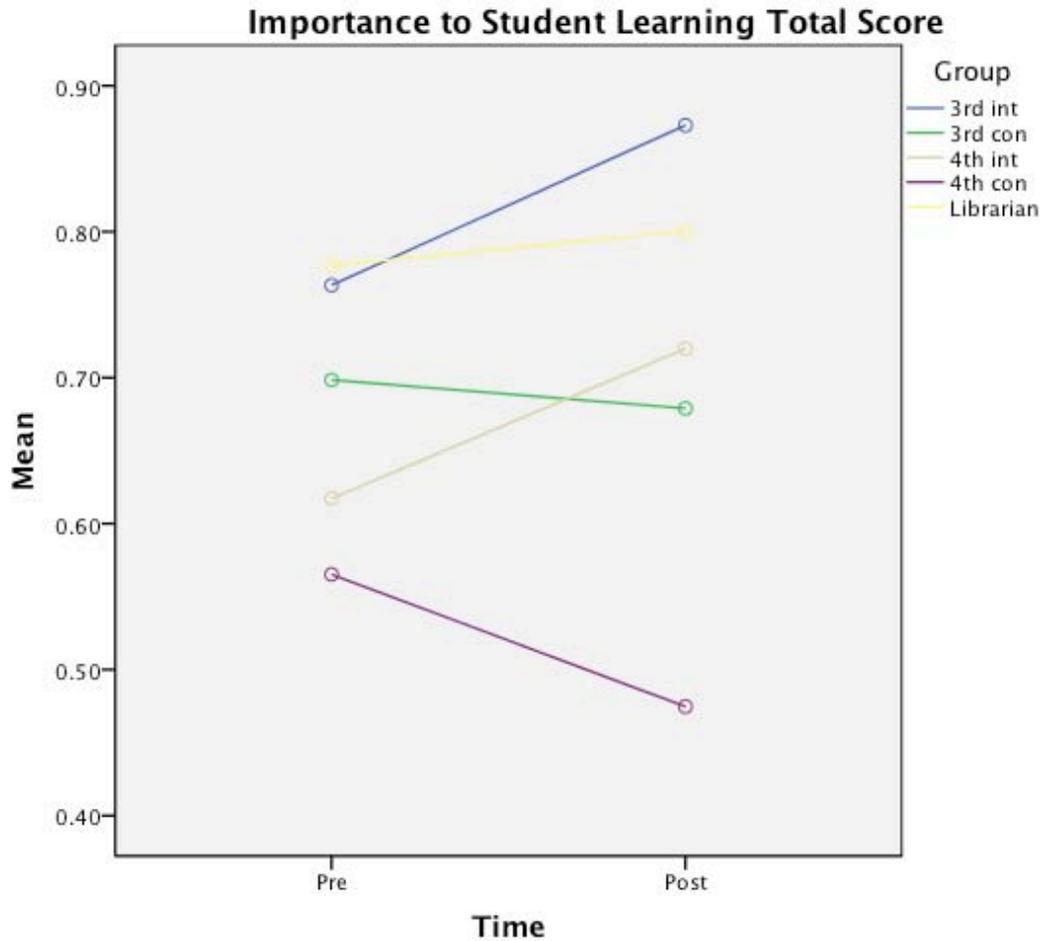
Analysis of Facets (TLC-III Subscales)

Frequency Ratings
A composite score for each facet (i.e., A: Coordination, B: Cooperation, C: Integrated Instruction, D: Integrated Curriculum) was computed by averaging the ratings for the six items in the facet. The mean Frequency ratings and standard deviations for the five groups for each of the four facets are presented in table 4. As evident in table 4, scores for teachers and school librarians who attended the intervention workshops rose from pre- to post-test for each facet, while scores for the control group of teachers declined slightly.

Table 4. Mean Frequency ratings for each facet by group.

	Time	Coordination (Facet A)	Cooperation (Facet B)	Integrated Instruction (Facet C)	Integrated Curriculum (Facet D)
third-grade intervention	Pre	0.52 (.25)	0.61 (.32)	0.45 (.32)	0.39 (.34)
	Post	0.73 (.19)	0.88 (.10)	0.91 (.09)	0.57 (.42)
third-grade control	Pre	0.36 (.21)	0.47 (.20)	0.27 (.20)	0.20 (.07)
	Post	0.35 (.21)	0.41 (.22)	0.23 (.16)	0.14 (.07)
fourth-grade intervention	Pre	0.29 (.08)	0.36 (.21)	0.15 (.11)	0.17 (.04)
	Post	0.51 (.12)	0.66 (.28)	0.70 (.29)	0.54 (.33)
fourth-grade control	Pre	0.44 (.22)	0.44 (.21)	0.32 (.21)	0.28 (.15)
	Post	0.38 (.25)	0.36 (.24)	0.25 (.23)	0.23 (.20)
school librarians	Pre	0.49 (.18)	0.48 (.21)	0.39 (.24)	0.40 (.28)
	Post	0.58 (.24)	0.59 (.25)	0.56 (.29)	0.53 (.29)

Note: Standard deviations are in parentheses.

To test for a statistically significant change over time, a mixed design ANOVA with one between-subjects factor (Group) and one within-subjects factor (Time of Assessment) on the Frequency ratings was computed for each facet of the model. Analysis of variance results are presented in table 5.

Table 5. Mixed-design ANOVA F-test for Frequency ratings by facet.

	Coordination (Facet A)	Cooperation (Facet B)	Integrated Instruction	Integrated Curriculum (Facet C)	(Facet D)
group	2.25	2.37	4.61**	2.38	
time	9.48**	11.03**	24.63***	5.18*	
time x group	3.68*	5.80**	8.63***	2.48	

$* p < .05; ** p < .01; *** p < .001$

A significant main effect of group was evident on only one of the four facets, Facet C (Integrated Instruction), $F_{(4, 25)} = 4.61$. A significant main effect of time was evident on all four facets. Significant interaction effect of time and group was evident on all facets except Facet D (Integrated Curriculum), which was marginally significant ($p = .070$) (see table 5). To identify the source of the effects, post-hoc mean comparisons using a Bonferroni approach that adjusts

for Type I error in repeated tests were computed. The significance level for each test was set at .01 (α/# of tests=.05/5). The results of the multiple mean tests are presented in table 6.

Table 6. Pre- and post-test mean comparisons for Frequency ratings by facet.

	Pre-Test	Post-Test	Mean Difference (Post-Pre)
Coordination (Facet A)			
third-grade intervention	0.52	0.73	.214**
third-grade control	0.36	0.35	-.009
fourth-grade intervention	0.29	0.51	.219**
fourth-grade control	0.44	0.38	-.060
school librarians	0.49	0.58	.091
Cooperation (Facet B)			
third-grade intervention	0.61	0.88	.271***
third-grade control	0.47	0.41	-.053
fourth-grade intervention	0.36	0.66	.300***
fourth-grade control	0.44	0.36	-.078
school librarians	0.48	0.59	.103
Integrated Instruction (Facet C)			
third-grade intervention	0.45	0.91	.453***
third-grade control	0.27	0.23	-.037
fourth-grade intervention	0.15	0.70	.559***
fourth-grade control	0.32	0.28	-.073
school librarians	0.39	0.56	.170
Integrated Curriculum (Facet D)			
third-grade intervention	0.39	0.57	0 .18
third-grade control	0.20	0.14	-0.05
fourth-grade intervention	0.17	0.54	0 .37**
fourth-grade control	0.28	0.23	-0.05
school librarians	0.40	0.53	0.13

** $p < .01$; *** $p < .001$

For the first three facets, a significant difference between the pre- and post-test means in both third-grade and fourth-grade intervention groups (workshop participants) was evident. As noted previously, both control groups declined slightly, but the difference was not significant in either case. School librarians increased slightly on all three facets, but not enough to be significant. The omnibus *F* test for Facet D (Integrated Curriculum) was marginally significant, and the

subsequent contrasts show that only the fourth-grade intervention group improved significantly. Thus, classroom teachers who participated in the workshops stated that they carried out collaborative activities within the first three facets significantly more often after the workshops than before.

Importance to Student Learning Ratings

Analysis for Importance to Student Learning paralleled the analysis for the Frequency ratings. A summary of ratings for teachers and school librarians who participated in the workshops (intervention) and control groups of teachers on the four facets are shown in table 7 below.

Table 7. Mean Importance to Student Learning ratings for each facet by group.

	Time	Coordination (Facet A)	Cooperation (Facet B)	Integrated Instruction (Facet C)	Integrated Curriculum (Facet D)
third-grade intervention	Pre Post	0.71 (.14) 0.81 (.09)	0.77 (.16) 0.87 (11)	0.77 (.20) 0.91 (.07)	0.81 (.18) 0.91 (.12)
third-grade control	Pre Post	0.64 (.17) 0.59 (.15)	0.76 (.12) 0.76 (.11)	0.69 (.20) 0.72 (.15)	0.71 (.21) 0.64 (.24)
fourth-grade intervention	Pre Post	0.53 (.11) 0.58 (.20)	0.68 (.07) 0.73 (.14)	0.62 (.17) 0.78 (.12)	0.64 (.20) 0.80 (.16)
fourth-grade control	Pre Post	0.58 (.24) 0.54 (.20)	0.63 (.22) 0.55 (.33)	0.55 (.28) 0.43 (.31)	0.53 (.28) 0.37 (.30)
school librarians	Pre Post	0.71 (.15) 0.69 (.24)	0.73 (.12) 0.80 (.13)	0.80 (.14) 0.87 (.14)	0.87 (.09) 0.85 (.16)

Note: Standard deviations are in parentheses.

Scores for teachers who attended intervention workshops increased from pre- to post-test, while scores for the third-grade and fourth-grade controls declined or showed smaller positive change. Scores for school librarians declined in the case of Facets A (Coordination) and Facet D (Integrated Curriculum), but increased in Facet B (Cooperation) and Facet C (Integrated Instruction).

A mixed-design ANOVA with one between-subjects factor (Group) and one within-subjects factor (Time of Assessment) on the Importance to Student Learning ratings was computed for each facet. Table 8 summarizes the results of the analyses.

Table 8. Mixed design ANOVA F-test for Importance to Student Learning ratings by facet.

	Coordination (Facet A)	Cooperation (Facet B)	Integrated Instruction (Facet C)	Integrated Curriculum (Facet D)
group	2.48	1.96	3.99*	4.72**
time	0.13	1.06	4.00	0.01
time x group	0.53	1.36	3.04*	4.35**

* $p < .05$; ** $p < .01$;

Unlike results for the Frequency ratings, scores for Importance to Student Learning generally showed less effect. The time x group interaction in Facet D (integrated curriculum) was statistically significant, $F (4, 25) = 4.35$, whereas it was not significant for the frequency analysis. The time x group interaction in Facet C (integrated instruction) was also significant, $F (4, 25) = 3.04$, although the probability level was at .05 in the analysis for Importance to Student Learning compared to the Frequency ratings ($p < .001$).

To identify the source of the time by group interaction, contrasts for each group on the pre- and post-intervention tests were computed and are presented in table 9. None of the contrasts were statistically significant at the Bonferroni-adjusted alpha level of .01. However, the contrasts for the third-grade ($p = .03$) and fourth-grade ($p = .02$) intervention groups were close to significance for Facet C (Integrated Instruction). Both groups showed an increase over time. On Facet D (Integrated Curriculum), those for the fourth-grade intervention and control groups were also very close to significance, with the intervention group increasing in their perception of the importance of collaboration ($p = .016$) and the control group decreasing in their ratings of importance ($p = .016$). In general, it appears that while the intervention and control groups changed with respect to their perceptions as expected, the changes were smaller and not significant. One possible cause of the lack of significant change is that the scores for Importance were closer to the top of the scale (scale maximum = 1.00), leaving was less room for improvement, regardless of the effectiveness of training.

Table 9. Pre- and post-test mean comparisons for Importance to Student Learning ratings.

	Pre-Test	Post-Test	Mean Difference (Post-Pre)
Coordination (Facet A)			
third-grade intervention	0.71	0.81	0.10
third-grade control	0.64	0.59	-0.05
fourth-grade intervention	0.53	0.58	0.05
fourth-grade control	0.58	0.54	-0.04
school librarians	0.71	0.69	-0.02

Cooperation (Facet B)

third-grade intervention	0.77	0.87	0.10
third-grade control	0.76	0.76	0.00
fourth-grade intervention	0.68	0.73	0.05
fourth-grade control	0.63	0.55	-0.08
school librarians	0.73	0.80	0.07

Integrated Instruction (Facet C)

third-grade intervention	.765	.912	.147[*]
third-grade control	.691	.722	.031
fourth-grade intervention	.624	.784	.159[*]
fourth-grade control	.548	.430	-.117
school-librarians	.800	.866	.066

Integrated Curriculum (Facet D)

third-grade intervention	.808	.908	.100
third-grade control	.708	.638	-.069
fourth-grade intervention	.636	.795	.159[*]
fourth-grade control	.533	.374	-.159[*]
school librarians	.872	.853	-.020

*close to statistical significance at alpha .01

Discussion

Findings from this preliminary report indicate that professional-development intervention workshops contributed to changes in teachers' and school librarians' collaborative behaviors related to how frequently they collaborate, and to teachers' and librarians' perceptions about the importance of collaboration to student academic success, although teachers' and librarians' perceptions differed slightly from each other on these two scales.

Frequency of Collaboration

For classroom teachers in the intervention group, there was a significant increase in activities defined by the first three facets of the TLC Model, which included low- and high-end collaborative activities. At the low end, activities included arranging time for students to use the library, and scheduling events. At the high end, activities included planning objectives together and jointly teaching lessons. This finding confirms earlier studies that indicate that high-end collaboration requires collaborators to engage in multiple facets of the TLC Model. For example, teachers and school librarian must arrange times so that they can meet to jointly plan lessons (Montiel-Overall 2008; Montiel-Overall and Jones 2011). School librarians showed a small increase also, although the increase was not significant, which could have been because of librarians' initial higher ratings of these activities, their prior knowledge that these activities were recommended within the LIS profession, or that they were unable to do more given that they were responsible for relatively large faculties. The smaller sample of school librarians could also

have been a factor in the smaller gains. Although not statistically significant, the degree of collaboration among teachers in the control group declined over time.

On the fourth facet of the model (Facet D: Integrated Curriculum), teachers' and school librarians' ratings also changed over time. This facet identifies activities involving school librarians in curriculum planning and evaluation. Classroom teachers in the intervention group and school librarians slightly increased in these activities, and control teachers decreased in the amount of time they indicated they spent on the activities.

Importance to Student Learning

Findings indicate that professional development also contributed to changes in perceptions about the contribution to student success of collaboration between teachers and school librarians, but, as previously stated, changes were not significant and were smaller than they were for the Frequency rating scale.

Teachers who participated in the intervention workshops changed perceptions about collaboration between teachers and school librarians being important to student learning, as did the librarians. Changes in perception between the intervention teachers and control teachers were close to significant, which means that the change was unlikely to be due to chance. As with the Frequency scale, intervention teachers indicated a positive change in perception while teachers in the control group found collaboration less important over time.

Of particular interest are school librarians' scores on the Importance to Student Learning scale. School librarians had lower scores from pre- to post-intervention on Facet A (Coordination). This would have been expected after the extensive peer mentoring by expert school librarians who stressed that teaching was more important than scheduling and organizing library events. Also, since most of the school librarians were relatively new to the profession they may have been engaged in more low-level activities prior to the workshops. Lower scores on Facet D (Integrated Curriculum) were unexpected, however. Perhaps school librarians had a more realistic perception about the likelihood of their being included in curriculum planning and student evaluation at the end of the year. School librarians' higher scores on Facet B (Cooperation) reflect their increased involvement in working directly with teachers to find resources and materials for instruction. Minimally higher scores on Facet C (Integrated Instruction) were also unexpected given the amount of time spent on planning lessons that linked information-literacy standards and science standards. However, as previously noted, school librarians' initial ratings may have been high, resulting in less of a gain. Also, the small number of school librarians participating in the study should be considered when interpreting results.

For all teachers and school librarians, changes in perceptions about the *importance* of collaborative efforts may not have been as great as they were for *frequency* because of a general understanding within both professions about collaboration being important in education. The recent MetLife (2012) report is an example of teachers' understanding of the importance of collaboration. Recent research on teacher collaboration also indicates a growing awareness of the effect of collaboration on student academic achievement (e.g., Goddard, Goddard, and Tschannen-Moran 2007), and reflects the same types of arguments about the importance of collaboration suggested in LIS literature.

Limitations

A word should be said about the nature of this study and its findings. While quantitative studies are extremely important to academic work in general, human factors must be considered in research in the social sciences. In this study, for example, teachers that did not participate (control group) in the workshops at some of the schools were extremely anxious about the research being carried out. At the time of the study (and to date), teachers experienced considerable pressure to have students succeed on standardized tests, and this study was perceived by many control teachers as giving an advantage to certain teachers over others. Lower scores by control teachers illustrate this phenomenon and should be considered in applying classic research methods to education and other areas in which context is critically important in explaining results. Finally, the small number of participants (n = 30) limits the generalizability of the study.

Conclusion

Why is collaboration important? Adults learn more when they collaborate, work harder, support one another emotionally, and commit to cumulative efforts and effects.
—Robert J. Garmston (1997, 44–45)

Over a decade ago, Robert J. Garmston (1997) identified important reasons for educators to collaborate. His message regarding teacher collaboration is equally applicable to collaboration between teachers and school librarians. The key is to ensure that collaborators (e.g., teacher/teacher or teacher/librarian) know how to collaborate effectively and have a clear understanding about how to implement collaboratively planned instruction. Teachers must also recognize school librarians as potential collaborators in the education of students.

Initial findings from this study indicate that one way to encourage effective collaboration is to provide professional development on what it means for teachers and school librarians to collaborate, and to improve knowledge of and desire for collaborative partnerships between teachers and school librarians. Neither profession can expect teachers and school librarians to become collaborative partners without adequate preparation. Professional development is needed to clearly define TLC, explain what is involved in the process, and demonstrate how high-end collaboration is carried out. Changed perceptions by teachers in particular about the type of collaborative instructional and curricular planning activities in which they could engage with school librarians indicates that teachers are open to collaboration between teachers and school librarians, and are open to learning about TLC and its benefits including its importance to improving student learning.

Lastly, school library professionals should not overlook the fact that, despite years of teacher and librarian collaboration being promoted within the profession, some school librarians still have little experience collaborating with teachers or have not yet initiated or participated in any collaborative instruction with teachers. This situation should be a major cause for concern if the role of librarians as instructional partners is to be fully implemented, and efforts should be undertaken to ensure more uniformity in how TLC is carried out. Furthermore, school library professionals must recognize that they alone cannot implement collaborative endeavors without teachers. School librarians' colleagues in education must know about and, more importantly, agree to work with librarians as instructional partners if TLC is to be successful.

Works Cited

American Association of School Librarians, and Association for Educational Communications and Technology. 1998. *Information Power: Building Partnerships for Learning.* Chicago: ALA.

American Association of School Librarians. 2007. *Standards for the 21st-Century Learner.* <www.ala.org/ala/mgrps/divs/aasl/guidelinesandstandards/learningstandards/AASL_Learning_Standards_2007.pdf> (accessed March 22, 2012).

———. 2009. *Empowering Learners: Guidelines for School Library Programs.* Chicago: ALA.

Branch, J. L. 2006. "A Teacher-Librarian Finally Understands the Joys and Pitfalls of Collaboration." *School Libraries in Canada* 25 (2): 23–34.

Brown, C. A., L. K. Dotso, and E. Yontz. 2011. "Professional Development for School Library Media Professionals: Elements for Success." *TechTrends* 55 (4): 56–62.

Callison, D. 1997. "Expanding Collaboration for Literacy Promotion in Public and School Libraries." *Journal of Youth Services* 11 (1): 37–48.

Callison, D., and L. Preddy. 2006. *The Blue Book on Information Age Inquiry, Instruction and Literacy.* Westport, CT: Libraries Unlimited.

Chu, S. K. W., S. K. Tse, E. K.Y. Loh, and K. Chow. 2011. "Collaborative Inquiry Project-Based Learning: Effects on Reading Ability and Interests." *Library & Information Science Research* 33 (3): 236–43.

Chisholm, M. E., and D. P. Ely. 1979. *Instructional Design and the Library Media Specialist.* Chicago: AASL and ALA.

Cleaver, B. P., and W. D. Taylor. 1983. *Involving the School Library Media Specialist in Curriculum Development.* Chicago: AASL and ALA.

———. 1989. *The Instructional Consultant Role of the School Library Media Specialist.* Chicago: ALA.

Donham, J. 1999. "Collaboration in the Media Center: Building Partnerships for Learning." *NASSP Bulletin* 83 (605): 20–26.

———. 2008. *Enhancing Teaching and Learning: A Leadership Guide for School Library Media Specialists*, rev. 2nd ed. New York: Neal-Schuman.

Eisenberg, M. B., and R. E. Berkowitz. 1990. *Information Problem Solving: The Big Six Skills Approach to Library & Information Skills Instruction.* Norwood, NJ: Ablex.

Farmer, L. 2007. "Principals: Catalysts for Collaboration." *School Libraries Worldwide* 13 (1): 56–65.

Ferguson, R. F. 2006. "5 Challenges to Effective Teacher Professional Development." *National Staff Development Council* 27(4) 48-52.

Garmston, R. J. 1997. "Can Collaboration Be Taught?" *Journal of Staff Development* 18 (4): 44–46. <www.wsfcs.k12.nc.us/cms/lib/NC01001395/Centricity/ModuleInstance/90848/CanCollaborationBeTaught.pdf> (accessed September 16, 2012).

Glazer, E., M. J. Hannafin, and L. Song. 2005. "Promoting Technology Integration through Collaborative Apprenticeship." *Educational Technology Research & Development* 53 (4): 57–67.

Goddard, Y. L., R. D. Goddard, and M. Tschannen-Moran. 2007. "A Theoretical and Empirical Investigation of Teacher Collaboration for School Improvement and Student Achievement in Public Elementary Schools." *Teachers College Record* 109 (4): 877–96.

Guskey, T. R. 2003. "Professional Development that Works: What Makes Professional Development Effective?" *Phi Delta Kappan 84*(10) 748.

Harada, V. H. 2002. "Taking the Lead in Developing Learning Communities." *Knowledge Quest* 31 (2): 12–16.

Haycock, K. 2003. "Collaboration: Because Student Achievement Is the Bottom Line." *Knowledge Quest* 32 (1): 54.

Lance, K. C. 1994. "The Impact of School Library Media Centers on Academic Achievement." *School Library Media Quarterly* 22 (3): 167–72.

Lance, K. C., M. Rodney, and C. Hamilton-Pennell. 2000. *How School Librarians Help Kids Achieve Standards: The Second Colorado Study.* San Jose, CA: Hi Willow Research and Publishing.

Lance, K. C., and B. Russell. 2004. "Scientifically Based Research on School Libraries and Academic Achievement: What Is It? How Much of It Do We Have? How Can We Do It Better?" *Knowledge Quest* 32 (5): 13–17.

Lindsay, K. 2005. "Teacher/Teacher-Librarian Collaboration: A Review of the Literature." *School Libraries in Canada* 25 (2): 8–21.

Loertscher, D. V. 1988. *Taxonomies of the School Library Media Program.* Englewood, CO: Libraries Unlimited.

MetLife, Inc. 2012. *The MetLife Survey of the American Teacher: Teachers, Parents, and the Economy*. <www.metlife.com/assets/cao/contributions/foundation/american-teacher/MetLife-Teacher-Survey-2011.pdf> (accessed March 20, 2012).

Montiel-Overall, P. 2005. "Toward a Theory of Collaboration for Teachers and Librarians." *School Library Media Research* 8. <www.ala.org/aasl/aaslpubsandjournals/slmrb/slmrcontents/volume82005/theory> (accessed September 17, 2012).

———. 2008. "Teacher and Librarian Collaboration: A Qualitative Study." *Library & Information Science Research* 30 (2): 145–55.

———. 2010. "Further Understanding of Collaboration: A Case Study of How It Works with Teachers and Librarians." *School Libraries Worldwide* 16 (2): 31–54.

Montiel-Overall, P., and P. Jones. 2011. "Teacher and School Librarian Collaboration: A Preliminary Report of Teachers' Perceptions about Frequency and Importance to Student Learning." *Canadian Journal of Information and Library Science* 35 (1): 49–75.

Oberg, D. 2006. "Developing the Respect and Support of School Administrators." *Teacher Librarian* 33 (3): 13–19.

Rodney, M. J., K. C. Lance, and C. Hamilton-Pennell. 2002. *Make the Connection: Quality School Library Media Programs Impact Academic Achievement in Iowa.* Bettendorf, IA: Mississippi Bend Area Education Agency. <www.iowaaeaonline.org/pages/uploaded_files/Make%20The%20Connection.pdf> (accessed September 17, 2012).

Shannon, D. 2009. "Principals' Perspectives of School Librarians." *School Libraries Worldwide* 15 (2): 1–22.

Small, R. V., J. Snyder, and K. Parker. 2009. "The Impact of New York's School Libraries on Student Achievement a012nd Motivation: Phase I." *School Library Media Research* 12. <www.ala.org/ala/mgrps/divs/aasl/aaslpubsandjournals/slmrb/slmrcontents/volume12/small.cfm> (accessed March 12, 2011).

Turner, P. M., and J. Naumer. 1983. "Mapping the Way toward Instructional Design Consultation by the School Library Media Specialist." *School Library Media Quarterly* 12 (1): 29–37.

Turner, P. M., and A. M. Riedling. 2003. *Helping Teachers Teach: A School Library Media Specialist's Role*, 3rd ed. Westport, CT: Libraries Unlimited.

Yoon, K. S., Duncan, T., Lee, S. W.-Y., Scarloss, B., & Shapley, K. 2007. "Reviewing the Evidence on How Teacher Professional Development Affects Student Achievement." (Issues & Answers Report, REL 2007–No. 033). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southwest. <http://ies.ed.gov/ncee/edlabs/regions/southwest/pdf/rel_2007033_sum.pdf> (accessed September 21, 2012).

Appendix A

Teacher and Librarian Collaboration Model
(TLC Model)
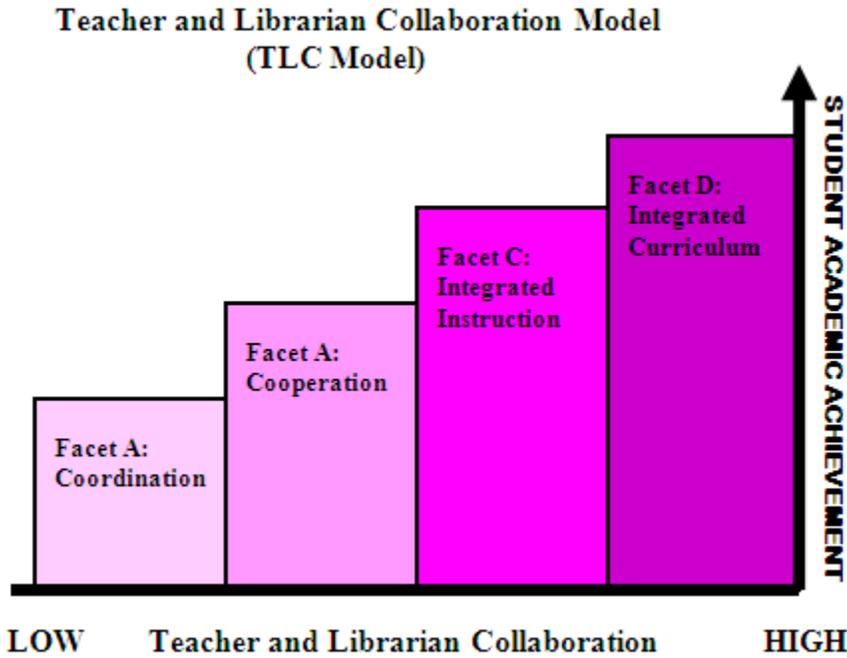
Appendix B

Survey Given as Pre- and Post-Test to Teachers and School Librarians in 2008-2009

Teacher and Librarian Collaboration Survey III
(TLC Survey III)

TEACHER SURVEY

Name:_____   Date:_____
School:_____

Dear Teachers and Librarians,
This is a short survey about practices that **teachers and librarians** engage in. There are 24 statements. Please rate **each** statement on how often you and the librarian carry out the practice described in the statement *(Frequency)*, and then rate how important you believe the practice is to student learning *(Importance to Student Learning)*. The rating scale for each type of response is described below.

Place an X along the line between the words on either end. The end words are described in the parenthesis below the line. The X should mark the location that best describes what you think about the frequency with which you carry out the practice with a librarian and how important you think the practice is to student learning.

EXAMPLE:

1. **Talking with the librarian in the hallway.**

Frequency: Importance to Student Learning:

Never _____✗_____Most frequently   Not at all important_____✗_____ _____Very important

(0 times monthly)   (Four or more times monthly)   (Not at all important to helping students learn)   (Critical to helping students learn)

1. Talking with the librarian to arrange time periods for students to use the library.

Frequency:	Importance to Student Learning:
Never _____ Most frequently	Not at all important _____ Very important

2. Scheduling time for the librarian to work with students in the library.

Frequency:	Importance to Student Learning:
Never _____ Most frequently	Not at all important _____ Very important

3. Setting up a time with the librarian when groups of students can go to the library for free reading.

Frequency:	Importance to Student Learning:
Never _____ Most frequently	Not at all important _____ Very important

4. Making sure that class library times don't conflict with times when other classes use the library.

Frequency:	Importance to Student Learning:
Never _____ Most frequently	Not at all important _____ Very important

5. Scheduling events (e.g., book sales, book fairs, RIF) in the library for students with the librarian.

Frequency:	Importance to Student Learning:
Never _____ Most frequently	Not at all important _____ Very important

6. Setting up convenient times to use the library for extracurricular activities (e.g., clubs).

Frequency:	Importance to Student Learning:
Never _____ Most frequently	Not at all important _____ Very important

7. Identifying with the librarian materials (e.g., books, websites, references) needed for teaching.

Frequency:	Importance to Student Learning:
Never _____ Most frequently	Not at all important _____ Very important

8. Asking the librarian to provide a list of library resources you need to teach a lesson.

Frequency:	Importance to Student Learning:
Never _____ Most frequently	Not at all important _____ Very important

9. Dividing responsibilities for a lesson (e.g., the teacher will teach a lesson using resources provided by the librarian).

Frequency:	Importance to Student Learning:
Never _____ Most frequently	Not at all important _____ Very important

10. Talking with the librarian about new library resources available for instruction.

Frequency:		Importance to Student Learning:	
Never	Most frequently	Not at all important	Very important

11. Asking the librarian to provide references that can be used by students.

Frequency:		Importance to Student Learning:	
Never	Most frequently	Not at all important	Very important

12. Spending time with the librarian identifying library resources that are helpful in teaching.

Frequency:		Importance to Student Learning:	
Never	Most frequently	Not at all important	Very important

13. Meeting with the librarian to plan objectives for a lesson.

Frequency:		Importance to Student Learning:	
Never	Most frequently	Not at all important	Very important

14. Sharing ideas with the librarian for teaching a lesson together.

Frequency:		Importance to Student Learning:	
Never	Most frequently	Not at all important	Very important

15. Working with the librarian to discuss a lesson that will be jointly taught.

Frequency:		Importance to Student Learning:	
Never	Most frequently	Not at all important	Very important

16. Spending time with the librarian planning instructional activities in the library.

Frequency:		Importance to Student Learning:	
Never	Most frequently	Not at all important	Very important

17. Working with the librarian to incorporate library skills into classroom lessons.

Frequency:		Importance to Student Learning:	
Never	Most frequently	Not at all important	Very important

18. Talking to the librarian about how well students understand what they are learning.

Frequency:		Importance to Student Learning:	
Never	Most frequently	Not at all important	Very important

19. Planning lessons with the librarian.

Frequency:		Importance to Student Learning:	
Never _____	Most frequently	Not at all important _____	Very important

20. Developing objectives for instruction with the librarian.

Frequency:		Importance to Student Learning:	
Never _____	Most frequently	Not at all important _____	Very important

21. Teaching together with the librarian (e.g., implementing lessons that integrate the academic curriculum such as science and social studies with library instruction).

Frequency:		Importance to Student Learning:	
Never _____	Most frequently	Not at all important _____	Very important

22. Participating in curriculum planning with the librarian to integrate library instruction into classroom curriculum.

Frequency:		Importance to Student Learning:	
Never _____	Most frequently	Not at all important _____	Very important

23. Assessing students' progress with the librarian.

Frequency:		Importance to Student Learning:	
Never _____	Most frequently	Not at all important _____	Very important

24. Discussing with the librarian how well students understand what they are learning.

Frequency:		Importance to Student Learning:	
Never _____	Most frequently	Not at all important _____	Very important

Thank you for taking this survey.

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Note: This survey is under further development and should not be used without permission from the authors.

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