

# Assessing Teacher and Librarian Collaboration: A Preliminary Report

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*Exploratory factor analysis was used to examine the structure of a 32-item teacher and librarian collaboration survey (TLC-II). The survey consisted of two scales with 16 items in each scale, Frequency and Importance to Student Learning. Scores from teacher surveys (N=194) were examined using principal axis factoring and oblique rotation to identify underlying constructs. A four factor interpretable structure of teacher and librarian collaboration emerged providing support for a proposed model of teacher and librarian collaboration. Internal consistency was high for the overall scale and for each of the factors. The results of this study provide a basis for further refinement of the instrument in preparation for broad distribution among teachers and librarians.*

*Collaboration, teacher and librarian collaboration, factor analysis*

## Introduction

Collaboration among teachers and librarians<sup>1</sup> is recommended in professional guidelines as an integral part of school librarianship (American Association of School Librarians [AASL] and Association for Educational Communications and Technology [AECT], 1998). An early study by Lance (1993) commonly referred to as “the Colorado Study” found indications that higher standardized test results occurred in schools where teachers worked with librarians. These results have also been found in additional studies across the United States leading to efforts to increase teacher and librarian collaboration as a means of improving student academic achievement (Lance, 1994, 2001, 2002; Lance et al., 1993, 1999, 2000, 2001, 2005; Lance & Russell, 2004; Rodney et al., 2002, 2003). Considerable anecdotal evidence of the positive effect of teacher and librarian collaboration on improved student academic achievement also exists. For example, librarians have written extensively about the importance of teacher and librarian collaboration in schools to meet standards for students to be successful (Bush, 1998; Busseo, 2003; Jinkins, 2001; Milbury, 2005), and about the attributes needed for librarians to be successful collaborators (Abilock, 2002). However, the types of practices undertaken by teachers and librarians are not always clearly understood. Such information is essential to further understand the relationship between teacher and librarian collaboration and improved student academic achievement. The purpose of this paper is to discuss preliminary results from a study assessing the types of

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<sup>1</sup> The term librarian is used throughout to avoid confusion in the discussion of teacher and librarian collaboration. Other preferred terms include teacher-librarian, school library media specialist, information specialist, and media specialist.

collaborative practices that teachers and librarians engage in and examining factors that may contribute to teacher and librarian collaboration.

## Background

Although teacher and librarian collaboration is a relatively new phenomenon for school librarians (AASL & AECT, 1998), the notion of librarians working closely with teachers to plan and implement instruction (as opposed to gathering information and distributing it) has been discussed within the profession for over twenty years (Loertscher, 1982, 1988). Efforts to expand the role of librarians into curriculum planning and implementation were proposed, and suggestions that librarians become co-planners, co-implementors, and co-evaluators with teachers were widely discussed in the literature (Callison, 1997) before being recommended in professional guidelines for school librarians (AASL and AECT, 1998). Building on the works of others in the field of school librarianship, Montiel-Overall (2005) proposed a model of teacher and librarian collaboration (TLC Model), and identified possible facets of collaboration (Montiel-Overall, 2006) between teachers and librarian ranging from low- to high-end collaboration along a continuum of collaborative practices. A preliminary survey of teacher and librarian collaboration (TLC-Survey) found some support for the proposed model. Using exploratory factor analysis, two factors emerged, Integrated Instruction and Traditional Role for Teacher and Librarian, from an instrument distributed to teachers and librarians. Utilizing these results, an expanded measure of teacher and librarian collaborative practices was developed. This paper reports on results from a pilot study of a second teacher and librarian collaboration survey (TLC-II). The instrument was developed to examine teacher and librarian collaborative practices and to test the proposed TLC Model, which identified four facets of collaborative practices that emerged from a broad review of the literature (Callison, 1997; Lance, 1994, 2001, 2002; Lance, et al., 1993, 1999, 2000, 2001, 2005; Lance & Russell, 2004; Loertscher, 1982, 1988, 2000; Rodney, et al., 2002, 2003). The facets (originally called “Models”) reflected the range of practices discussed in the literature. For example, Facet A: *Coordination* identified practices that were commonly carried out between teachers and librarians such as organizational or scheduling responsibilities. Facet B: *Cooperation* involved traditional librarian practices in which teachers and librarians worked together. These included such activities as finding resources for teachers to use in instruction and helping teachers by giving booktalks. Facet C: *Integrated Instruction* reflected practices recommended by professional guidelines. These practices included jointly planned and taught lessons. Finally, Facet D: *Integrated Curriculum* described broad application across a school or school district of teachers and librarians working together to integrate instruction (i.e. jointly planned lessons described in Facet C: *Integrated Instruction* would occur across a school or school district).

## Method

### *Description of Sample*

Data were collected from 204 participating teachers and librarians from 11 elementary schools in a metropolitan school district in the southwest United States. Because of the small number of librarians in the study, only surveys from 194 teacher surveys were analyzed. Of these, the majority were female (86%), reflecting the population of the teaching profession. Teachers breakdown by age was 33% between 20-30 years of age, 24% ( $n=48$ ) between 31-

40 years of age, 24% ( $n=48$ ) between 41-50 years of age, 29% ( $n=57$ ) between the ages of 51-60, and 3% ( $n=7$ ) reported being over the age of 61. One teacher did not respond to this question. The ethnicity breakdown for teachers in the sample was 49% ( $n=95$ ) identified as White (non-Hispanic), 44% ( $n=87$ ) identified as Hispanic/Latino, 2% ( $n=4$ ) identified as Asian-American, 1% ( $n=3$ ) identified as African-American, and 1% ( $n=3$ ) identified as Other. Two teachers did not respond to this question. Educational level was reported by 191 teachers. Of these, 55% ( $n=106$ ) had a Bachelor's degree, 39% ( $n=76$ ) had a Master's degree, 1% ( $n=2$ ) of teachers reported having a Masters of Library Science, and 37% ( $n=7$ ) reported Other. For teaching experience, 28% ( $n=56$ ) teachers reported having taught for less than 6 years, 20% ( $n=66$ ) had between 6-10 years, 13% ( $n=27$ ) had between 11-15 years, 22% ( $n=43$ ) had taught between 16 and 25 years, and 15% ( $n=29$ ) had taught 26 or more years. Finally, 53% ( $n=103$ ) of teachers had been at the school for up to five years, 35% ( $n=68$ ) had been at the school for between 6-15 years, 10% ( $n=21$ ) for 16-25 years, and only 1% ( $n=2$ ) of teachers had been at the school for 26 or more years.

## *Procedure*

***Participants.*** After Institutional Review Board approval to conduct the study with teachers and librarians from local schools in the community was received, schools were selected from a list provided by school district administrators. Only schools with full-time librarians were considered for the study. Once schools had been identified, a meeting with the principal of each school took place. This was followed by a formal application to the school district to conduct research at the school. After each district approved the study, principals were again contacted to assist the researcher in scheduling a time for distribution of the instrument. All principals agreed to allow the researcher and research assistants to attend a faculty meeting and to distribute the instrument at that time. Participants received token compensation for their time.

***Development of the Instrument.*** The instrument was constructed to test a proposed model of teacher and librarian collaboration (Montiel-Overall, 2005) with four facets of teacher and librarian collaboration previously mentioned (Coordination, Cooperation, Integrated Instruction, and Integrated Curriculum). The instrument consisted of several sections, which asked participants to rate aspects of teacher and librarians collaboration such as levels of trust, interest, innovation, and time. This paper reports only on a 32-item section designed to measure types of activities reflected in the four facets of the TLC Model. A prototype of the instrument was constructed after an extensive review of the literature, and contained items from a previous study (ibid.). The list of items was reviewed by a panel of expert teachers and librarians.

***Content Validity.*** In order to ensure face and content validity of the instrument, the theoretical framework proposed in the TLC Model was used along with the expert opinion of teacher and librarian panelists from one of the school districts from which participants in the study were employed. Librarian expert panelists who assisted with the development of the instrument were nominated by school district administrators because they were well respected for their ability to work with teachers collaboratively on instruction. Teacher panelists were selected by the librarians. Among the teacher-librarian panelists was a winner of a national award for her collaboration with teachers. Another panelist had helped develop library standards approved by the school board for the school district. The standards required teacher and librarian collaboration for implementation. Teachers included on the panel were

considered expert teacher and librarian collaborators by the librarian and the school principal. Those recruited for the panels each had over 10 years teaching and/or library experience. In addition to the panelists, a statistician reviewed the instrument during and after its development to ensure clarity of wording.

Review of items by panelists included extensive discussion and revision until final agreement by panelists was reached. Several rounds of reviews occurred. First one panel of four teachers and librarians reviewed the prototype of the survey to change or delete items to the original list and to generate additional items (statements) that would describe collaborative practices between teachers and librarians. A second panel then reviewed the revisions and selected redundant items to eliminate and created the final list of items with four items for each facet of the TLC Model. This was done to ensure adequate representation in each category (Fabrigar et al., 1999).

**Field testing.** After the panels had reviewed the survey, the instrument was administered to a small group of teachers and librarians ( $n=23$ ) from a school district in the community where the instrument was later field tested. Participants were recruited by school librarians. The participants signed a consent form according to Institutional Review Board procedures. Each participant received a token compensation for completing the survey and for discussing it with the researcher afterwards. Participants recommended changes in wording for clarity and reorganization of like-items. The survey took approximately 20 minutes and the postsurvey discussion took approximately 25 minutes. High internal consistency was demonstrated on the 38 items in the subsection of teacher and librarian collaboration survey (Coefficient alpha = 0.93).

**Refinement of instrument.** Further refinement of the TLC-II continued after field-testing and redundant items were removed as suggested by participants during field-testing of the instrument. A final revision was made of the instrument and instructions were reworded for clarity to increase reliability of the instrument. The final version of was a pencil and paper self-administered survey, which contained several sections. The first section, reported on in this paper, contained two sets of 16 items answered on a 4-point Likert-type scale. The first set of 16 items was related to the *frequency* with which practices occurred and were scaled between 1 (never) and 4 (always). Respondents were asked to rate the frequency of practices such as working with teachers to arrange visits to the library for students and jointly planning, teaching, and evaluating students. Using the same set of 16 statements, participants were also asked to rate *how important to student learning* they thought the practice was. A 4-point Likert-type scale ranging from 1 (not at all important) to 4 (always important) to was used for these items.

**Missing data.** Of the teacher participants, 10 cases were missing data for one or more items. Expectation maximization (EM) was the method used for handling missing data in this study. EM is an iterative procedure involving multiple steps (Expectation and Maximisation) described in Graham et al., (2003). The procedure utilizes partially observed data to determine missing values and is considered preferable to listwise deletion used as the default on the Statistical (SPSS) statistical package used for this study. (For further discussion of missing data on surveys see Montiel-Overall, 2008b.)

## **Analysis**

Exploratory factor analysis were carried out on teacher responses ( $N=194$ ) for each of the two sets of 16 questions. Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was conducted to determine appropriate use of exploratory factor analysis. KMO results was for frequency was .90 and for importance to student learning was .89 indicating correlations between pairs of variables were sufficiently high to proceed with exploratory factor analysis (EFA). Principal axis factoring (with communalities substituted for values of 1.0 in the correlation matrix) was used to extract the factors and oblique (Promax) and orthogonal (Varimax) rotation were performed to rotate to “simple structure” (Thurstone, 1947) for the two sets of variables, Frequency (F1-F16) and Importance to Student Learning (SL1-SL16). Both orthogonal and oblique rotations yielded similar results but because factors were expected to be correlated both theoretically (and were so in practice), the results of the oblique rotation are discussed here. Descriptive statistics (Means and standard deviations) for both scales (Frequency and Importance to Student Learning) are provided on Table 1.

**Table 1. Means and Standard Deviations for Teacher and Librarian Collaborative Practices Most Frequently Performed (F1-F16) and Most Important to Student Learning (SL1-SL16) as Perceived by Teachers ( $N=194$ )**

Item		Mean	SD
F1	T/L work to arrange times for library use	2.36	.79
F2	T/L spend time to organize instructional activities in the library	1.97	.71
F3	T/L work to coordinate schedules	2.30	.87
F4	T schedules time for L to talk to students about a particular book	1.82	.79
F5*	T/L discuss library materials for teaching	2.30	.81
F6	T/L discuss what students will do when they go to the library	2.35	.77
F7*	T asks L for resources for instruction	2.67	.67
F8*	T/L divide responsibilities when working together	2.18	.78
F9	T/L jointly plan objectives for lessons	1.65	.68
F10*	T/L implement lessons together	1.75	.73
F11	T/L integrate library curriculum into teaching	2.28	.86
F12	T/L jointly evaluate students' progress	1.66	.77
F13*	T/L jointly develop objectives in school district	2.01	.81
F14	T/L jointly plan lessons in school district	1.93	.79
F15	T/L jointly participate in curriculum planning in school district	2.09	.87
F16	T/L jointly teach together in school district	2.04	.84
SL1	T/L work to arrange times for library use	3.13	.77
SL2	T/L spend time to organize instructional activities in the library	2.97	.76
SL3	T/L work to coordinate schedules	3.17	.77
SL4	T schedules time for L to talk to students about a particular book	2.78	.83
SL5*	T/L discuss library materials for teaching	3.11	.76
SL6	T/L discuss what students will do when they go to the library	3.07	.72
SL7*	T asks L for resources for instruction	3.34	.67
SL8*	T/L divide responsibilities when working together	3.04	.80
SL9	T/L jointly plan objectives for lessons	2.68	.89
SL10*	T/L implement lessons together	2.72	.84
SL11	T/L integrate library curriculum into teaching	3.09	.74
SL12	T/L jointly evaluate students' progress	2.50	.91
SL13*	T/L jointly develop objectives in school district	2.80	.85
SL14	T/L jointly plan lessons in school district	2.70	.86
SL15	T/L jointly participate in curriculum planning in school district	2.86	.81
SL16	T/L jointly teach together in school district	2.81	.85

Note: Means are arranged from highest to lowest for each scale, Frequency and Importance to Student Learning. Four point scales were used for both Frequency and Importance to Student Learning.

\* Items ranked in the same position on both scales.

## Results

### *Frequency of teacher and librarian collaboration.*

**Extraction of Factors.** Initial analysis of unrotated factors using Principal Axis Factoring was carried out yielding four factors. PAF extraction indicated that factors were highly correlated, as anticipated. The criterion of eigenvalue  $> 1$  (Kaiser, 1960) and the scree test (Cattell, 1966) were both used to determine the appropriateness of the four factor model (Fabrigar et al., 1999). A strong central factor representing approximately 45% of the total variability in the variables was present. The first factor accounted for over 45% of the variance with the next three factors representing 13.5%, 7.3%, and 6.6% of the total variability (the four eigenvalues were approximately 7.22, 2.16, 1.17, and 1.06; the total variability for 16 variables was 16.0).

Communalities among all measured factors for Frequency items (F1-F16) were examined to determine the percent of variance in a given variable for all factors extracted. Communalities among Frequency items (F1-16) were moderate to high ranging from .42 to .80 (Table 2). Communalities are considered high when they are  $>.6$  (MacCullum et al., 1999). The unrotated loadings showed the presence of a strong central factor, with loadings ranging from .59 to .76, which is a common result when factors are highly correlated. Accordingly, rotation results were examined for interpretability.

**Rotation of Factor Loading Matrices.** PAF with orthogonal (Varimax) and oblique (Promax) rotations were carried out for further interpretation. Since four constructs were postulated to underlie the data, a four factor model was requested in the rotation. Results from both methods were similar.

Table 2.  
Item Community and Exploratory Factor Analysis Results for Frequency of Collaborative Practices

Item	Community	Factor Loadings			
		Factor 1: Integrated Instr.	Factor 2: Integrated Cur.	Factor 3: Coordination	Factor 4: Cooperative Role
F10	0.76	0.95	---	---	---
F9	0.70	0.88	---	---	---
F2	0.59	0.62	---	---	---
F11	0.43	0.53	---	---	---
F12	0.42	0.61	---	---	---
F4	0.49	0.50	---	---	---
F13	0.79	---	0.86	---	---
F16	0.77	---	0.84	---	---
F14	0.70	---	0.84	---	---
F15	0.77	---	0.87	---	---
F1	0.75	---	---	0.89	---
F3	0.80	---	---	0.90	---
F7	0.78	---	---	---	0.96
F5	0.59	---	---	---	0.65
F8	0.55	---	---	---	0.51

Oblique (Promax) rotation may be more difficult to interpret because items may load on more than one factor. Three sets of “loadings” are available in oblique rotation. The pattern matrix provided the most interpretable results and was used for interpretation as recommended by Tabachnick and Fidell (1996). However, the structure matrix and content of items were also used in interpreting results. Table 3 presents the factor correlation matrix, which indicates the relative independence of the various constructs. Factor 1 was highly correlated with all variables. However, the correlations between Factor 2 and Factors 3 and 4

were relatively low. The pattern and structure matrices provided additional information distinguishing variables (Table 4). A  $\pm .50$  threshold was loosely used to identify items that characterized the factor (Ibid.).

Table 3 Factor Correlation Matrix for Frequency

Factor	1	2	3	4
1. Integrated Instruction	1.000	.525	.584	.613
2. Integrated Curriculum	.525	1.000	.298	.378
3. Coordination	.584	.298	1.000	.562
4. Traditional Cooperative TL Role	.613	.378	.562	1.000

Factor 1 was moderately to highly correlated with F9, F10, F11, F12 (.53-.95) and to a lesser extent to F2 and F4 (.62 and .50 respectively) in the pattern matrix. This was similar to the loadings on the structure matrix. However on the structure matrix, items were less well defined with cross-loadings for six items (F2, F3, F4, F5, F6, and F8). Content of items was used for further interpretation of this factor. Since the six items in the pattern matrix were associated with collaborative practices in which teachers and librarians integrated course content and library curriculum in their instruction, the label assigned to this factor was Course Integrated Instruction.

Factor 2 was defined by four closely related items, F13-F16 (.84-.87), with high factor loadings and substantially smaller correlations for other variables on both the pattern and structure matrices. Items in Factor 2 were associated with joint planning and teaching across the school district. Examples of statements for this factor include “Teachers and librarians in my school district jointly develop objectives for instruction” and “Teachers and librarians in my school district teach together (e.g. plan and implement lessons that integrate the academic curriculum-math, science, social studies- with library instruction).” Since as all items referred to integrated instruction across the school district, Factor 2 was labelled Integrated Curriculum.

Factor 3 was defined by two items on the pattern matrix, F1 and F3 (.89 and .90 respectively) with the remaining loading having low or negative values. On the structure matrix, F1, F2, F3, F4, and F6 (.58 to .89) loaded moderately to highly with F6 loading on three factors (1, 3, and 4) indicating shared variance with other factors. An examination of the content of these items revealed practices attributed to management efforts (e.g., arrange time, schedule time, coordinate schedules). Examples of statements for these items included “Working with the librarian to coordinate schedules so that students can use the library,” “Working with the librarian to arrange time periods for students to use the library,” and “Scheduling time for the librarian to talk to students about a book.” Factor 3 generally corresponded to a low level of collaboration on the TLC Model (Facet A: Coordination). Accordingly, Factor 3 was labelled Coordination of Activities.

Factor 4 was defined by three items F5, F7, and F8 (.65, .96, and .51 respectively) on the pattern matrix, and by four items on the structure matrix, F5, F6, F8, and F9 (.76, .60, .68, and .50). While no crossloads were observed in the pattern matrix, four occurred in the structure matrix (F5, F6, F8, and F9). F6 loaded on multiple factors in the structure matrix and did not load on the pattern matrix. This item apparently had elements that pertained to multiple factors rather than “simple structure” (Thurstone, 1935). An examination of the content of other variables in this factor was used to determine the most appropriate structure since there is no single correct solution. Factor 4 was labelled Traditional Cooperative Role since it contained items that implied cooperative endeavors between teacher and librarian in which the librarian carried out traditional responsibilities of helping teachers find resources for teaching and dividing responsibilities. Examples of statements in Factor 4 include “asking the librarian for library resources to use in instruction,” “spending time with the librarian to

discuss library materials (e.g. books, websites, references) needed for teaching,” and “dividing responsibilities when jointly working (e.g. librarian gathers resources for a lesson that you [the teacher] will teach).”

Table 4  
Structure Coefficients and Pattern Weights and Alpha Coefficients for Frequency of Collaborative Practices between Teacher and Librarian (T/L) Based on Teacher Surveys

<i>Item Stem</i>	<i>Pattern</i>	<i>Structure</i>
Factor 1 Course Integrated Instruction $\alpha=0.87$		
F10 T/L implementing lessons	.95	.86
F9 T/L planning objectives for lessons	.88	.84
F2 T/L spending time to organize instructional activities	.62	.74
F11 T/L integrate library curriculum into teaching	.53	.65
F12 T/L evaluating students' progress	.61	.62
F4 T/L schedule time for librarian to talk to students about a book	.50	.65
Factor 2 Integrated Curriculum $\alpha=0.93$		
F13 T/L jointly develop objectives in school district	.86	.89
F16 T/L teach together in school district	.84	.84
F14 T/L jointly plan lessons in school district	.84	.88
F15 T/L jointly participate in curriculum planning	.87	.88
Factor 3 Coordination of Activities $\alpha=0.87$		
F1 T/L arrange times for library use	.89	.86
F3 T/L coordinate schedules	.90	.89
Factor 4 Traditional Cooperative T/L Roles $\alpha=0.81$		
F7 T asks librarian for library resources for instruction	.96	.87
F5 T/L discuss library materials needed for teaching	.65	.80
F8 T/L divide responsibilities when working together	.51	.68

Note. Values from the pattern matrix are arranged from highest to lowest with higher values indicating stronger correlations.

### *Importance to student learning*

**Extraction of Factors.** Initial analysis of unrotated factors using Principal Axis Factoring was carried out yielding three factors. The criterion of eigenvalue  $> 1$  (Kaiser, 1960) and the scree test (Cattell, 1966) were both used to determine the appropriateness of the three factor model (Fabrigar et al., 1999). A four factor model was supported by the scree test (Cattell, 1966) with a slight elbow after the fifth factor. The last factor fell just under the eigenvalue  $>1$  rule (Kaiser, 1960) but was interpretable so it was retained. PAF extraction indicated that factors were highly correlated, as anticipated. A strong central factor representing approximately 48% of the total variability in the variables was present. The first factor accounted for over 48% of the variance with the next three factors representing 12.7%, 6.43%, and 5.71% of the total variability (the four eigenvalues were approximately 7.75, 2.04, 1.03, and .91; the total variability for 16 variables was 16.0).

Communalities among all measured factors for Importance to Student Learning items (SL1-SL16) were examined to determine the percent of variance in a given variable for all factors extracted. Communalities among Importance to Student Learning items (SL1-SL16) were moderate to high ranging from .49 to .84 (Table 5). Communalities are considered high when they are  $>.6$  (MacCullum et al., 1999). As with the Frequency variables, all items had high loadings on the first unrotated factor with loadings ranging from .54 to .78, which is a common result when factors are highly correlated. Accordingly, rotation results were examined for interpretability.

**Rotation of Factor Loading Matrices.** Oblique (Promax) rotation was again selected because factors were expected to be correlated. As with the Frequency variables, four factors were selected for rotation and a +/- .50 threshold was used to identify items that defined each factor (Tabachnick & Fidell, 1996). Three sets of loadings available in oblique rotation were examined in interpreting the data.

Table 5.  
Item Communalities and Exploratory Factor Analysis Results for Importance to Student Learning

Item	Communality	Factor Loadings			
		Factor 1: Integrated Cur.	Factor 2: Integrated Instr.	Factor 3: Coordination	Factor 4: Cooperative Role
SL15	0.84	0.94	---	---	---
SL13	0.82	0.89	---	---	---
SL14	0.81	0.83	---	---	---
SL16	0.66	0.76	---	---	---
SL10	0.78	---	0.95	---	---
SL9	0.76	---	0.94	---	---
SL12	0.51	---	0.63	---	---
SL11	0.49	---	0.45	---	---
SL3	0.79	---	---	1.02	---
SL1	0.64	---	---	0.76	---
SL7	0.72	---	---	---	0.93
SL5	0.56	---	---	---	0.74
SL8	0.61	---	---	---	0.62

Substantial intercorrelations among the factors indicate that the constructs, while identifying some unique variability were highly related to each other. Table 6 contains the correlation matrix for the Importance to Student Learning scale. Correlations were quite high.

Table 6 Factor Correlation Matrix for Importance to Student Learning

Factor	1	2	3	4
1. Integrated Instruction	1.000	.668	.403	.431
2. Integrated Curriculum	.668	1.000	.619	.601
3. Coordination	.403	.619	1.000	.681
4. Traditional Cooperative T/L Role	.431	.601	.681	1.000

Factor 1 was defined by four items, SL13-SL16, with loadings from .76-.94 in the pattern matrix and slightly higher loading in the structure matrix (.80-.91) (see Table 6). Examination of content indicated these four items were strongly related to collaborative practices across the school district, and were thus assigned the label, Integrated Curriculum. Items in this factor included “teachers and librarian in my school district jointly participate in curriculum planning,” and “teachers and librarian in my school district jointly develop objectives for instruction.”

Table 7  
Structure Coefficients and Pattern Weights and Alpha Coefficients for Importance of Collaborative Practices between Teacher and Librarian (T/L) Based on Teacher Surveys

<i>Item Stem</i>	<i>Pattern</i>	<i>Structure</i>
Factor 1 Integrated Curriculum $\alpha=0.93$		
SL15 T/L jointly participate in curriculum planning	.94	.91
SL13 T/L jointly develop objectives in school district	.90	.90
SL14 T/L jointly plan lessons in school district	.83	.90
SL16 T/L teach together in school district	.76	.81
Factor 2 Course Integrated Instruction $\alpha=0.86$		
SL10 T/L implementing lessons	.95	.88
SL9 T/L planning objectives for lessons	.94	.86
SL12 T/L evaluating students' progress	.63	.70
SL11 T/L integrate library curriculum into teaching	.45	.67
Factor 3 Coordination of Activities $\alpha=0.82$		
SL3 T/L coordinate schedules	1.03*	.87
SL1 T/L arrange times for library use	.77	.80
Factor 4 Traditional Cooperative T/L Roles $\alpha=0.84$		
SL7 T asks librarian for library resources for instruction	.93	.87
SL5 T/L discuss library materials needed for teaching	.74	.80
SL8 T/L divide responsibilities when working together	.63	.68

*Note.* Items are arranged from highest to lowest for the pattern matrix. Higher values indicate a stronger correlation.

\*In oblique rotations since the loadings are regression coefficients instead of correlations, values may be greater than 1.

Factor 2 correlated moderately to highly with four items SL9-SL12 on the pattern matrix with loadings from .45-.95, and substantially smaller correlations for other variables. On the structure matrix, the SL9-SL12 items displayed moderate to high correlations (.67-.88). The association among these items was joint planning and implementation of library lessons, and classroom instruction reflected in statements such as “planning objectives for lessons with the librarian,” “implementing lessons with the librarian,” and “integrating the library curriculum into my teaching.” (These same items loaded highly on Factor 1 of the Frequency subscale along with three additional items, F2, F4, and F6). Factor 2 of the Importance to Student Learning subscale was labelled Course Integrated Instruction since the items were associated with collaborative practices in which classroom teachers and librarians integrate library curriculum and subject content.

Factor 3 was most highly related to SL1 and SL3 (.77 and 1.03 respectively) on the pattern matrix. These items also loaded highly on the structure matrix (.79-.84) along with SL2 and SL4, which loaded moderately on the structure matrix (.65 and .66 respectively) and cross-loaded with Factors 2 and 3. To reflect the content of items in this factor, the label assigned to Factor 3 was Coordination of Activities associated with practices of arranging schedules and organizing time and planning instructional activities.

Factor 4 was defined by three items, SL7, SL5, and SL8 (.93, 74, and .63 respectively) on the pattern matrix, and by an additional item, SL6 (.57), on the structure matrix, which cross-loaded on two other factors. The main implication of these items was librarians working with teachers to determine appropriate resources for instruction and to gather resources. As with the Frequency variables, these items represent traditional roles in which librarians worked cooperatively helping teachers. For example, statements such as “spend time with the librarian to discuss library materials (e.g. books, websites, references) needed for teaching,” “asking the librarian for library resources to use in instruction,” and “dividing responsibilities when jointly working (e.g. librarian gathers resources for a lesson that you will teach” identify practices that have traditionally been carried out by librarians.

These practices represent a level of collaboration labelled Cooperation in the TLC Model. The label assigned to this factor corresponded to the label applied to Factor 4 of the Frequency subscale, Traditional Cooperative T/L Roles. This label was selected to provide greater clarity in understanding the content of the items which made up the factor. Table 6 contains structure coefficients and pattern weights. While no items with high loadings appeared in multiple factors in the pattern matrix, three occurred in the structure matrix (F2, F4, F6).

### *Internal Consistency*

Internal consistency of the TLC II Survey was determined using Cronbach's alpha reliability coefficients in SPSS 15.0. Results are shown in Table 8. The overall scale alpha for all 16 items for Frequency was 0.92. The overall scale alpha for the 16 items in Importance to Student Learning was 0.93.

Table 8 Alpha Reliability Coefficients

	Frequency	Importance to Student Learning
Overall alpha	0.92	0.93
Course Integrated Instruction	0.87	0.86
Integrated Curriculum	0.93	0.93
Coordination	0.87	0.82
Traditional Cooperative T/L Role	0.81	0.84

## **Discussion**

This study explored teachers' perceptions on teacher and librarian collaboration on an instrument designed to reflect various collaborative practices between teachers and librarians (TLC-II Survey). Four factors emerged from the factor analysis, which resembled the facets postulated in the TLC Model. The TLC-II Survey will require further preparation before widespread distribution, however. For example, the Coordination of Activities scale will require additional items for stability. The other factors may also benefit from additional items and rewording of items to improve internal consistency. However, since the self-report instrument typically takes only about 15 minute to complete (a positive feature given the limited time teachers and librarians have outside the classroom), care will be needed in revising the instrument to ensure that parsimony and brevity are maintained.

Several important limitations should be noted. Only teachers' responses were reported, and while it is important to examine teachers' perceptions about teacher and librarian collaboration, librarian responses are equally valuable. Future studies will be needed to examine a sufficient number of librarians to compare teacher responses to librarian responses on frequency and importance of teacher and librarian collaboration. A second important limitation is that the instrument may not be representative outside the community in which it was used, and caution should be used in interpreting results to broader populations outside the southwestern or in rural communities.

The TLC-II Survey may be a valuable tool in assessing the types of collaborative endeavors that occur between teachers and librarians, and may help determine types of teacher and librarian collaboration that improve student learning.

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This statement certifies that the paper above is based upon original research undertaken by the author and that the paper was conceived and written by the author(s) alone and has not been published elsewhere. All information and ideas from others is referenced.