A Theoretical Understanding of Teacher and Librarian Collaboration (TLC)

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Teacher and librarian collaboration (TLC) is considered essential to support the changing population of students, complexity of educational issues, and increased information. However, collaboration has yet to be clearly defined for teachers and librarians. This article discusses four models of teacher and librarian collaboration (TLC) previously proposed by the author (Model A: Coordination, Model B: Cooperation, Model C: Integrated Instruction and Model D: Integrated Curriculum) and identifies five constructs in the models that can be used to evaluate the effect of each model on students' academic achievement. This article argues that high levels of the five constructs (a) interest, (b) level of involvement, (c) improved learning, (d) innovation, and (e) integration in TLC may have the most effect on students' academic achievement.

Introduction

Those who fall in love with practice without theory are like the sailor who
boards ship without rudder and compass, and never is certain where he is
going. (Leonardo da Vinci, circa 1508)

In education, collaboration reflects a shifting philosophical view about the importance of working together to improve learning. Teachers previously isolated in classrooms (Oberg, 1990) and teaching autonomously (Leonard & Leonard, 2001; Houston, 1980) must face the complexity of teaching "21st-century students," many of whom need basic resources, native language instruction, and greater access to information and services. Collaboration is perceived as a way to address these needs by creating opportunities for interaction between and among educators and those being educated (Dewey, 1963; Piaget, 1929; Bruner, 1968; and Vygotsky, 1978). Through collaborative interaction, an environment develops where teachers and learners feel socially engaged (Dewey; Vygotsky) and democratic principles are supported.

Efforts to share responsibilities in education through collaborative practices represent an attempt to transform education into a community of learners (Little, 1982; Leonard & Leonard, 2001; Pugach & Johnson, 1995) where each member is considered capable of achieving academic success. The dynamic interaction among members of a community created through collaboration invites creativity (John-Steiner, 2000; Pugach & Johnson) and innovative thinking (Moran & John-Steiner, 2003): two fundamental ingredients for academic success.

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In library and information science, collaboration between teacher and librarian is considered essential in preparing students for a complex society where vast amounts of information must be understood and managed (American Association of School Librarians & Association for Educational Communications and Technology [AASL & AECT], 1998). Professional guidelines encourage librarians to engage in collaboration with teachers to create a student-centered learning environment. The guidelines also establish the mission of school librarians: to ensure that students, staff, and others in the educational community "are effective users of ideas and information" (p. 6).

Collaboration is also extensively promoted in education (Sergiovanni, 1996; Fishbaugh, 1997; Pugach & Johnson, 1995) as a way of improving teaching and learning. Most discussions of collaboration in education involve teachers, principals, special educators, parents, and other school communities. Noticeably absent from the literature in education are discussions involving collaboration between teachers and librarians (Leonard & Leonard, 2001, 2003; Pugach & Johnson; Fishbaugh; Hart, 1998; Houston, 1980). It could be argued that this is due to a lack of understanding about the changing roles of librarians. It might also be the result of a lack of clarity about collaboration and the development of collaborative relationships between teachers and librarians. Although both are equally important, in this article I attempt to advance an understanding of collaboration between teacher and librarian previously discussed (Montiel-Overall, 2005). In this article, additional constructs contributing to the success of collaboration are introduced in an attempt to further explain the relationship between collaboration and improved student academic achievement. The following discussion consists of four sections. The first provides an overview of various world views through which teacher and librarian collaboration (TLC) is examined. The next section involves a discussion of collaboration intended to clarify its meaning in an educational environment, and a definition is proposed for teacher and librarian collaboration (TLC). Details of terms associated with collaboration such as coordination and cooperation are discussed in order to create a mental model of collaboration. Following this, four models of teacher and librarian collaboration (TLC) found in school environments are described. These models, which I proposed in earlier work, evolve from Loertscher's (1982, 1988, 2000) classification of teacher and librarian involvement. Attributes that lead to effective collaboration are identified in this section. Then I discuss constructs that may help us determine the effect of teacher and librarian collaboration on student academic gains. Here I argue that by identifying levels of interest, intensity of interaction between teacher and librarian, improvement in student learning, innovation, and integration of instruction we can begin to assess collaborative endeavors in school environments. Finally, I identify next steps in developing a theory of teacher and librarian collaboration (TLC) and recommend further research needed to guide effective collaboration in educational settings.

Theoretical works often seem of little benefit to practitioners. In developing a theory of teacher and librarian collaboration (TLC), a primary focus is to provide a usable guide for practitioners. Much of the information used in developing the concept of collaboration results from discussions with teachers and librarians and direct observation, in addition to a broad review of literature on collaboration. Every attempt is made to create a clear and concise explanation of this phenomenon and to make clear associations between theory and practice.

Theoretical Perspectives

Epistemological issues, although controversial, are central to teaching and learning. (Ernest, n.d.)

Sociocultural World View

An epistemological world view is a set of beliefs with underlying assumptions about knowing and how we acquire knowledge (Schraw, 2002). The purpose of discussing world views is to provide a lens for examining collaboration from two distinct perspectives: that of the learner and that of the instructor. A world view affects instructional practices, teaching strategies, and assessment: three essential elements of collaboration among teachers and librarians. Collaboration has been closely aligned with two forms of constructivist thinking: a social constructivist world view (Kuhlthau, 1993; Callison, 2003) and a sociocultural world view (John-Steiner & Mahn, 1996). These world views are strongly influenced by Vygotsky (1978), a Russian psychologist whose premature death over 70 years ago left many of his works unpublished until recently. He envisaged learning as a socially constructed experience where meaning is developed through interaction among members of society. These principles are also manifested in underlying assumptions of collaboration and serve to guide beliefs about learners as active participants in constructing meaning through social interaction and through quality educational experiences "that live fruitfully and creatively in subsequent experiences" (Dewey, 1963, p. 28).

In this world view, collaborative relationships are a social endeavor in which participation of groups who hold diverse perspectives is encouraged and their unique individual cultural differences are seen as a way of expanding conceptual development of all group members. In addition, notions of equality form the basis of collaboration among groups, creating an environment of parity where all voices and perspectives are respected (Houston, 1980). For many, a collaborative environment *equalizes the playing field* by developing mutual understanding.

Negotiating Diverse World Views

Ideally, collaborators would share a similar world view (Kuhlthau, 1993; Creamer, 2003; Callison, 2003). However, as a fundamentally democratic process, collaboration should have the capacity to accommodate diverse

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world views, which are likely to exist in most school environments. A study of faculty collaborators with shared world views (Creamer) provides valuable information for teachers and librarians, albeit somewhat different from the lessons intended. First, even when researchers share world views, "differences in views about the nature of knowledge and how it accumulates ... did not always translate to the expected differences in practical aspects of the collaborative process" (p. 464). Sometimes world views are not clearly delineated, and occasionally individuals shift perspectives. Second, differences that arise must be negotiated so that they need not be detrimental to collaboration. On the contrary, diverse views may enrich collaborative processes through broadened conceptual development among collaborators. Differences of opinion are an essential part of collaborative experiences, and as Creamer states, "Conflict is an element of the relational dynamics of a collaborative relationship that plays an instrumental role in collaborative learning and knowledge construction" (p. 556). The importance of this in collaborative relationships between teachers and librarians is that it is not possible for them to select partners based on their world view. Thus coexistence depends on the ability to debate, reflect, and then organize to get things done (Chrislip, 2002). It is interesting to note that in corporate literature, the process of resolving differences is a mechanism that strengthens collaboration. The negotiation of differences builds trust and develops a greater awareness of interdependence and mutual dependence toward a single goal (Schrage, 1989; Austin, 2000a).

Consider the following example of collaboration between teacher and librarian in an elementary school. The librarian's approach to teaching and learning is inquiry-based (Callison, 2003). Through the librarian's sociocultural perspective of education, social, historical, and linguistic factors associated with student learning are considered (Vygotsky, 1978). The librarian's beliefs stem from a Vygotskian framework in which "all mental functions are first experienced socially, [and] learned in interaction with others" (Moran & John-Steiner, 2003, p. 4). The belief that students learn through social interaction with others and that they should be encouraged to think broadly about information and investigate their own questions underlies instructional practices, teaching strategies, and assessment. The library curriculum is designed to make the most of the "inferential power" of information (Bruner, 1968, p. 99) and helps students attain levels of understanding from interaction with peers as well as adults. The librarian has observed that students' interaction can significantly influence their comprehension, a phenomenon described by Vygotsky (1978) as the zone of proximal development (ZPD). He described this as the difference between a learner's ability at a given developmental level and the level to which a learner could advance intellectually with the assistance of an adult or peer.

This world view is noticeably different from that of the grade 6 teacher who as a realist believes that students learn best through structured teacher-directed instruction that focuses on specific information deemed

essential for students to know. This world view, also reflected in the current trend in education, is in sharp contrast to social constructivist and sociocultural perspectives about learning. However, teacher and librarian agree on certain goals that will advance student learning despite their philosophical differences about how students acquire knowledge. Over time, teacher and librarian have learned that in spite of different world views, by focusing on students' needs, they are able to work together. As they have done in the past, they meet to discuss how to integrate subject content and library curriculum. They plan an instructional unit on famous world scientists. They decide on materials including literature and texts and create activities to develop literacy through reading, writing, and research. Disagreements that arise are resolved through problem-solving, a creative process in which participants find solutions through analyzing information and reasoning (Hare, 1992). This is in contrast to authoritarian resolution of conflict. From past experience, students understand the expectation that a considerable amount of memorization will be required, but that the overall learning experience will be robust as a result of TLC. This example represents a highly developed level of teacher and librarian collaboration (Callison, 2001; Loertscher, 1982, 1988, 2000; Montiel-Overall, 2005).

Understanding Collaboration

It is wonderfully ironic that the term collaboration is not well understood because it is used to describe so many kinds of relationship and activities. In a way, it suffers not from lack of meaning ... but from too much meaning! (Himmelman, 1997, para. 13)

As with many words in the English language, ubiquitous use and familiarity often have the effect of diminishing clarity of meaning. Such is the case with the word *collaboration*. Houston (1980) reports that 25 years ago in a search of the library card catalogue at the University of Houston, the only entry for collaboration was "Collaborationæsee 'Treason'" (p. 331). Since that time, collaboration has come to mean many things to many people, and currently its popular and academic definitions have yet to be agreed on. Wood and Gray's (1991) research on collaboration in management demonstrates a broad range of meanings that surface among nine case studies involving organizations. One definition of the phenomenon of collaboration defined by Gray (1989) is "a process of joint decision-making among key stakeholders of a problem domain about the future of that domain" (p. 11).

In a comprehensive literature search and in discussions with individuals involved in collaborative endeavors, collaboration is often used to identify specific endeavors. However, it is also used in a general sense to refer "to people working together" (Niks, 2004, p. 8). Examples of this general use of the term appear among researchers (Noam, 2001; Clark et al., 1996); social service agencies (Mattessich, Murray-Close, & Monsey, 2004); psychologists (Kainz, 2002); corporations (Austin, 2000b; Pollard, 2005); interorganizations

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(Selsky, 1991); virtual groups (Kukulska-Hulme, 2004; Roschelle & Teasley, 1995); special education practitioners (Puguch & Johnson, 1995); school-college partnerships (Creamer, 2003, 2004); and health professionals (Twilling, Sockell, & Sommers, 2000). Certain similarities in collaborative efforts exist in these distinct areas. At a minimum, collaboration involves two individuals working together to accomplish something with minimal effort to maximize efficiency. In education, this is evident in coordinated activities involving teachers, librarians, administrators, and students in which people, time, and place must be scheduled and organized. Outside education, coordination ensures cost effectiveness (Pollard, 2005). As collaborative efforts become more dynamic and intellectually challenging, partners or groups engaged in joint endeavors *cooperate* to reach their desired goals. When collaborative endeavors reach their maximum capacity, individuals engage in intellectually challenging endeavors where they jointly create something that is greater than what either could *create* alone. Schrage (1989) suggests that the latter is at the heart of collaboration. In developing the models, creativity and innovation were assigned to the highest levels of collaboration and appear to have the greatest effect on improving students' academic achievement (Montiel-Overall, 2005). These terms are described in greater detail in the following discussion.

Mental Model of Collaboration

> People form internal, mental models of themselves and of the things with which they are interacting. These models provide predictive and explanatory power for understanding the interaction. (Norman, 1983, p. 7)

A mental model is a representation of a concept created in someone's mind based on experience, information, and semantics (Johnson-Laird, 1983). In mental models, *"a single representative sample from the set of models satisfying the assertion"* is presented (p. 264, original emphasis) that helps individuals create a schema for organizing information. The following discussion is intended to clarify frequently used terminology associated with collaboration in an effort to develop a more accurate mental model of collaboration. This section focuses on four concepts closely linked to collaboration: networking (Himmelman, 1997); coordination (Grover, 1996; Mattessich et al., 2004; Pollard, 2005; Rogers & Whetten, 1982); cooperation (Grover; Mattessich et al.; Pollard, 2005; Houston, 1980); and partnerships (Austin, 2000a; Senge, Roberts, Ross, Smith, & Kleiner, 1994; Drucker Foundation, n.d.; Wood & Gray, 1991; US Department of Education Office of Educational Research and Improvement, 1996). Clarification of the meaning of these terms enhances our understanding of collaborative endeavors and develops a mental model of the processes involved in collaboration.

Terminology

Networking, coordination, cooperation, and *partnership* are closely related terms in the literature on collaboration. Despite their close association, they

are not the same (Pollard, 2005). Distinguishing characteristics of are noted in the following discussion.

Networking is essential to initiate the process of collaboration. In management, networking occurs within and across companies (Österle, Fleisch, & Alt, 2001). In educational settings, networking is a strategy (Himmelman, 1997) used by individuals to make informal social connections that may lead to joint efforts. Networking brings individuals together to share meaning through informal conversation at gatherings such as potluck meals or "other participatory events" (Senge et al., 1994, p. 301). In schools, networking sometimes occurs in the hallway, at the drinking fountain, at sports events, at meetings, or most important, in the lunchroom (Kottler, Kottler, & Kottler, 2004). Networking establishes ways for collaborative relationships to develop and move from "'I' to 'we'" (Putnam, 1995, para. 8). Networking appears to form the backbone of collaborative efforts by building the trust needed for future collaboration (Himmelman, 1997; Austin, 2000a).

Coordination is also associated with collaboration. Some have suggested that coordination involves a formal relationship among *equal partners* (Mattessich et al., 2004; Winer & Ray, 1994; Grover, 1996; Mulford & Rogers, 1982). Current professional and popular literature, however, treats coordination as a functional activity involving management practices that ensure that events are synchronized and work harmoniously (Sergiovanni, 2005; Pollard, 2005; Winograd, Newman, & Yim, 1991). Considering the linguistic features of *coordinate*, which is derived from Latin *ordinare*, which means to put things in order, and examples from the literature such as "coordinate existing services" (Bruner, Kunesh, & Knuth, 1992, n.p.) and "coordinating of processes within and across companies" (Österle et al., 2001, p. 2), it appears more appropriate to use coordinate to describe informal working relationships intended to make events or activities such as fundraising, volunteering, recycling, and social services work harmoniously. This contrasts with Mattessich et al.'s (2004) publication on collaboration, which states that coordination is a formal relationship among partners. This use is common in literature on interorganizational models of collaboration, particularly that from the 1980s (Mulford & Rogers, 1982; Rogers & Whetten, 1982).

In education, particularly where groups or organizations are brought together to share time, space, schedules, and work, coordination involves bringing individuals (students and adults) together to exchange information or engage in activities in a manner that avoids overlap of efforts, roles, or responsibilities.

Library media specialists and teachers have a long history of coordinating joint functions, events, and practices that are mutually helpful (Ford, 1996; Woolls, 2004; Fox, 2001) such as resources, time, space, and students. For example, librarians or teachers may coordinate activities in order to accommodate a greater number of students using the library or to improve the flow of activities. Coordination also helps reduce duplication of events

(Loertscher, 2000). When librarians and teachers coordinate schedules for events such as book fairs or computer classes, a primary function is efficiency, organization, and harmony.

Partnerships are a form of collaboration (Austin, 2000b) and are made up of individuals or organizations working together in pairs (no more than two) to form working relationships needed to carry out joint endeavors. *Partners* carry out work involved in collaboration. Partnerships usually imply cooperative relationships in which members mutually agree on joint responsibilities around a common goal. In corporate partnerships, a legal aspect is sometimes associated with joint roles. These range from short-term associations to lifelong contractual agreements. Government partnerships are another common alliance. School partnerships could include liaisons in the school environment such as parent-teacher associations (PTA) or partnerships with outside organizations interested in providing social services to youth.

Cooperation is another concept often associated with collaboration. Cooperation can involve formal or informal arrangements among participants or between partners who agree to work together (Pollard, 2005, Himmelman, 1997). This can include joint functions, activities, events, funding, space, collections, time, or students. "Cooperation is ... always giving and taking" (Bruner, 1968, p. 84). Cooperation also denotes a working relationship with individuals who share a common goal (Pollard, 2005), and it has become a fundamental component of modern practices in school environments. Cooperation is also used in instructional strategies that bring students together to work on projects (Slavin, 1995). A common practice of cooperative endeavors is to divide work among participants (US Office of Research Education 1992; Roschelle & Teasley 1995; Creamer, 2003), with each member completing a single aspect of the task. Graham and Misanchuk (2004) call this the "divide and conquer" model (p. 184). Teachers and librarians engage in this form of cooperative effort when teachers provide instruction and librarians provide collections to supplement instruction. Teachers and librarians usually engage in some or all of these endeavors at some time during the school year. However, it will be argued that to reach a high level of collaboration that affects students' academic achievement, certain components are necessary.

Teacher and Librarian Collaboration (TLC)

Loertscher (1982, 1988, 2000) developed a classification of teachers' and librarians' involvement in school environments. The taxonomies described varying levels of involvement among teachers and librarians from no involvement to full participation by both teacher and librarian in school curricular development. The levels in the taxonomies share characteristics of various types of collaborative relationships discussed in the section on mental models (i.e. networking, coordination, cooperation, and partnership). From Loertscher's Taxonomy and literature on collaboration, a

definition and four distinct models of collaboration between teachers and librarians evolve (Montiel-Overall, 2005). These four models progress along a continuum from relatively insignificant levels of involvement among collaborators to deep intellectual involvement and intense commitment.

Callison (1997) explains that collaboration involves "coplanning, coimplementation, and coevaluation" (p. 37). Donham (1999) states that collaboration involves "accessing, evaluating, interpreting, and applying information" (p. 21). Buzzeo (2002) states that TLC involves "equal partners who set out to create a unit of study based on content standards in one or more content areas plus information literacy standards, a unit that will be team-designed, team-taught and team-evaluated" (p. 7). In *Information Power: Building Partnerships for Learning* (1998), collaboration is defined as "a symbiotic process that requires active, genuine effort and commitment by all members of the instructional team" (p. 51). For the purposes of developing a theory of collaboration that demonstrates and explains the relationship between collaboration and student academic achievement, I draw on these and other definitions to propose a definition of effective teacher and librarian collaboration (TLC) for the 21st century. The definition states: Collaboration is a trusting, working relationship between two or more equal participants involved in *shared thinking, shared planning*, and *shared creation of innovative integrated instruction*. Through a shared vision and shared objectives, student learning opportunities are created that integrate subject content and library curriculum by co-planning, co-implementing, and co-evaluating students' progress throughout the instructional process in order to improve student learning in all areas of instruction.

Shared thinking involves thinking together, however, and does not imply that there must be agreement. Shared creation of innovative instruction involves joint creation by collaborators of something new. This process must permeate all areas of the curriculum to affect academic achievement. Inasmuch as most schools have only one professional librarian, it is essential to involve the him or her in curricular planning to ensure that library curriculum is integrated into schoolwide curriculum and instruction. Most librarians would be unable to meet and plan regularly with every teacher on the faculty, but could ensure systematic integration of content and library information at the planning level by meeting regularly with all faculty to plan schoolwide implementation of innovative instruction.

The definition proposed identifies a specific model of teacher and librarian collaboration (TLC) reflecting a highly intellectual joint effort between teacher and librarian. If collaborative endeavors progress along a continuum, this definition would reflect an endeavor at the highest level. I defined constructs included in the definition in earlier work (Montiel-Overall, 2005). It should be noted, however, that shared thinking is equivalent to *thinking together* (Minnis, John-Steiner, & Weber 1994, C-2, cited in John-Steiner, Weber, & Minnis 1998, p. 776) and includes free sharing of ideas.

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Models of Teacher Librarian Collaboration (TLC)

Consider the following examples from the perspective of a school librarian who is engaged in a variety of activities throughout the day. Let us suppose that several classes need to use the library on the same day for an educational event with several grades. The librarian *coordinates* schedules to maximize efficient use of library time and space and minimize confusion. Following up, the librarian *cooperates* with a grade 6 teacher to provide materials and instruction for several lessons discussed earlier. At an after-school meeting, librarian and teacher *think together* about how to integrate a new state standard into a grade 6 history unit. The success of the unit impresses the principal, who asks the librarian and teacher to participate with other teachers in schoolwide curriculum planning to create innovative instructional science units across grade levels. The goal is to integrate the teachers' and librarian's distinct areas of expertise into science instruction across the curriculum in units that can be co-taught and co-evaluated by teachers and the librarian.

In this example are four models of teacher and librarian collaboration (TLC) that capture varying capacities and expertise of teachers and librarian. Aspects of the scenario are described in Loertscher's Taxonomy (1988) illustrated in Figures 1 and 2, which gives information about levels of

Teacher's Taxonomy of Resource-Based Teaching	
Level 1	No involvement of library media center specialist or use of materials from the library media center
Level 2	Permanent room collection created. Little need to interact with the library media center.
Level 3	Materials borrowed from the library media center, public library or other sources for classroom use.
Level 4	Library media center specialist provides ideas and suggestions regarding materials for instruction
Level 5	Use of library media center materials to supplement unit content.
Level 6	Library media center materials/activities are integral to unit content rather than supplementary.
Level 7	Library media specialist is a teaching partner to construct unit of instruction (i.e. information literacy).
Level 8	Library media specialist is consulted as curriculum changes are being considered.

Figure 1. Teacher's taxonomy of resource-based teaching and learning. Adapted from Loertscher's (1988, 2000) Taxonomy: The Teacher's Taxonomy of Resource-Based Teaching and Learning.

	School Library Media Specialist Taxonomy
Level 1	No involvement. Library media center is bypassed.
Level 2	Students access information when needed.
Level 3	Specific requests from teachers and students addressed.
Level 4	Materials gathered on the spur of the moment.
Level 5	Informal planning in hall or lunchroom.
Level 6	Advance notice for needed library materials.
Level 7	A concerted effort to promote library.
Level 8	Formal planning with teacher on a resource based project or unit.
*Level 9	Participation in development, execution, and evaluation of a resource-based teaching unit (Level I).
*Level 10	Participation in resource-based teaching units where the entire unit content depends on the resources of the LMC program (Level II).
Level 11	Participation and contribution made along with teachers to planning and structure of what will be taught in school.

*Figure 2. School library media specialist taxonomy. Adapted from Loertscher's Taxonomy.Information on the table summarizes levels in the taxonomies by Loertscher (1988): The Library Media Specialist Taxonomy. *Levels were combined in 2000 version.*

involvement from teachers' and librarians' perspectives (*Teacher's Taxonomy of Resource-Based Teaching* and *Learning and Library Media Specialist Taxonomy*). Noticeable in the taxonomy for teachers is the implication that the role of librarians is to support instruction provided by teachers. During the past several decades, this notion has been changing in the library profession, as noted by statements such as "library media specialists ... have assumed new responsibilities as they have focused on raising student achievement" (AASL & AECT, 1998, p. 144) and "Nurturing authentic student learning within and beyond the curriculum is at the core of an effective library media program" (p. 49). Despite this change in professional librarian guidelines, professional library and education literature still contains terminology such as *help, support, aide,* and *assist,* which reflect a supportive rather than equal role for librarians.

I proposed four models that evolve from Loertscher's Taxonomies and the literature on TLC (Montiel-Overall, 2005). These are Model A: Coordination; Model B: Cooperation; Model C: Integrated Instruction; and Model D: Integrated Curriculum.

Each model identifies a type or form of collaboration. Models typically are examples or versions of a phenomenon that deserves to be studied. I

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Models of Librarian and Teacher Collaboration (TLC)

	Model A Coordination	Model B Cooperation	Model C Integrated Instruction	Model D Integrated Curriculum
Degree of Involvement:	Low	Medium	High	Highest
Loertscher's Levels:	2-4	5-6	7	8-10

Figure 3. The four models evolve from literature reviewed and Loertscher's Taxonomy (1982, 1988, 2000). Levels that had similar characteristics were combined to form the models (Montiel-Overall, 2005).

argue that by clearly understanding differences among models of collaboration, teachers and librarians will be better able to assess collaborative efforts in which they engage and those in which they would like to engage. Teachers and librarians will also understand what is involved in developing a collaborative relationship that will result in having a significant effect on students' academic achievement.

Figure 3 illustrates the models and identifies corresponding levels of involvement from Loertscher's Taxonomy (1982, 1988, 2000). Loertscher's levels appear at the bottom of the illustration. Where common patterns of activity appeared in levels in Loertscher's Taxonomy, the levels were collapsed to create a new model (Models A, B, C, and D). For example, levels 2-4 were combined because of the low level of involvement between teacher and librarian. In Loertscher's Taxonomy (1988) these levels describe teachers who own a private classroom collection or borrow books for classroom use during a unit, relying on the librarian only occasionally for ideas on "the spur-of-the-moment" (p. 10). In this level, librarians are minimally involved in working with teachers or students, and when involvement does occur, it takes place with little or no preplanning. These levels are reflected in Model A: Coordination. Levels 5-6 reflect less spur-of-the-moment interaction, but planning is cursory and carried out at the teacher's request. These levels are reflected in Model B: Cooperation. Level 7 reflects formal planning for instruction between teacher and librarian. This level is reflected in Model C: Integrated Instruction. Levels 8-11 identify a transition toward full integration of the librarian in curriculum planning and development. This level is reflected in Model D: Integrated Instruction. Models A, B, C, and D are briefly described below (see Montiel-Overall, 2005, for an in-depth discussion of the models).

Model A: Coordination

Model A: Coordination is a collaborative effort that requires low levels of involvement between teacher and librarian. (Figure 4). In Model A, an indi-
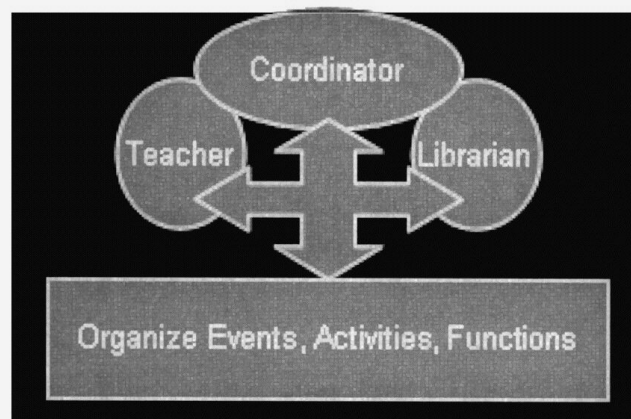
Figure 4. Model A: Coordination
Coordination of events, functions, instruction can be carried out by
teacher, librarian or another person. The coordinator works with others
to organize, manage, and/or synchronize actions so that everything runs
more efficiently.

vidual could carry out major coordinating responsibilities alone for any number of other individuals. As discussed above, coordinate means to organize, order, or synchronize events, activities, and so forth. Teachers and librarians are frequently involved in coordination of events involving themselves and students. As illustrated in Figure 4, coordination involves a minimal amount of communication, collegiality, and trust.

Model B: Cooperation

In Model B: Cooperation, teacher and librarian begin to work more closely to enhance students' learning opportunities (Figure 5). Teacher and librarian cooperate on lessons or units of study by dividing tasks. In Model B, goals and objectives are developed independently although joint instruction may be involved. Teacher and librarian teach their area of specialization, but sequencing and connectedness of their areas of specialization (library curriculum and subject content) are not necessarily considered during instruction.

Model C: Integrated Instruction

Model C: Integrated Instruction reflects a deeper level of involvement and commitment by the librarian and teacher and also a deeper level of trust. This model involves thinking together, planning together, and integrating innovative learning opportunities that reflect teacher's and librarian's expertise in subject content and library science curricula in order to improve students' understanding of instruction. Library science curriculum includes information literacy, reference and bibliographic instruction, and development of research skills such as those proposed by Kuhlthau
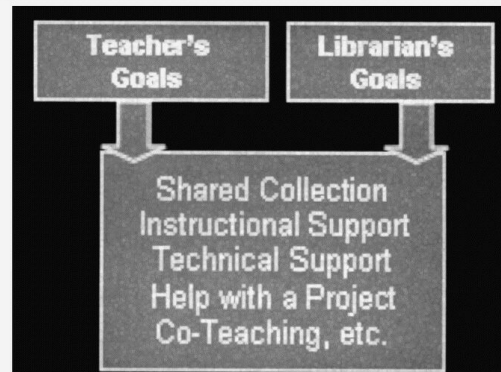
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Figure 5. Model B: Cooperation
Teacher and librarian can help each other for mutual benefit but they do
not necessarily have to be involved in thinking together, co-planning,
co-teaching, or co-evaluation, which are developed independently of
each other. Teacher and librarian may come together for implementation
of their separately planned unit, lesson or activity.

(1985, 1993, 2005) and Eisenberg (1990). A conscious effort is made by
teacher and librarian to integrate and connect their separate areas of expert-
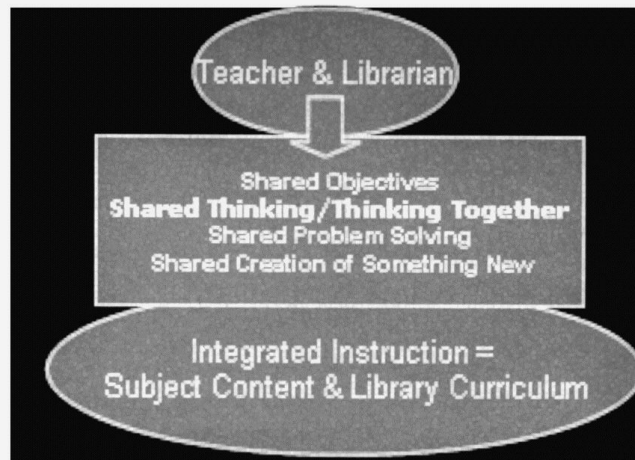ise, and special attention is given to sequencing instruction (Bruner, 1968).

Figure 6. Model C: Integrated Instruction
Teacher and librarian meet to decide joint objectives and to figure out
how to integrate their separate areas of expertise into classroom instruc-
tion. Content curriculum and library curriculum are integrated into units,
lessons or activities. These become more creative and innovative and
students benefit from depth and breath of instruction. The continuity and
sequence of instruction is improved through the collaborative effort and
the results "makes more sense" to students.

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Instruction is planned with the intention of helping students to engage actively in learning experiences that connect classroom and library units of study through jointly planned, implemented, and evaluated lessons and activities (Figure 6).

Model D: Integrated Curriculum

Model D: Integrated Curriculum involves TLC across the curriculum. Teachers meet regularly with the librarian to integrate information literacy and content through joint efforts that involve co-thinking, co-planning, co-implementation, and co-evaluation across the curriculum at the invitation of the principal or through involvement in curriculum planning committees. This could also happen at the invitation of the curriculum specialist, but involvement by the principal would be vital (Oberg, 1996) to ensure that time was made available for the teachers' and librarian's participation and to guarantee that they be co-equals as they participate in decisions that affect curricular planning. In this model, the principal is instrumental in establishing the climate for TLC and extending it across the curriculum (Oberg). The principal also provides resources (time, professional development, and funding) for this model to be implemented. The same attributes that are required for Model C are also required for Model D (propensity to share, deep trust, reciprocity). Through collaboration, subject areas and library curricula such as information literacy are integrated at every grade level (Figure 7).
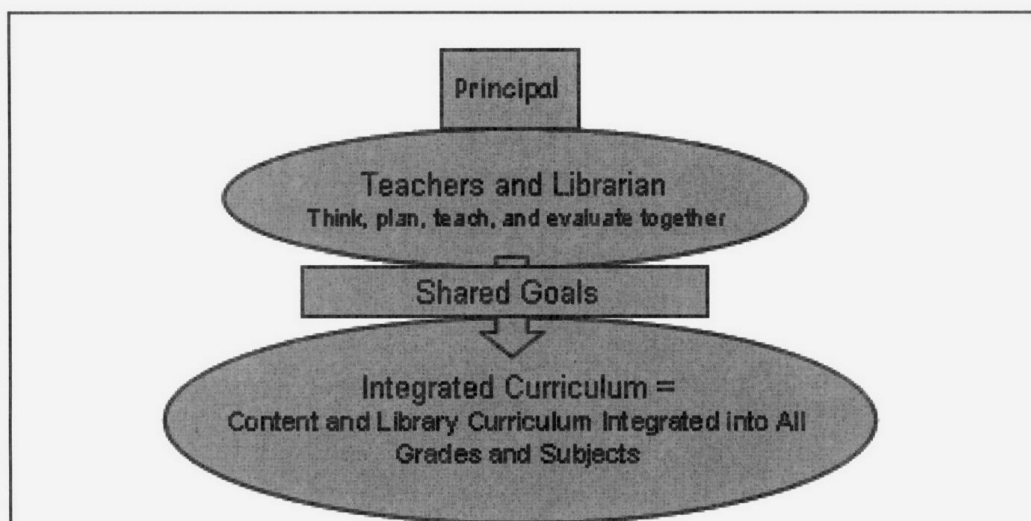

Figure 7. Model D: Integrated Curriculum
Teacher and librarian collaboration (TLC) occurs throughout the curriculum. The principal plays a major role in making this possible by creating an environment conducive to collaboration. Challenges normally faced (lack of time, lack of resources) are eliminated by the principal.

Attributes

A review of the literature on collaboration indicates that relationships are a major factor in successful or unsuccessful collaboration (Richards, Elliot, Woloshyn, & Mitchell, 2001) and that certain attributes involved in developing the relationship between participants (teachers, researchers, administrators, or institutions) help them develop to their full potential. As teacher's and librarian's efforts develop from Models A and B and progress toward more intellectual endeavors in Models C and D, a greater number of attributes are required for successful collaborative relationships to develop. Collaborators must at least demonstrate a pattern of behavior of being friendly (Duck, 1977), signaling agreeableness and congeniality. But collaboration requires more than friendliness and congeniality. Appley and Winder (1977), two lifelong collaborators in academia who wrote about collaboration in the late 1970s, considered collaboration "an alternative value system involving caring, commitment" (p. 279) and "fairness" (p. 286). Other attributes identified in the literature include reciprocity (Crow, 1998), propensity to share (John-Steiner et al., 1998), and trust (Austin, 2000b; Lewis, 2000). Collaborators who engage in high levels of collaboration in planning classroom instruction and curricular planning (Models C and D) must demonstrate these and other attributes to be successful. Among the most essential are deep levels of trust (Lewis), preparation and follow-through on promises (Pounder, 1998). Moran and John-Steiner (2003) found

Attributes			
Model A Coordination	Model B Cooperation	Model C Integrated Instruction	Model D Integrated Curriculum
Shallow trust	Shallow trust	Deep trust	Deep trust
Friendly Congenial	Friendly Congenial Collegial	Friendly Congenial Collegial	Friendly Congenial Collegial
	Propensity to share Reciprocity	Propensity to share Respect Equality Expertise recognized Reciprocity	Propensity to share Respect Equality Expertise recognized Reciprocity
Minimal/Low Communication	Moderate Communication	Good Communication	Excellent Communication
		Frequent Dialogue	Frequent Dialogue

Figure 8. Certain attributes are required for successful collaboration.
At a minimum collaborators must be friendly. However, in Models C and D, collaborators must demonstrate a deep level of trust and must be involved in frequent communication. They must also consider their collaborator an equal, be willing to share and reciprocate, and demonstrate a high level of respect for their colleagues.

long-term engagement, voluntary connection, trust, negotiation, and jointly chosen projects essential to successful collaboration (Figure 8). Other attributes that affect successful collaboration are being friendly and collegial, mutually respectful and trustworthy, and being prepared to follow through on responsibilities or commitments. Collaborators must also be willing to share their respective areas of expertise in order to integrate information successfully for instructional purposes. Further research will be needed to help us learn more about these and other attributes needed for successful collaboration and to determine if causal relationships exist between and among these attributes (see Montiel-Overall, 2005, for a discussion of attributes present in each model).

Constructs of Collaboration: Understanding the Continuum

Through Models A, B, C, and D, a picture begins to develop of collaboration as various forms of involvement among individuals. Each model involves a different relationship between and among collaborators depending on the purpose for which the collaboration is formed. Relationship becomes the unit of analysis in understanding collaboration (Lincoln & Guba, 1985). By identifying differences in TLC in Models A, B, C, and D we acquire a deeper understanding of movement along the continuum. We would also want a deeper understanding of differences *within* each model. Factors within each model that appear to influence the effectiveness of collaboration are purpose (Hord, 1981); length of time of involvement (Mattessich et al., 2004); expertise of collaborator and incentive to collaborate including varying levels of interest from participating members (Hara, Solomon, Seung-Lye, & Sonnewald, 2003); increased or reduced *intensity or commitment* and time to the collaborative effort (Appley & Winder, 1977); greater or lesser emphasis by collaborators on improved learning (Pounder, 1998); more or less *innovation* of ideas (Schrage, 1989); and varying degrees of *integration* of information into instruction (Callison & Morris, 1989). These examples of factors should all be considered. The latter five constructsæinterest, intensity, improved learning, innovation, and integrationæare the focus of the following discussion.

Moving to Assessment

Interest, improved learning, intensity, innovation, and *integration* are five constructs that range from low to high in any collaborative effort. I would argue that these constructs provide a viable tool for assessing teacher and librarian collaboration in Models A, B, C, and D and could help determine whether resources expended on TLC (energy, time, and money) were producing desired results in improved student achievement. Although numerous combinations of interest, improved learning, intensity, innovation, and integration are possible in each model, theoretically, high levels of all five factors at the high end of the continuum (Models C and D) would predict the greatest effect on student learning. I refer to this predictive

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value of the five factors as *High Five* (Figure 9). As with Models A, B, C, and D, the five constructs progress along a continuum, which I suggest includes a range from "complementary to integrative" (Hara et al., 2003, p. 958).

Interest in collaborative endeavors by those appears to be an important construct that affects the success of collaboration. Levels of interest may vary depending on who is involved, why, and for how long. Hara et al. (2003) found that researchers who shared an interest in each other's expertise, valued each other's work, and were interested in sharing in professional development as well as friendship were more likely to engage in successful collaboration. Ideally, teachers and librarians whose interest in co-thinking, co- planning, co-teaching, and co-evaluation is high would have the greatest positive effect on students. For example, levels of interest in collaboration among librarians and classroom faculty to plan an academic decathlon should be greater than collaboration on a social activity such as a graduation event. It might be argued that interest in academic projects demonstrated by teachers and librarians would be conveyed to students
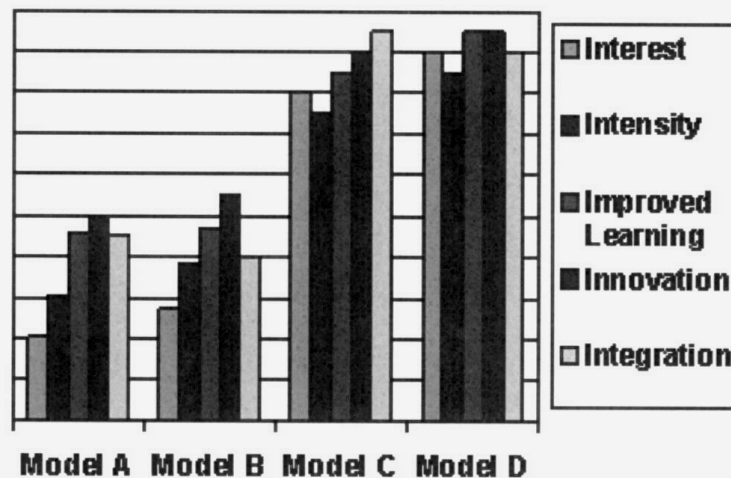

Model A   Model B   Model C   Model D

Figure 9. High 5: Assessment Through Constructs of Collaboration.
Five constructs are interest, intensity, improved learning, innovation, and integration. By measuring these constructs within each model, an evaluator, the principal, teachers or librarian can determine the level of investment in a particular collaborative effort. These can guide the amount of time and energy that are involved in an endeavor and provide information about the impact on student academic achievement. For example, Model A may involve high levels of interest, involvement, and innovation but low levels of improved learning, and integration. Theoretically, low levels of improved learning and integrated instruction would be evident in Models A and B. High levels of all five constructs should be evident in Models C and D and would result in the greatest academic achievement.

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and could have a positive effect on their level of interest as well. We might also argue that the greater the interest in TLC, the more likely it is that collaboration will move toward high-end efforts as demonstrated in Models C and D.

Intensity of involvement refers to the degree of commitment and/or participation in collaborative efforts. It may be related to the amount of time involved or to an individual's sense of obligation and willingness to put additional effort into thinking about, planning, teaching, and evaluating in order to improve something. Intensity could also relate to personal satisfaction derived from achieving success after committing time and energy to a project, activity, event, lesson, unit of study, or development of curriculum.

Improved learning refers to the effect of collaborative efforts on student outcomes or improved student learning. Some TLC has little or no effect on student learning. Using the above example, teacher and librarian collaboration on a graduation party is unlikely to affect students' gains. On the other hand, TLC involving instruction to prepare students for standardized tests during the academic year may significantly affect their learning.

Innovation is an idea, practice, or object that is perceived as new to an individual or another unit for adoption (Rogers, 1995). Innovation comes from thinking creatively together and creating a "shared understanding that none had previously possessed or could have come to on their own" (Schrage, 1989, p. 33). From a sociocultural perspective, innovation is a social process that takes place in the cultural and historical context (Creamer, 2004). Innovation is a replacing old ways with new ideas, even if they have been implemented in other environments (Rogers, 1995). What is considered innovative can vary considerably in a school environment. For example, TLC could simply result in a decision to use science lessons for beginning literacy instruction (Tytler, 2002). Or it could result in the use of interactive electronic blackboards to teach mathematics and science in information literacy units that are evaluated using electronic assessment tools that enable students to answer questions using remote-control devices. Some studies indicate that resolving differences of opinion leads to innovation and is most likely to make significant contributions to knowledge (Creamer, 2004; Moran & John-Steiner, 2003).

Integration involves combining parts into a more holistic learning opportunity. For example, integration of math-science lessons and library curricula would incorporate content from subjects and information literacy into a single learning experience. Integrated curricula enhance students' capacity to make connections when they is properly sequenced (Kovalik & Olsen, 1994). "Powerful concepts are seldom limited to the field that generates them" (Bruner, 1968, p. 130). Consider the following example of a powerful learning experience developed through joint preparation, implementation, and evaluation. TLC on a unit for math, science, and information literacy (the ability to find and use information appropriately by evaluating, analyzing, and learning how to integrate it meaningfully) has engaged

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teacher and librarian in shared thinking, shared planning, and shared creation of innovative, integrated instruction. The unit involves studying the effect of a connecting bridge between two dissimilar communities on their economy, ecology, social structure, and language. The results are reported in a poster presentation at the end of the study. By integrating subject-matter areas, students clearly develop the cognitive framework for understanding relationships and connections. They engage in focused library research and group and individual work in the classroom. As Kovalik and Olsen (1994) explain, "It is easier to build interest around a yearlong study of ... *I Adoregon* (I Adore Oregon) than, say, *Punctuation*" (p. 201).

Research will be needed to determine how *interest* of collaborators, *intensity* or degree of involvement or commitment, *improved learning* for students, *innovation* of instruction, and *integration* of curriculum should be measured and whether greater academic achievement will be predicted in situations where TLC focuses on improved learning and involves high levels of the five factors. Research that examines these factors will provide teachers and librarians with valuable information for assessing existing collaborative efforts and for developing new ones. In theory, the High Five shown in Figure 9 should contribute to a synergistic relationship that develops during teacher and librarian collaboration.

As suggested by John-Steiner (1998) and others engaged in theory construction on creativity, an explanation of activities involved in collaboration cannot be examined in isolation. Instead, constructs emerge as a "set of nested, interrelated representations of complex, innovative human activities" (p. 778). In building a theory of teacher and librarian collaboration, the constructs overlap and are interrelated. It should be noted that additional constructs are involved in TLC such as communication and expertise, and knowledge of collaborators will require our attention to determine their effect on effective collaboration and improved academic achievement of students.

Implications: Predicting Students' Success

By clearly understanding collaboration, teachers and librarians will be able to engage in effective collaboration that affects students' academic achievement. In this article I develop a framework for TLC by examining various collaborative efforts that exist in school environments so that we can begin to understand the mechanisms for improving students' academic achievement through teacher and librarian collaboration (TLC). I attempt to bring us closer to answering questions such as: Why should we collaborate? What are the goals of teacher and librarian collaboration? With what partners do we want to collaborate? How do teachers and librarians with different world views collaborate successfully? What values must teachers and librarians share? and What model(s) of collaboration should we be engaged in given our limited resources?

I argue that by providing a clearer understanding of models of teacher and librarian collaboration (TLC) and identifying constructs in each model,

teachers and librarians will be prepared to determine if resources are available for them to engage in high-end collaborative efforts that are more likely to affect student achievement positively. Teachers, librarians, and principals need to be able to make informed decisions about how and where their limited resources should be spent. The models of TLC presented here exist in schools settings at every grade level, but few empirical studies have examined specific aspects of collaboration. The High Five is proposed as a way to examine empirically differences between Models A, B, C, and D and to determine if and to what extent differences in the models captured by the High Five affect students' academic achievement. Systematic evaluation of TLC and examination between and within Models A, B, C, and D collaboration should be the focus of TLC research to determine if the time and energy required for TLC are achieving the desired outcomes for students. Research specifically related to those learners identified above as 21st-century students should be undertaken to determine the effect of TLC on improved language development, literacy, and other academic needs. Collaboration has the potential for changing teaching and learning. The challenge will be to examine school norms to determine if they accommodate the full range of collaborative relationships; to determine how opportunities for TLC can be encouraged where they do not already exist; to expand TLC to incorporate teachers and librarians into curricular planning, development, implementation and evaluation; and to implement professional development to maximize TLC and its effect on students' learning.

Equally important is the need to examine the role of the librarian in the educational setting and to determine the most effective model of collaboration for librarians to fulfill the role outlined for them in *Information Power* (AASL & AECT, 1998) as collaborators, educators, and promoters of lifelong learning. Bruner's (1968) prescriptive theory of instruction aptly reminds us that "knowledge is a process, not a product" (p. 72), which develops over time and "how one wishes to teach can best be learned, with improving rather than describing learning" (p. 40). Understanding this guiding principle is fundamental if improved student learning is to be gained by teacher and librarian collaboration (TLC). Through combined efforts and sharing knowledge, collaboration between teacher and librarian could transform public education.

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