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Poised for Change: Effects of a Teacher Education Project on Preservice Teachers' Knowledge of the School Library Program and the Role of the Teacher-Librarian

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Preservice teachers are a greatly overlooked group of instructional partners. This article describes a one phase of an ongoing project in a teacher education program that aims to enhance pre-service teachers' personal and practical knowledge of school library programs and of the role of the teacher-librarian. In the second year of the project, reported here, qualitative analysis was conducted on students' pre- and post-writings about three focal concepts. Results showed that preservice teachers expanded their understandings of information literacy, critical thinking, and resource-based learning. Their additional unsolicited post-writings about the role of the teacher-librarian indicated formation of new insights about teacher-librarians' responsibilities as teacher, instructional partner, and information specialist. Although major findings suggest that teacher educators can play an important advocacy role, the degree to which their efforts will be effective depends on support of this new knowledge held by preservice teachers when they enter the field.

Teachers as Partners

Two decades ago, David Loertscher proclaimed that "school libraries must make a difference in public education or face extinction" (1982, p. 417). The field of teacher-librarianship responded with policies, research initiatives, and teacher-librarian education programs that moved teacher-librarianship into the 21st century. Collaboration, information literacy, technology, learning-centered libraries, and educational leadership are key principles underlying current visions of school libraries. Realization of these principles depends on partnerships with other educators (AASL/AECT, 1998). But many of the teacher-librarians' partners appear uneducated about this new vision. Recent studies show that teachers continue to have little knowledge or misconstrued ideas about information literacy and the role of the teacher-librarian (Moore, 2000; van Deusen, 1996). Of equal concern is the fact that most preservice teachers are not introduced to the role of the teacher-librarian or the school library program (Haycock, 1996).

In 1997, a project in a large teacher education program in western Canada was developed to begin to address this problem. The project introduces preservice teachers to inquiry-based integrated unit planning and to infor-

mation literacy pedagogy through collaborative experiences with teacher-librarians. Known as the Information Literacy Project, the project is housed in the Department of Language and Literacy Education at the University of British Columbia, and it represents the department's expanding conception of literacy. The general goals of the project are to increase preservice teachers' knowledge of: (a) the role of the teacher-librarian as instructional partner, and (b) integrated collaborative school library media center programs.

The project is ongoing, and research data have been collected each year. This article reports on the second year of the project. Each year, the students are given the opportunity to plan units of study with teacher-librarians from local schools. Results from Year 1 of the project showed that students strengthened their understanding of the role of the teacher-librarian as information specialist and teaching partner (see Asselin, 1999, for complete report of the first year of the project). In reviewing the results of the first year of the project, the planning team realized they had tried to present too much knowledge to the preservice teachers. Thus for Year 2, the project team focused on three essential understandings that would best support new teachers' ability to work effectively with teacher-librarians: resource-based learning, information literacy, and critical thinking.

Information Literacy, Resource-based Learning, and Critical Thinking

Much has been written about information literacy over the past two decades. At its simplest, it is "the ability to find and use information" (AASL, 1999, p. 1). The necessary skills and strategies underlying this ability are delineated in the Information Literacy Standards (AASL/AECT, 1998). Other definitions place information literacy within the broader spectrum of literacy, such as "understanding the role and power of information, having the ability to locate it, retrieve it, and use it in decision-making, and having the ability to generate and manipulate it using electronic processes" (Behrens, 1994, p. 313). Information literacy has evolved from a repertoire of discrete skills to an enactment of higher-level cognitive processes, specifically problem-solving and critical thinking (AASL, 1999; Case & Daniels, 1997; Kuhlthau, 1993a). All conceptions of information literacy include its relationship to lifelong, independent learning. It is particularly exciting to note the growing awareness of this area in literacy journals for teachers (Burke, 2000; Herro, 2000; Tower, 2000).

Increasing endorsement for a resource-based learning model of education reflects the shift from positivist to constructivist conceptions of teaching and learning. In resource-based learning, in contrast to past teacher-centered and textbook-centered views, teachers coach students while students actively engage in structuring meaningful inquiries and constructing their own knowledge through the use of multiple print and electronic resources. It is

the primary learning strategy teacher-librarians use to guide students to develop information literacy skills and strategies.

The third focal concept, critical thinking, involves the ability to investigate and analyze an issue from different points of view. One framework for effectively helping students to become better thinkers is a critical thinking model called CT^2 (The Critical Thinking Cooperative) that helps teachers to consider such pedagogical factors as background knowledge, habits of mind, and thinking strategies (Case & Daniels, 1996, 1999). This framework has been particularly attractive to teacher-librarians in western Canada as it enables students' use of higher-level thinking processes through setting critical challenges or learning inquiries.

When teachers and teacher-librarians collaboratively plan and teach resource-based units that are grounded in curriculum, they can also address the critical thinking skills and the information strategies students need to use resources effectively. AASL (1999) highlights collaboration between teachers and teacher-librarians and integration of information literacy skills in authentic learning contexts:

> Students will master information literacy skills when teachers and library media specialists guide them as they use information with a discipline or through an interdisciplinary project. Resource-based learning calls for all members of the educational community to become partners in a shared goal, providing successful learning experiences for all students. (para. 1)

Teachers' Knowledge about the Teacher-Librarian and the Library Program

Current research in teaching and teacher education regards teachers' beliefs as central to how teachers teach (Shulman, 1987) and as starting points in learning to teach (Richardson, 1997). Research in preservice teachers' beliefs shows the significant influence of their past experiences with teaching, learning, and curricular areas that in turn act as filters of their coursework and their student teaching experiences (Borko & Putnam, 1996). Teacher education is seen as a critical period for development of new beliefs about teaching and learning (Powell, 1996); the reformulation of beliefs is most effective when preservice teachers' entry beliefs are examined alongside the new beliefs.

Given the influence of teachers' past experiences, it is not surprising that teachers' knowledge about the role of the teacher-librarian and library program appears to reflect past notions of teacher-librarian as resource provider or instructor of decontextualized library skills and the school library as warehouse (Craver, 1986). Although advocacy efforts are in place to educate teachers about instructional partnerships with teacher-librarians, the task is clearly great. Many teachers are unsure about the role of the teacher-librarian (Getz, 1996), and many teacher-librarians are uncertain about what teachers want (Turner, 1996).

In a recent survey of 40 elementary teachers, Moore (2000) found that teachers were unclear about the meaning of information literacy and equated information literacy with older notions of library or research skills. Results of Moore's survey also revealed teachers' undeveloped understandings about how to plan resource-based learning effectively. Finally, Moore found that teachers were unsure about the role of the school library program in students' learning. Pickard's (1993) survey findings suggest that teachers may have few opportunities to see strong models of instructional partnerships. Although library media specialists in Pickard's study understood the importance of the instructional consultant role, only 10% carried out the role at Loertscher's (1988) higher levels, that is, joint planning, teaching, and evaluating of resource-based curriculum units; and leadership in curriculum development. Similarly, McCarthy (1997) found that implementation of *Information Power* was constrained in many schools, thus by implication providing teachers with limited models of school library programs.

Research Design and Methodology

Design of the Information Literacy Project

The Information Literacy Project takes place as part of a required language arts course in a fifth year of the teacher education program. Information literacy is a part of the Department of Language and Literacy's broader literacy mandate. As well, both collaboration and inquiry-based, integrated approaches to teaching and learning are part of the Faculty's broader constructivist philosophy (Vygotsky, 1978) and recognition of principles of educational change (Fullan, 1995; Wagner, 1998). Thus the goals and visions of teacher-librarianship converge neatly with those of the teacher education program. The Information Literacy Project is the result of the collaborative efforts of teacher educators, of education librarians, and of local teacher-librarians who volunteer to participate in the project.

Over a two-week period during the required language arts course, the teacher education students participate in a number of experiences meant to increase their own information literacy and their ability to plan an inquiry-based, integrated unit collaboratively with a teacher-librarian. The basic components are: (a) introduction to inquiry-based teaching and integrated unit planning, (b) observation of an exemplary school library program, and (c) two collaborative planning meetings with a teacher-librarian. The students select their own unit topics to use in their upcoming student teaching practicum. Working from this topic, they create an overview of an integrated unit; introductory and closing activities for the unit; one information literacy lesson for use in that unit; and an annotated, critically evaluated bibliography of learning resources. Collaborative planning sessions take place in the two Faculty of Education libraries where a variety of multimedia resources supportive of unit themes are pulled in advance. The students work on this assignment either individually or in small groups with teacher-librarians.

They use the CT^2 critical thinking framework to plan an inquiry-based, integrated unit. They identify appropriate learning outcomes from the provincial curriculum guides; they also identify appropriate information literacy outcomes from the information literacy scope and sequence curriculum developed and used in local schools (Bens et al., 1999). During the planning periods, the teacher education students and the teacher-librarians work collaboratively with learning resources, curriculum guides, information skills charts, and CT^2 support materials.

Data Collection

Data for this study were collected from four classes (n=143). Students in these classes completed pre- and post-knowledge measures of resource-based learning, information literacy, and critical thinking. At the beginning of the course, students were asked to make a table of three columns across one piece of paper and label the columns with the three concepts above. They were then to write points about each of the concepts pertaining to one or more of the following aspects: (a) definition, (b) what it looks like in practice, and (c) related terms. Writings from both pre- and post-measures ranged from one line or phrase to six sentences per concept, with most entries one to two lines per concept. During the post-writing, some students elected to write additional thoughts about what they had learned outside the prescribed three individual concepts.

Data Analysis

Due to student absences during pre- and post-writings, final analysis was based on a matched set of 103 sets of data. I used inductive analysis techniques on students' writings to identify their pre- and post-experience understandings about information literacy, resource-based learning, and critical thinking. Students' additional post-writings outside the assigned categories were also analyzed, but separately from the target concept writings.

Writings were marked off as "text segments," coded according to the three focal concepts (pre- and post-), or as "extra" post-writings, and entered into the computer. Text segments mostly included phrases and single sentences and occasionally several sentences. A doctoral student and I then read the data independently. We discussed emerging themes within the three prescribed categories as well as those from the additional post-writings. We then recoded the data according to pre- and post-themes within the major categories (information literacy, resource-based learning, and critical thinking) as well as according to themes in the extra post-writings. We assigned some multiple codes to some text segments. For example, a comment about how teacher-librarians teach students how to locate, evaluate, organize, and communicate information was coded in two themes of post-understandings about information literacy—understanding information literacy as a process and as curriculum. When we had categorized all the pre- and post-data related to the three major categories into themes, we reread for other emer-

gent themes within categories and compiled representative evidence. Again, we used a multiple coding system for those responses that exemplified more than one theme. We repeated the procedure for the additional post-writing themes. We discussed any coding differences until we agreed. Finally, we reread the data for further insight and disconfirming evidence about the themes.

A total of 502 text segments were categorized across 15 themes in the pre- and post-writings about information literacy, critical thinking, and resource-based learning. Fourteen percent of those were assigned multiple codes, resulting in 572 text segments coded within the three target concepts (pre- and post-). In the pre-writings especially, some students left a target concept blank, indicating they had no understanding. Although not all students were represented in all of the 15 themes, each student was represented in at least seven themes. Occasionally, an individual student was represented more than once in a theme. Approximately half the students wrote additional points about their new understandings. These unsolicited post-writings represent two new concepts and three themes based on analysis of 193 text segments.

Results of the Study

Analysis of preservice teachers' writings about information literacy, critical thinking, and resource-based learning before and on completion of the Information Literacy Project revealed a trend to more explicit understanding of: (a) each concept; (b) the interrelationships among concepts; and (c) the formation of new insights into the role of the teacher-librarian as teacher, instructional partner, and information specialist. Table 1 summarizes preservice teachers' pre- and post-knowledge of the original target concepts.

Information Literacy

At the beginning of the project, nearly one third of the teacher education students (28%) reported they did not know what information literacy meant, and 18% of the students left that category blank. Six percent of the writings revealed misconceptions about information literacy such as "It is a language arts program" and "The use of text and other literature as a resource for language tests." Most of the writings in this category (65%) referred to the ability to handle informational text, and many statements mentioned the large masses of information in our society. The following comments typify students' entering conceptions of information literacy:

> Being able to read printed materials.
>
> Being literate, being able to read and process the huge amount of print information.
>
> Being able to read information.
>
> Reading the mass amount of information that is available to us.

Table 1
Preservice Teachers' Pre- and Post-Project Knowledge of Information Literacy, Critical Thinking, Resource-Based Learning

Concept	*Pre-Writings Theme*	*N*[a]	%[b]	*Post-Writings Theme*	*N*[a]	%[b]
Information Literacy	No knowledge	21	28.5	Multiple media	30	25
	Misconception	4	6	Process-based	52	43
	Handling volumes of information	48	65.5	Part of curriculum	29	24
				Authentic need to use	10	8
Critical Thinking	Higher-level thinking	77	100	Problem-solving process	64	56
				Part of curriculum	17	15
				Pedagogical methods	34	29
Resource-based Learning	No knowledge	12	13	Multiple, authentic resources as basis of learning	96	100
	Multiple resources to supplement learning	70	76			
	Fact gathering	8	9			

Note. A total of 572 text segments were coded for this analysis based on 103 matched pre- and post-writings.
[a]Number of text segments coded within theme.
[b]Percent of text segments coded within theme.

These explanations stressed reading as the way of interacting with these texts and named types of information text as "newspapers," "nonfiction," and "expository" as primary forms. Thirteen percent of these writings mentioned computers and technology in association with information literacy. Nine percent of comments in this category referred to other processes of dealing with information than reading such as: "Being able to process all the information and decide what is relevant to the individual" and "Communicating about knowledge that you have thought about critically." Although a few writings associated information literacy with literacy generally, none articulated the specific nature of that relationship.

Analysis of post-project data showed that most of the students (87% representation in this category) had increased their understanding of information literacy with more specific knowledge of information materials, processes, and uses, as well as realizing its existence as school curriculum. Students named many more types of information resources than they did in their pre-writing such as "books, kids' magazines, old and new magazines, posters, videos, maps, charts, Internet, CD-ROMs, worldwide web, people, places in the community, e-mail, nonverbal things, music (25% of writing in

this category)." First and foremost, nearly half (43%) of the post-data in this category represented students' learning about a process-based view of information literacy. Key words associated with a process view of information literacy recurred in these writings, such as:

> It is the act of accessing, evaluating, using, and producing information.
>
> Information literacy is the ability to find the information and organize it so that it could be useful.
>
> Information literacy can be defined as the ability to effectively collect, analyze, and utilize resources of information for a specific purpose.
>
> Information literacy involves sorting, analyzing, and organizing information. This fits in with critical thinking because it is a challenge to decide what is reliable and valuable information.

Another major theme (24% of writings in this category) focused on the teacher education students' discovery of an information literacy curriculum and program. Students remarked how they "had no idea that information literacy could be broken down and taught from the earliest grades" and how they "were never taught all these skills and now it's so much harder for me to do my assignments let alone feel independent and confident about myself as a learner." They also wrote about their newly realized importance of information literacy in learning in students' present and future lives (8% of writings in this category). "The process of learning information literacy skills needs to be incorporated into a child's education at an early stage. Students require such skill early in life and continue to have a use for them throughout their lifetime." A few students noted the "wasted opportunities" for teaching students information literacy: "I was disappointed with primary programs that rely heavily on programmed games or typing. The children could be taught to become more information literate. They could e-mail children in other countries. They could do research online."

Critical Thinking.

The dominant theme in the pre-writings about critical thinking was the general notion of higher level thinking. Some students had been introduced to the CT^2 model of critical thinking in their social studies education classes the previous term. The writings represented a range of degree of development about the concept. Examples at the least developed end are "Thinking, guessing," "Higher level of thinking," "Not just memorizing the facts," and "Thinking about things with a critical eye." The few more developed conceptions included some reference to cognitive processes as well as more accuracy of definition such as "The ability to investigate and analyze an issue from other points of view" and "Taking an issue and examining from different perspectives."

After the project experiences, more than half (56%) of the writings in this category were about critical thinking as a problem-solving process that involved multiple cognitive processes. Examples of this understanding are:

> Learning experiences that require you to look at problems in multiple ways and perspectives.
>
> Problem-solving or making judgments or questions
>
> The ability to evaluate information and weigh evidence in order to make reasonable judgments.
>
> Teachers must ask questions that will get students problem-solving, making decisions, and then supporting their arguments.

Like information literacy, students stated that critical thinking should be an explicit part of the school curriculum (15% of writings): "Critical thinking is something that must be taught. We are not born with this skill." "A major goal of educators is to provide students with the ability to be critical thinkers." " Critical thinking is a lifelong skill."

Finally, 29% of the post-writings about critical thinking concerned the effectiveness of the CT^2 inquiry-based approach to integrated unit planning that they were taught in the project:

> I now know that a critical question can be at the base of a unit. I have learned how to pose critical questions to help direct a unit.
>
> Teaching a unit in the framework of critical challenge provides authentic meaning to what students are learning, how and why. They can see an issue as a whole. Solve a problem or address an issue from beginning to end, and learn from real situations.

In this theme, some writings pointed to how critical thinking or inquiry supports students' motivation and ownership of their own learning. "A critical challenge takes learning out of the classroom, puts it in the context of the outside world. It ends the question of 'where am I ever going to need to know this?'"

Resource-Based Learning

Initial conceptions of resource-based learning varied from none (13% of writings for this category) to the dominant notion of using multiple resources to supplement or enrich core curriculum (76%). A few students (11% of the writings in this category) associated resource-based learning with information finding and "fact collecting" about a topic that has been assigned.

Although only a few students associated resource-based learning with textbooks as primary resources, students most commonly named books, computers, stories, and media as examples of their basic definitions, for example, "using resources for learning about concepts," "using multiple resources in lessons," and "learning using texts, books, computers, etc." Entry definitions were marked with notions of resource-based learning as

supplemental as opposed to central. For example, "Being able to use a variety of resources to supplement learning" and "Using extra materials to enrich curriculum."

Only one theme emerged from the post-writings about resource-based learning. Here, students expanded their concept to include many types of resources "besides books" and included "library personnel, technology, CD-ROMs, the Internet, field trips, people, literature in every form, guest speakers, newspaper articles, and websites." Put simply, post-writings indicate students viewed resource-based learning as "refer[ring] to a variety of resources, rather than just concentrating on one textbook."

Additional Post-Writings

Approximately half the students opted to write about what they had learned outside the space allotted for the three target concepts. Table 2 identifies the concepts and themes that emerged from analysis of these additional post-writings.

Interrelationships among information literacy, critical thinking, and resource-based learning. Although students were not directed to write about perceived relationships between the three focal concepts above, 42% wrote about their understandings of these relations after the Information Literacy Project. They described connections between resource-based learning and information literacy, between resource-based learning and critical thinking, and among all three concepts. The following writings illustrate students' new understandings of these connections.

> I think resource-based learning is really related to information literacy and critical thinking. Informational literacy is necessary for resource-based learning because both the instructor and students need to be aware of what kinds of

Table 2
Preservice Teachers' Voluntary Post-Writings about Additional Understandings Gained

Concept	*Theme*	*N ts*	*%ts*
Concept Interrelations[a]	Target concepts are and should be interdependent in schools	62	100
Role of the Teacher-librarian[b]	Teacher	11	8
	Instructional	49	38
	Partner		
	Information specialist	71	54

Note. *N* ts = number of text segments in this concept.
% ts = percent of text segments in this concept.
[a]Represents 42% of students (n=54) and 62 text segments.
[b]Represents 58% of students (n=74)and 131 text segments.

information are available and how to use it in order to use the resource-based approach.

Information literacy helps students to become critical thinkers, and critical thinking helps students be information literate. Resource based learning also integrates into this whole picture.

At first, I thought that all of these things were separate but now realize that really they are all interconnected and to some degree occur at the same time.

Not only do teachers need to use as many resources as they can, but they also need to show students how to access information from a variety of sources efficiently for themselves so that they can eventually become independent learners.

Resource-based learning in turn is necessary for the development of critical thinking. Background knowledge is an essential component of CT (critical thinking), therefore the ability to access, evaluate, and use a different sources is necessary for critical thinking.

The use of multiple sources is essential for critical thinking because it allows you to weigh contrasting evidence to come up with a reasonable conclusion.

Role of the teacher-librarian. Although students were not directed to comment in either the pre- or post-writing about the role of the teacher-librarian, 58% of the students wrote about the role of the teacher-librarian after the project experiences. Their writings represented new understandings about the role of the teacher-librarian as teacher, instructional partner, and information specialist. Writings about the role of teacher comprised the least number of text segments (8%), probably because of their limited experience with teacher-librarians in this role. Representative comments are:

Teacher-librarians help to teach students how to find information/resources for topics of research.

Teacher-librarians can assist and encourage students in engaging research and facilitate student learning of essential learning skills.

The teacher-librarian helps students obtain the necessary background knowledge to become critical thinkers.

Insights into the role of the teacher-librarian as information specialist were the second largest group (38% of comments in this category). Students remarked:

Teacher-librarians are specialized in knowing where to find pertinent information and how to go about doing it.

They know how to read books critically and how to teach this skill.

Teacher-librarians have an important knowledge base that we, as teachers, do not necessarily have full access.

They are essential because they are trained experts in the field of information technology.

Students wrote most about the teacher-librarian as instructional partner (54% of data in this category).

> The teacher-librarian is a supportive leg in teaching information processing skills. I hope to give my students the skills to assess, evaluate, use, and produce information by teaming up with my teacher-librarian.
>
> This individual aids immensely in helping us, as teachers, find not only resources, but in helping us find a common focus, and to thinking critically whether this focus in going to work in the long run.
>
> If it was not for them, my critical challenges and information literacy objective would not have come as nicely as it did. They really are important people to collaborate with and definitely resourceful.
>
> Teacher and teacher-librarian make a really good team because the teacher knows her student and librarian can find the resources required. Together, they can plan and teach a unit that has been well researched.

Discussion

Results of this phase of the Information Literacy Project show that the project developed in preservice teachers the foundation of effective partnerships for supporting student learning: "a clearer understanding of information literacy, resource-based learning, the role of the teacher-librarian, and how crucial school libraries are to achieving the learning outcomes of all students" (Doiron, 1999, p. 11). Over a two-week period in the midst of a heavy course load, preservice teachers increased their understanding of concepts that are fundamental to an effective information literacy program and increasing students' learning opportunities. Kuhlthau (1993a, 1999) identifies these enablers as: (a) a team approach to library services, (b) a collaborative model of planning and teaching, (c) a mutually held constructivist view of information seeking and learning, (d) a shared commitment to information skills and (e) competence in designing information process strategies. Although these are all clearly complex concepts to attain, preservice teachers' expanded understandings indicate development of significant bridges to future partnerships with teacher-librarians and schoolwide information literacy instruction.

Results show that the preservice teachers' concept of information literacy evolved from basic, commonsense interpretations that emphasized handling several types of everyday information texts to more sophisticated interpretations consistent with current literature (Kuhlthau, 1993b). That is, they were able to identify multiple stages or components of information literacy, view information literacy as a group of cognitive processes including critical thinking, and understand the need for a developmental approach to information literacy instruction.

Preservice teachers' understanding of a pedagogical view of information literacy was probably enhanced by having access to a curriculum of information literacy learning outcomes (Bens et al., 1999). These documents explained and made concrete the multiple skills and strategies that proficient learners use in and out of school. These "invisible" skills are rarely taught by

classroom teachers (Asselin, in press); however, the preservice teachers in this study became aware of their existence and experienced collaborative planning of an information literacy lesson first hand. Although students' writings suggested some emergent understanding of information literacy as an expanded definition of literacy, this theme was probably undeveloped due to the practical focus in the project on collaborative unit and information literacy lesson planning.

Analysis of students' writing about their concept of critical thinking indicated growth rather than significant change as a result of the project. The preservice teachers came to be able to name specific processes involved in solving a problem. This view of critical thinking reflects the Case and Daniel's (1996, 1999) CT^2 model of teaching critical thinking where inquiries or "critical challenges" frame the purpose of learning and teaching. A strong inquiry ensures students' development not only of knowledge, but of thinking strategies and habits of mind, both of which support Case and Daniel's conception and pedagogy of critical thinking. It also seems that students' experiences with CT^2 helped them to see learning as inquiry (Short et al., 1996). Because they developed inquiries or critical challenges at multiple levels in their integrated units—at the unit, sub-unit, and lesson levels—results suggest that they began to realize that inquiry forms the base of all learning and that in this model, teachers help students construct knowledge, not receive information.

Results indicate limited growth in the teacher education students' understanding about resource-based learning. It seems they shifted from a vague but commonsense notion of this concept to one that emphasized a rich and extensive selection of resources as primary rather than supplementary materials for student learning. Given the large and current collections of resources in our university libraries where planning sessions were held, it is not surprising that students focused more on materials in their revised views of resource-based learning. Teacher-librarians who worked with the students devoted much time and effort to providing students with a wealth of resources no matter how abstruse their topic.

Although the teacher education students never had explicit instruction on how information literacy, critical thinking, and resource-based learning worked together, and although they were never asked to write about their views of these relationships, slightly under half of the students had come to their own conclusions about these complex connections. These connections are the heart of teacher-librarians' work (AASL, 1999) and the focus of teacher-librarians' advocacy efforts with experienced educators. Results from this study show that these preservice teachers glimpsed the links between resource-based learning and information literacy, resource-based learning and critical thinking, information literacy and critical thinking, and among all three concepts. They pointed out that resource-based learning is dependent on all participants being information literate, not just the teacher-

librarian; that the construction of new knowledge through critical inquiry processes rests on accessing and becoming informed about existing knowledge; and that the relationship between information literacy and critical thinking is interactive and recursive.

The amount of unsolicited writing about the role of the teacher-librarian suggests the significant influence teacher-librarians had on students during the two-week project period. It was particularly interesting that no students associated teacher-librarians with any of the original target concepts in their pre-writings. No mention was made of teacher-librarians in any of the pre-writings. In contrast, more than half of the students wrote voluntarily about the teacher-librarian in their post-writings. Students' post-writings show how they came to view the teacher-librarian in the three roles defined by the American Association of School Librarians (1998). Specific areas of responsibility that preservice teachers came to know about were: (a) teacher in the context of students' and other members of the educational community's learning and information needs; (b) instructional partner with teachers, linking student information needs, curricular content, and resources; and (c) information specialist in evaluation of information, information issues, and modeling of information literacy. When new teachers understand the role of the teacher-librarian, it is likely that the amount and quality of collaborations between teachers and teacher-librarians will increase. The level of collaboration in the United States, for example, in the early 1990s was about 30% (National Center for Educational Statistics, 1994). Findings from Pickard's (1993) study at that time suggest that less than 10% of collaboration occurred at Loertscher's (1988) higher levels.

The Information Literacy Project applies principles of effective knowledge growth as identified in current research on teaching (Borko & Putnam, 1996). Students in the project expanded their knowledge of key concepts underlying integrated collaborative school library programs; however, students' beliefs are most significantly influenced by their student teaching practicum experiences (Goodlad, 1990). In this phase of the project, the preservice teachers' introduction to integrated approaches to teaching and information literacy pedagogy were limited to experiencing the planning stage during on-campus coursework. The next phase of the project, currently in process, attempts to increase authenticity of the experiences by having students carry out their collaborative lesson planning in the practicum school libraries, where they would be working in on completion of the course. The ongoing research that is part of the Information Literacy Project will help us to understand more about the process of preparing new teachers for their responsibilities in supporting students' information literacy. The Department of Language and Literacy Education has spearheaded the Information Literacy Project, but it is hoped that the responsibility for information literacy education will be shared across all departments in the Faculty of

Education, giving students a more integrated and authentic introduction to information literacy.

This project illustrates one way that faculties of education and other teacher education agencies can take a leadership role in preparing their students in the areas of resource-based learning, information literacy, and critical thinking. With the support of partnerships between the field and university and with advocacy efforts in place by the professional organizations of teacher-librarians, teacher-librarians and school libraries are poised to "play their unique and pivotal role in the learning community" (AASL, 1998, p. 4).

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