DOCUMENT RESUME

ED 352 622 CS 011 118

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TITLE What Will It Take To Ensure Implementation? A Content Literacy Dilemma.
PUB DATE 2 Dec 92
NOTE 25p.; Paper presented at the Annual Meeting of the National Reading Conference (42nd, San Antonio, TX, December 2-5, 1992).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Case Studies; *Content Area Reading; Higher Education; *Learning Strategies; *Literacy; Preservice Teacher Education; *Student Teachers; Teacher Education Curriculum; *Teacher Effectiveness; *Teaching Styles
IDENTIFIERS *Content Area Teaching

ABSTRACT

A study attempted to determine a variety of facilitating and militating elements that influence Content Area Literacy/Learning Teaching Strategies (CAL/LTS) implementation. It investigated the impact of various contextual or ecological features embedded within the student teaching experience on student teachers' ability to implement various strategies. Five student teachers who had taken the author's Content Reading Class were interviewed at different times during the semester and their responses were analyzed to categorize their predominant supervisory styles using J. A. Zahorik's university supervision types (1988). Results indicated that unless preservice teachers see for themseives that attention to content literacy helps improve students' subject matter learning, they cannot fully accept the need for such instruction. Results showed that student teachers needed additional support, either via nudge or overt expectations, to actually apply what they had learned. (Thirty-seven references, two appendixes containing biographical sketches of student teacher participants and a checklist of CAL/LTS strategies, and one figure are attached.) (PRA)

WHAT WILL IT TAKE TO ENSURE IMPLEMENTATION? A CONTENT LITERACY DILEMMA

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A paper presented at the National Reading Conference
December 2, 1992
San Antonio, TX

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Preface

Both a simple and complex response to the question posed in the title would be, "More than we currently understand or conceivably can control." The response is simple because many reading researchers would likely concur. It is also complex because it begs additional consideration. Likewise, findings and implications of this paper are simultaneously simple yet complex.

Introduction

The call to merge content reading with various subject matters was sounded at least six decades ago (Moore et al., 1983). Since 1983, all but 14 states have required a content reading class for secondary certification (Farrell and Cirrincione, 1984). Recognizing that university supervisors might need assistance with this new responsibility, Memory and Simbol (1983) and Rafferty (1992) provided suggestions for content reading supervision. In addition, according to Stewart and O'Brien (1989) we are fairly certain that a "sizeable cadre of knowledgeable secondary teachers...should be confident in their abilities to incorporate reading instruction into their lessons" (p. 397). However, a subsequent study (O'Brien and Stewart, 1990) indicated that resistance to content reading instruction is complex and related to issues such as misconceptions about reading, perceptions of secondary schools as workplaces, and assumptions about teaching and learning. Those of us who spend substantive time in public schools realize that despite certification requirements, years of staff development, and considerable research, implementation is far from widespread. Why? This paper explores the impact of various contextual or ecological features embedded within the student teaching experience on student teachers' ability to implement various Content Area Literacy/Learning Teaching Strategies (CAL/LTS).

Study Design

Since my induction into teacher preparation in 1988, I have taught multiple sections of a state mandated content reading course. Like many teachers, I was curious to know what students "took with them and applied." In addition, I wanted to know what I, as instructor could do to improve course content to increase the likelihood that theory would indeed be translated into practice. Discussions with university supervisor colleagues during the last few years indicated at least two disturbing trends: 1) former students did not seem to be applying many content reading strategies and 2) many university supervisors were less than knowledgeable about the nature/intent of the course. Alvermann and Moore's 1991 synthesis of secondary reading practices and Moore's 1991 review of the prevalence of traditional secondary reading practices also underscored the need for additional research. As a result, the following project emerged.

At the end of Fall 1991, I solicited volunteers from my two content reading classes to participate in a project that would span Spring 1992 semester. Only a few students were planning to student teach; three volunteered (Sheila, Peter, and Rebecca). Two additional

students (Tim and Steve) were recruited from my spouse's student teaching cadre. Four of five students (Sheila, Steve, Peter, and Rebecca) had taken the content reading class from me, four had taken it the semester preceding student teaching (all except Steve), three were nontraditional students (age 27 or older), and three were male. Biographical sketches of the participants are included in Appendix A. Pseudonyms are used to maintain anonymity.

At the beginning of Spring semester 1993, each student teacher received a letter further explaining our project. Included with the letter was a copy of a checklist that volunteers had received in the content reading class the previous semester. The checklist was designed to remind students of possible content reading strategies (CAL/LTS - Content Area Literacy/Learning Teaching Strategies) that could be used either before, during, or after instruction. (For elaboration on CAL/LTS checklist see Rafferty, 1992 and Appendix B.) I met with these student teachers three times during the semester - at the beginning (mid-February), middle (late-March), and end (early May) of their instructional responsibilities. Prior to each session, participants received a copy of potential interview questions. All interview sessions were audio-recorded, transcribed, then reviewed, revised (if necessary) and approved by the student teachers for content, accuracy, and clarity. In addition to audio-recorded interviews, I encouraged (but did not require) participants to submit sample lesson plans or other materials as documentation of their incorporation of content reading strategies (CAL/LTS). At semester's end each student teacher completed a self-analysis using the CAL/LTS checklist to indicate which strategies they had incorporated during the semester. Several also provided copies of lesson plans and materials created during the semester. Using constant comparative method (Glaser, 1978), data were read and coded for themes within and across individual interviews as well as across the five participants. Data were also triangulated with sample lesson plans, activities, and university supervisor observations.

University supervisors of these student teachers also provided data through a structured interview and informal conversations. Two of four supervisors were knowledgeable about CAL/LTS. In fact, one often taught a summer section of the content reading courses. A dimension of the interview requested that each supervisor use the CAL/LTS checklist to identify strategies promoted in seminars and/or used by the student teachers. When reviewing the checklist two supervisors reluctantly admitted little or no familiarity.

Using knowledge of my colleagues--both from the interview and our work together at the university--I categorized their predominant supervisory styles using Zahorik's university supervision types (1988). That analysis is cross-referenced with the student teachers experiencing that style. This information will be addressed further in the discussion and implications.

(Supervisor A) Behavior Prescription

Tim and Steve's supervisor represented a combination of two subtypes - master supervisor and critic supervisor. According to Zahorik, the former is described as one who prescribes "instructional and management practices from the perspective of an experienced, expert teacher" while the latter carefully collects "evidence

regarding the student teacher's teaching," provides "analysis and interpretation of the behaviors used" and suggests and supports "actions to be taken by the student teacher" (p. 11).

(Supervisor B) Idea Interpretation

Rebecca's supervisor, predominantly a "humanistic supervisor," could be described as raising "the consciousness of the student teacher about questionable classroom and school practices," and "suggesting ways to bring about change" (p. 11).

(Supervisor C) Person Support

The predominant mode of Sheila's supervisor was as "advocate." This type eliminates or reduces "those forces in the classroom or school" that inhibit the student teacher "from being a responsible decision maker" (p. 11). Often, such intervention involves discussion with the cooperating teacher or principal or clarification of university policy.

(Supervisor D) Person Support

Peter's supervisor also displayed traits of the "advocate" subtype.

Description of Content Reading Class

A brief description of the course will provide essential context for data analysis and discussion. Four of five student teachers had taken the state mandated course from me. The three volunteers had the course immediately before student teaching, while one (Steve) had taken it Fall, 1989. Tim had the course from a colleague, but we shared a common syllabus.

Reading was presented as an active, constructive process in which the reader uses prior knowledge in an attempt to dialogue with the author to gain meaning. To broaden application across all content areas, I used McKenna and Robinson's (1990) definition of content literacy as "the ability to use reading and writing for the acquisition of new content in a given discipline" (p. 184). Numerous content reading strategies were presented, modeled, and experienced by the preservice teachers. This instructional sequence was often followed by projects which required students to create lessons and materials which incorporated various CAL/LTS in their own subject area. Indeed, the course could be viewed as developing pedagogical content knowledge. As Shulman (1986) noted, in addition to understanding subject matter, teachers must also have knowledge of how to represent content in a variety of ways to support student understanding. Specific examples of these before, during, and after instructional strategies are presented in Appendix B, the CAL/LTS checklist.

By semester's end, the vast majority of students were both knowledgeable of and favorably disposed toward implementing various strategies. At least they were able to construct activities and lesson plans in which content literacy strategies were incorporated with various subject matters. This is consistent with previous research which indicates that a content reading class can produce positive attitudes toward content reading philosophies (O'Rourke, 1980; Stieglitz, 1983; and Christiansen, 1986). Unfortunately,

attitudes alone do not guarantee implementation (Ratekin et al., 1985). The implications of this study confirm that even with knowledge and predispositions, numerous factors can preclude implementation of various content literacy techniques.

Learning to Teach: What we Think we Know/Need to Know

Although recent syntheses on facets of teacher preparation have illuminated our understanding, there is much to learn (see, for example, Applegate's 1987 chapter on early field experience; a chapter on the ecology of field experience by Zeichner, 1987; the impact of student teaching by Watts, 1987 and Guyton and McIntyre, 1990; and Feiman Nemser's 1983 chapter on learning to teach). There is general consensus that cooperating teachers have greater influence on student teachers than do university supervisors (Watts, 1987). Their influence, however, may be viewed as positive or negative depending on circumstances and ultimate impact on student teacher's experience. Nonetheless, at least one study contends that we can't hold cooperating teachers solely responsible for "lack of implementation." Even without a cooperating teacher's influence student teachers reverted to more traditional reading instruction approaches (Hodges, 1982).

Apparently conventional wisdom also exists that students become progressively liberal toward education during their university coursework but shift to more traditional views during student teaching, resulting in a "wash out" scenario. (Zeichner & Tabachnick, 1981). These same authors assert, however, that such a "wash out" of university effects is not possible because they never really existed in the first place.

Despite hundreds of articles and manuscripts about university supervisors and their roles, about the only consistent finding is the lack of influence of university supervisors. However, university supervisors do perform functions such as critiquing performance that are often ignored by cooperating teachers (Zimpher, 1987).

Two final and interrelated facets of learning to teach include the impact of developmental level and personal history of preservice teachers. A number of studies and syntheses including Glassberg & Sprinthall, 1980; Sprinthall & Thies-Sprinthall, 1983; Thies-Sprinthall, 1984; Thies-Sprinthall & Sprinthall, 1987; and Burden, 1990, significantly inform our understanding of teachers' personal and professional development across various psychological and social aspects. A basic assumption is that humans behave according to the level of complexity of their mental structures. Less sophisticated cognitive development yields rigid, concrete, and less adaptive behavior during problem solving situations. Teaching involves hundreds of problem-solution scenarios daily--implications are obvious.

Closely connected to developmental level is biography or personal history. Lortie's (1975) seminal sociological study chronicled the power of 10,000 hours comprising the "apprenticeship of observation" that results in a "teachers teach the way they were taught" scenario. Recently, Holt-Reynolds (1991, 1992) and Hollingsworth (1989) and Hollingsworth and Teel (1991) documented the impact of personal histories/prior knowledge on reading instructional decisions.

While it may appear that the "learning to teach" knowledge base is considerable, from dialogues with student teachers and their university supervisors, I emerged with more questions than answers. This was particularly true with respect to factors facilitating or undermining implementation of various content literacy strategies (CAL/LTS). What was "learned" is presented in the next section.

Is it Possible to Ensure CAL/LTS Implementation? What I Learned from Student Teachers

During interview sessions, not one student teacher denigrated use of CAL/LTS. It could be argued that this occurred because I served as instructor to most and they were too polite to criticize or object. However, with one exception, all were able to find at least a few appropriate and meaningful ways to implement these techniques. When implementation was not forthcoming it was primarily attributable to a complex web of factors displayed in Figure 1 rather than a "defense of current practice" documented by Holt-Reynolds (1992).

As categories and themes emerged during data analysis, I developed Figure 1 as a visual representation of a "Teacher Preparation/Development Ecosystem." This idea and language emerged before I read the following in Zeichner, 1987:

> ...an ecological approach to research in teacher education requires that studies: (a) seek to understand the simultaneous influence of a variety of people and factors under particular environmental conditions and at several levels, (b) document the evolution of an experience and patterns of influence over time, and (c) view influence in relation to teacher development as reciprocal in nature (p. 97).

In an attempt to understand what these student teachers experienced in relation to CAL/LTS implementation in particular and learning to teach in general, I found it necessary to complete extensive readings, many of which confirmed the Figure 1 "ecosystem" representation. An explanation of key components is warranted.

[Insert Figure 1 about here.]

The base is formed of those components which seem to undergird the entire teacher preparation experience. Besides being documented in research, there was a thread of personal history/prior knowledge of teaching that permeated each set of interviews. In addition, both Burden's (1990) and Thies-Sprinthall and Sprinthall's (1987) research syntheses document the more sophisticated capabilities of teachers operating at higher levels of cognitive development. For example, according to Thies-Sprinthall (1984) cognitively advanced teachers are reflexive and responsive to student needs while others follow mechanical routines regardless of student differences. Both personal history and developmental level seem linked to age. In this project, I would classify two as traditional students (ages 22-23) while the others were non-traditional with multiple work experiences outside of education (ages 27, 33, and 36).

The particular preservice preparation program experienced by these five student teachers provided little or no early field experience, hence the solid line between theory and practice. Theory was placed at the bottom for two reasons: 1) it was experienced first and formed the "foundation" for application and 2) it is usually perceived as less important by both student teachers and cooperating teachers. Within each component (theory and practice) are displayed major factors contributing to student teachers' thinking in relation to the central focus (defining/describing teaching) and the three categories surrounding the core. Permeable lines between these elements are designed to convey that there was some transfer of ideas across the core from theory to practice and back. I speculate this would have increased had these student teachers had substantive and meaningful early field experience. Numbers in parentheses below each component represent interview number (1-3) and question position within the interview.

The output arrow represents actual CAL/LTS implemented and projected future usage as impacted by various ecosystem factors. What follows is a discussion of commonalities and exceptions to learning to teach and CAL/LTS implementation.

Learning to Teach: Commonalities and Exceptions

Four of five student teachers gave clear descriptions of a teaching philosophy and style that was student-centered and involved students in their own learning (Tim, Steve, Peter, Rebecca). These same four described their cooperating teachers as "supportive" in the sense that they allowed some experimentation and autonomy. In addition, these four cited the content reading course as one in which they learned a variety of useful methods. They also specifically mentioned the impact of the educational psychology course with its emphasis on social, emotional, and cognitive needs of students. Furthermore, they cited a degree of confidence in their level of subject matter preparation. The core of the ecosystem represents this focus.

In contrast, the exception (Sheila), had difficulty articulating a teaching philosophy or style. Often, it was easier for her to describe what something was not, rather than what it was. She talked about not wanting "to bore students" and that students "don't really...learn a whole lot from lecturing" because of short attention spans. Sheila spoke frequently about lack of compatibility with her primary cooperating teacher (CT), both in philosophy and style. She considered herself to be structured and organized, a trait in opposition to the CT.

Sheila also evinced lack of confidence in her subject matter preparation. When support from the cooperating teacher did not materialize, she finally approached the English department chairperson who gave her suggestions for a week of fables, a week of persuasive writing, etc.

> ...That is what I needed because I had no idea what I was going to teach...my cooperating teacher in English [had] said, "Well, ok, pick a theme maybe like war." Coming in here from college I didn't have the ability to just pick something like that and to just come up with ideas (2-Q7).

As the following quote illustrates, despite difficulties in articulating a philosophy or knowing how to teach English, Sheila seemed to realize that under different circumstances her student teaching experience might have yielded different results.

> ...If I would have had any other English teacher in the school, I think my experience would have been a lot different (3-Q6).

There were instances of parallel learning for all student teachers. For example, all were surprised by the nature of students, perhaps attributable to lack of early field experience. They identified things like lack of motivation, respect, and work ethic. Representative comments provide additional insights.

> [How] unwilling to learn [students are] is a really big surprise. I knew there were going to be some surprises but I didn't think it was going to be like this (Sheila - 1-Q12).

> I don't remember being as bold. I don't remember talking about...sex and drugs, and they use language that maybe I use but outside of the classroom (Tim - 1-Q12).

> Getting them into a working mode, some kids are great, you ask them to do something and they sit there quietly and do it. [For others] you really need to push them and drive them, everything you can do to get them to do the problem (Rebecca - 1-Q12).

For those with a student-centered, activity-based philosophy, harsh classroom realities such as those identified above, provided much challenge and grist for reflection.

All five student teachers cited our conversations as beneficial, primarily because they provided reflective or metacognitive opportunities.

> Well, it's definitely made me more aware of different methodologies...available to me. It involved a little bit of labor, but it was well worth it I think...I probably wouldn't have [included many of these CAL/LTS if I hadn't been in this project.] I probably would have, how do they say - [taught] like [I was] taught. I probably would have fallen into some type of rut (Steve - 3-Q7).

> ...just the fact of having you to talk to three times this semester about what was going on helped me verbalize the things that I was thinking. If you go down the list of [interview] questions and you have to think about those and talk about them, then you start to realize some things (Peter - 3-Q7).

Only those who implemented at least a few CAL/LTS however, actually reflected upon their use during interview sessions. Interestingly enough, although three of five had volunteered to participate, they

were not the student teachers who reported the most implementation. That "distinction" fell to Tim and Steve, the recruits, setting up a comparative dichotomy that will be explored next.

Volunteers vs. Recruits: Exploring Ecosystem Influences and CAL/LTS Implementation

Volunteers

All three completed the content reading course immediately preceding student teaching and volunteered to participate. The following chart summarizes descriptive information vital to their student teaching experience and data analysis.

	STT Placement	# Courses/ Preps	Planning Time	Cooperating Teacher(s)	University Supervisor
Sheila	City H.S.	3 English 2 Fam. Life	1 period	Conflicting- Non supportive	Person Support
Peter	Mid-sized Jr. High	4 sections Am. History	3 periods	Compatible- Supportive	Person Support
Rebecca	Mid-sized H.S.	2 low Math 1 high Math 2 Bus. Ed.	1 period	Compatible- Supportive	Idea Interpr.

Interview data and ecosystem influences produced interesting case information. Although all three had volunteered knowing that I was interested in CAL/LTS implementation, only Peter consciously and deliberately worked toward that end. Space does not permit a complete explanation of ecosystem factors, but Peter's example will provide some detail as contrast to the other two volunteers.

Peter had one preparation, four sections of the same class, and multiple planning periods. In addition, his cooperating teacher allowed him enough autonomy to implement various teaching strategies. On a cold January day just prior to his student teaching semester, we met outside a local copy center. At that time Peter said to me, "I'm looking forward to being involved in the project this semester. I want to try some of these techniques and know I'll need a push, a nudge to make sure I do." Apparently he was determined and predisposed to implement. Of the three volunteers, he reported and documented use of numerous CAL/LTS (e.g.: pretests of prior knowledge, attitudes, and interests; advanced organizers and brainstorming; directed reading activities and cooperative learning; three-level guides, discussion, higher level questions, and writing to learn).

In Peter's case, ecosystem factors displayed in Figure 1 played a supportive/facilitative role. Yes, he was determined and predisposed, but he also had a "lighter" load and multiple planning periods. His teaching philosophy, clearly articulated in the first interview, was learner-centered, process-oriented, and activity-based. Although Peter's university supervisor was neither knowledgeable of CAL/LTS nor expecting their implementation, he did not assign additional work during the weekly seminar. Thus, Peter had even more time available for planning. He also operated at a high cognitive development level

which supported his search for appropriate methods for teaching History. When a technique was not particularly successful, rather than blame the students, he analyzed and reworked the lesson.

> The students...have had a big impact...until you actually come into this classroom yourself and [are] confronted with eighth graders, you never have any idea what it's going to be like on a day-to-day basis. [They have] made me become more organized, better at giving instructions, more specific, made me think about how I want to get something across to students, because I realize that if I wasn't doing it--if I wasn't getting something across--it was me, not them (2-Q6).

The exact origin of his cognitive sophistication is unclear, but is likely related to personal history. A perusal of Peter's biographical sketch in Appendix A reveals that he was 33, father of three young children, and had multiple work experiences. Undoubtedly he entered teacher education with clear focus and goals. At any rate, contextual circumstances provided him with an environment conducive to experimentation with various CAL/LTS. Next, recruits and their levels of implementation will be examined.

Recruits

Tim had taken the content reading class from a colleague just prior to student teaching while Steve had my course two years earlier (Fall 1989). They were recruited for the following reasons: 1) Tim because he had the course from someone else and was placed at a Professional Development School site in which I would spend time that semester; 2) Steve because he had taken the course two years before and I was curious to determine that impact. The following chart summarizes pertinent information.

	STT Placement	# Courses/ Preps	Planning Time	Cooperating Teacher(s)	University Supervisor
Tim	Mid-sized Rural M.S.	3 English 2 History	1 period	Compatible-Supportive	Behavior Prescrip.
Steve	Mid-sized Rural H.S.	2 Biology 2 Gen. Sci. 1 Chemistry	1 period	Compatible-Supportive	Behavior Prescrip.

Several ecosystem factors (See Figure 1) were parallel for the two recruits and Peter. Their philosophies were similar, they had some autonomy/flexibility to implement, and all used text or printed material on a regular basis. Differences were also striking as well. Both Tim and Steve had full teaching loads, multiple preparations, and minimal planning time. Tim had taken the content reading course from a different professor while Steve took the course two years prior to student teaching. Despite these contrasts, the recruits not only implemented and documented use of similar strategies but also employed more CAL/LTS than did Peter. For example, Steve used most of Peter's techniques and also experimented with bringing in outside resources, Directed Reading-Thinking Activity, Cornell Double-Entry Notes, and

Inferential Strategy. Apparently factors other than Peter's predisposition and relatively "light" student teaching load precipitated this result. It appears that university supervisor expectation was a significant factor.

Both recruits experienced a supervisor who was a master teacher and critic supervisor. He carefully documented and analyzed their performance and suggested various instructional and management practices. This approach, combined with consistent reinforcement that student teachers refer to CAL/LTS checklist for potential strategies, established a norm for implementation. This expectation was verbalized as, "I want you to use as many of these [CAL/LTS] as you can." In addition, it is likely that our personal relationship (spouses) also mutually reinforced the expectation for these recruits. One could argue that they consented to participate for fear of reprisal. I can neither confirm nor refute that possibility. At any rate, this set of circumstances clearly influenced their decision to implement. At no time however, were specific strategies required. Therefore, it is reasonable to assume that Tim and Steve selected CAL/LTS appropriate to their respective subject areas and teaching styles.

Conclusions/Implications/Recommendations

As previously noted, understanding "what it will take to ensure implementation" is far from resolved. This particular project was limited in size, depth, and breadth. In addition, the majority had taken the content reading course from me and two were recruited. Potential limitations notwithstanding, this study attempted to determine, at least as a first step, a variety of facilitating and militating elements that influence CAL/LTS implementation. These factors are listed below in nonhierarchical fashion.

INFLUENCES ON CAL/LTS IMPLEMENTATION

Facilitating	Militating
Predisposition/Intention to use	Insufficient subject matter prep.
Fewer preparations	Lack of early field experience
More planning time	Lack of expectations by supervisor
Supervisor expectations	Unsupportive cooperating teacher
Supportive cooperating teacher	
Adequate subject matter prep.	

Unless preservice teachers see for themselves that attention to content literacy helps improve students' subject matter learning, they cannot fully accept the need for such instruction (Hollingsworth and Teel 1991). In the current study, student teachers needed additional support, either via nudge or overt expectations, to actually apply what they had learned. Based on these findings I would reiterate Hollingsworth and Teel's (1991) recommendations:

> Content area reading courses and teacher education programs might (a) encourage reflection on school-based constraints which limit content area reading instruction, (b) choose teaching practice settings where content area reading is modeled, (c) collaborate

> with cooperating teachers to provide opportunities for practicing new literacy strategies in field placements, (d) educate university supervisors to observe and coach preservice teachers' reading instruction, and (e) include more guided practice and discussions of attempted classroom instruction in reading courses (p. 10).

In addition, I would add the following:

(f) that content reading instructors initiate dialogue with Arts and Sciences faculty to explore Marks' (1991) queries regarding the best time and most appropriate ways to develop pedagogical content knowledge. Many CAL/LTS are "grounded in" current cognitive learning theory and constructivist philosophies germane to pedagogical content expertise. This has potential to take content literacy to another level and provide opportunities for meaningful dialogue for all with responsibility for teacher education.

(g) that we consider creating a professional development continuum to promote and develop content area literacy as outlined in Rafferty (in press).

(h) that we explore appropriate adjustments/modifications to teacher education programs to accommodate developmental differences of preservice students. Thies-Sprinthall and Sprinthall (1987) provide such an alternative approach. Recently Haberman (1992) underscored need for "developmentally appropriate" programs by contending that most college youth should not be prepared for teaching.

(i) that we find ways to "match" student teachers with cooperating teachers and university supervisors. Perhaps under different circumstances (e.g. Behavior Prescriptive university supervisor and more compatible cooperating teacher) Sheila's semester would have been a more positive learning experience.

(j) that we seriously examine the pervasive practice of full-day teaching responsibilities which require multiple preparations with limited planning opportunities. Given the complex nature of learning to teach, expecting quality instruction and reflection under such constrictive circumstances seems ludicrous indeed.

(k) that on-campus faculty participate in student teaching supervision to enhance their own understanding of ecological circumstances surrounding teaching and learning in the schools and to enrich the knowledge base through additional research as suggested by Zeichner (1987).

Although three of five student teachers in this project successfully implemented various CAL/LTS during student teaching, they were uncertain about continued use. All mentioned the checklist as a good reference but also recognized that additional contextual factors would likely impact future instructional decisions. Peter's closing commentary provides insightful analysis of his own experience and summarizes Tim's and Steve's thoughts as well:

> I have no idea really what to expect. I think I expect the unexpected because I realize it is going to be a different world. I only had four sections a day to teach instead of seven. I didn't have to deal with politics and I didn't have to deal much

with the administrator or anything else...I know what it is like to be busy but I don't know what it is like to have a full-time teaching job. It would probably be easy to get bogged down and stick to what you know works, not experiment or try other things. I don't know.

Reducing the uncertainty for future preservice and induction teachers, especially regarding content literacy application, is an on-going process. This study made some progress toward understanding "what it will take to ensure implementation," but there is much to learn. If we adopt an ecological approach to research in teacher education (Zeichner, 1987), undoubtedly future findings will be more complex than simple.

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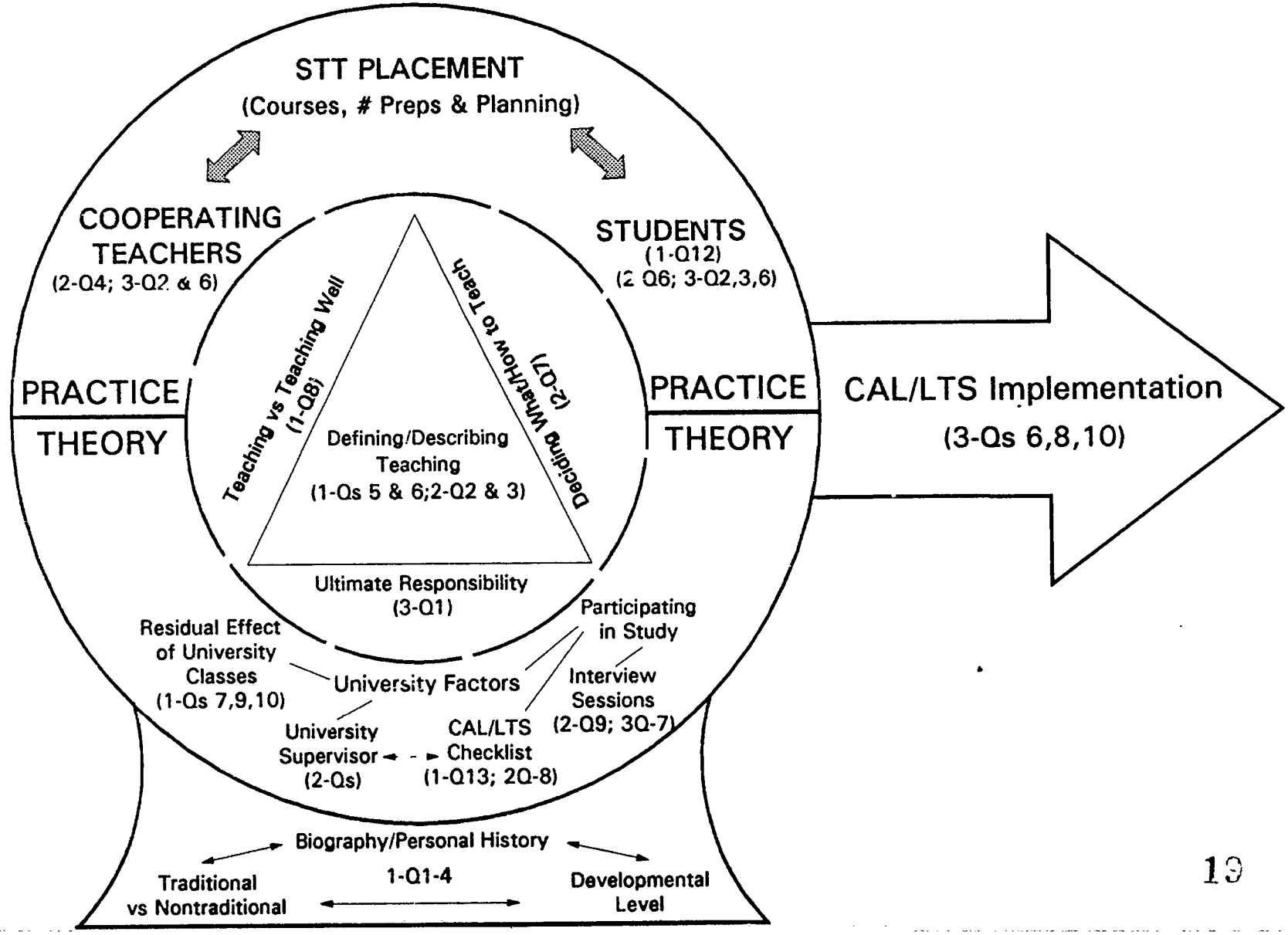
Figure 1

Teacher Preparation / Development Ecosystem



Appendix A
Biographical Sketches of Student Teacher Participants

Tim was a 22 year-old History major and English minor. He described his relatively small, rural high school as not a good college prep school primarily because his "senior year was the only year" in which he was required to write essay responses. He reported that as a young child he "played school a lot" and that he always "wanted to be the teacher." His grandfather has sparked an interested in history by telling World War II stories. In fact, Tim's favorite time period is 1919 to 1950. At one point he had wanted to be an environmentalist, but did not do well in botany labs.. Tim also explained that he "liked the idea of working with younger people" and that he also enjoys "writing and reading."

Sheila was a petite 23 year-old English major, Family Life and Human Sexuality minor. She also attended a small, rural high school in a community dominated by working class individuals and farmers. She described herself as a "smart" student who took "college prep" classes and liked school "a lot." She reported that she always respected her teachers even if she didn't "like" them and wanted to be an English major because she liked grammar ever since sixth grade. Sheila even compared grammar to Math in that "you catch on and you like it or if you miss it the first time somehow you never grasp it..." She chose her minor to diversify her English major.

Steve, first of three nontraditional students, was a 27 year-old biology major, geology/earth science minor. He attended a mid-size high school and emphatically stated that upon high school graduation he was "uncertain what (he) wanted to do with his career" and that he "had no inclination to be a teacher." He remembered being in regular courses in high school and spoke fondly and in great detail of two former science teachers who brought in samples, took students on field trips, and did other activities to spark interest in the subject matter. After being employed by K-Mart as a store manager, he returned to community college, ended up tutoring students, found it both "challenging" and "rewarding," and enrolled in the teacher education program.

Peter, a 33 year-old History major, bilingual/bicultural minor, attended a large suburban college prep high school. He spoke about a former high school history teacher who was "a good instructor" with "a good sense of humor" but he was also "disciplined." This combination "impressed me because he could be funny but you knew where you stood with him and you better not get out of line." Before entering the teacher education program, Peter had been a "jack of all trades" working at Sears, as a bike mechanic, a landscaper, and a gardener. Then after he married and started a family he realized the need for stability and decided to "finish school and have a career where (he) could be creative."

Rebecca, a 36 year-old Math major and Business Education minor, also attended a large suburban high school. She reported "not remembering much about courses taken" in high school and that "wanting to be a teacher didn't come from her school experience." She worked for 15 years as an accountant but really enjoyed her work with youth at a local church. Facing knee surgery, she took time off to evaluate options, did observations at a local school, liked the experience, and subsequently enrolled in the teacher education program.

Checklist of Content Area Literacy/Learning Teaching Strategies (CAL/LTS) to Support Reading, Writing, and Thinking for Learning in Content Area Classrooms

Student Teacher_____ Content Area_____
Grade Level of Class:_____ Type of Class_____
Date_____ Size of Class_____
Nature of Lesson_____

Directions: Check the items exhibited or observed either in pre-planning or actual lesson. It is NOT expected that all items listed will or should be included in any single instructional sequence. Spaces for comments are provided beneath each section. The following key may be useful:

+ Successful attempt
- Attempted but needs improvement
0 Not evident, but would be an appropriate strategy
x Not applicable to this lesson

The student teacher uses these activities during PRE-PLANNING for instruction.

Relative Success	Teaching Strategy	Specific Examples
	determines difficulty or appropriateness of the material	Readability, Cloze, etc.
	uses pretests of prior knowledge	
	uses pretests of student attitudes or interests	
	incorporates supplementary materials to meet needs of all ability levels	
	other (please describe)	

Comments related to PREPLANNING Phase:

The student teacher uses these activities to prepare the class BEFORE instruction:

Relative Success	Teaching Strategy	Specific Examples
	uses advanced organizers or structured overviews as framework for the lesson	Analogies, K-W-L, Webbing, etc.
	activates students' prior knowledge	brainstorming, PReP, etc.
	helps students set purposes for reading	
	helps students make predictions or ask questions	DR-TA
	preteaches difficult vocabulary	
	teaches or reminds students to use a study system	SQ3R, PRNR(Q)
	reminds students of their responsibilities as learners	New definition of Reading/Learning, Metacognition
	other (please describe)	

Comments related to BEFORE INSTRUCTION Phase:

The student teacher uses these activities to focus and guide students' attention DURING instruction:

Relative Success	Teaching Strategy	Specific Examples
	helps students be aware of their own reading/learning strategies and effectiveness	self-monitoring or metacognition
	uses teaching techniques to help students learn to focus on key concepts	Directed Reading Lesson, Directed Reading-Thinking Activity, etc.
	uses reading guides to help students know how to interact with expository text	Pattern Guides, Textbook Activity Guides, etc.
	uses a variety of textbook discussion strategies to provide for individual, small group, and whole class interaction	Inferential Strategy, Intra-Act, Radio Reading, ReQuest, K-W-L, Guided Reading Procedure, etc.
	provides cooperative learning opportunities	
	uses community resources	guest speakers, field trips, etc.
	other (please describe)	

Comments related to DURING INSTRUCTION Phase:

The student teacher uses these activities to consolidate learning AFTER instruction:

Relative Success	Teaching Strategy	Specific Examples
	models various notetaking strategies	semantic maps, webs, double-entry, etc.
	asks varied questions that involve interpretation, application, synthesis, evaluation, etc. rather than mere factual recall	higher order thinking skills
	provides adequate wait time for student response	
	helps students understand information at literal, interpretive, and applied levels	3-Level Reading Guides, QARs (Question-Answer Relationships)
	distinguishes between and appropriately uses both recitation and discussion techniques	
	uses various Writing to Learn strategies	Journals, Learning Logs, Summarizing, Admit or Exit Slips
	reminds students to use SQ3R or similar strategy to review and practice newly learned information	New definition of Reading/Learning, metacognition
	other (please describe)	

Comments related to AFTER INSTRUCTION Phase: