Interdisciplinary Team Teaching as a Form of Professional Development

By Judith Haymore Sandholtz

Collaboration is increasingly identified as a key aspect of teacher professional development. Teachers' commitment to teaching is associated with collegiality (Firestone & Rosenblum, 1988) and teachers' enjoyment in their work is linked to their sense of school community (Bryk & Driscoll, 1988). Researchers report that regular opportunities for interaction with colleagues are essential to creating professional school cultures (Lieberman, Saxl, & Miles, 1988; Miller, 1988). A community of peers is important not only in terms of support but also as a crucial source of ideas and criticism (Sykes, 1996). These three components—support, ideas, and criticism—combine to promote the improvement of teachers' practice. Identified as a key strategy for improving the instructional effectiveness of a school's faculty (Smith & Scott, 1990), collaboration is also a strong predictor of student achievement gains (Rosenholtz, 1989).

Judith Haymore Sandholtz is an assistant professor in the School of Education, University of California, Riverside, where she directed the Comprehensive Teacher Education Institute.

Despite the recognized value of collegial sharing, the dominant school structure continues to emphasize teacher autonomy more than collaboration. For decades, the "cellular organization" of schools has persisted, where teachers expect to teach students without assistance from others and are assigned

specific areas of responsibility (Lortie, 1975). The endurance of this pattern hinders attempts to create collaborative environments where teachers regularly talk with each other, observe one another, and reflect on their teaching. In school restructuring, teacher isolation has been identified as the most powerful impediment to reform (Lieberman, 1995). Little change will take place in schools unless teachers are observing, helping, and talking with each other (Barth, 1990).

In many schools, opportunities for collaboration among teachers are limited and communication tends to be informal and infrequent, even though teachers believe their teaching could be improved by working with colleagues (Corcoran, 1988; Johnson, 1990; Little, 1990). In a nation-wide survey, less than 10 percent of teachers reported being highly satisfied with the quality and quantity of opportunities to collaborate with fellow teachers (Choy, Bobbitt, Henke, Medrich, Horn, & Lieberman, 1993). Another survey reported that 59 percent of teachers indicated that time for meeting with colleagues was "poor" or "not regularly available" (Carnegie Foundation, 1990). Infrequent opportunities for collaboration contrast with teachers' most valued form of assistance and professional development. Researchers report that teachers are more likely to turn to other teachers, rather than administrators, for professional support, instructional ideas, and help in solving problems (Choy, Bobbitt, et al., 1993; Driscoll, 1993; Sandholtz, 1999). Teachers hold fellow teachers' expertise in high regard—more so than that of administrators or outside experts whom they often see as removed from the daily realities of classroom teaching. Building on this identified need, reform efforts are increasingly promoting methods that foster collaboration and create professional learning communities among teachers. Such strategies include, for example, teacher study groups, peer coaching, teacher research projects, and teacher networks.

A related approach to increasing collaboration among teachers is team teaching. Team teaching is a typical element of middle level education (Golner & Powell, 1992; Lounsbury, 1992; Williamson, 1993) but is less frequently implemented at the high school level, perhaps due to traditional departmental barriers (McKenna, 1989). Although a commonly used term, team teaching has a variety of operational definitions. For example, the term may refer to (1) a simple allocation of responsibilities between two teachers, (2) team planning but individual instruction, or (3) cooperative planning, instruction, and evaluation of learning experiences. These varying operational definitions of team teaching result in varying amounts of collaboration among teachers. Clearly not all team teaching approaches offer equivalent opportunities to foster collaboration and enhance teachers' professional development.

This article compares four approaches to team teaching implemented in a collaborative teacher education partnership at the University of California, Riverside. Over a five-year period, the partnership experimented with varying methods of team teaching at the high school level. However, the basic definition remained constant: joint planning, joint instruction, and joint evaluation. The initial aim in

developing and implementing a team teaching component was to enhance the professional growth of student teachers. Therefore, the primary goals of the team teaching component were directly related to student teachers' professional development: (1) to increase collaboration; (2) to encourage experimentation with new teaching strategies; (3) to enable observation of colleagues in a natural setting; and (4) to foster collegial analysis of instruction. In this article, I describe the partnership's decision making process, document the four approaches to team teaching, discuss benefits and drawbacks, and identify key areas to consider in designing team teaching components aimed at fostering professional development.

Decision Making Process

The team teaching component began as part of the professional development school model being implemented through the partnership. One of the most common collaborative arrangements for preparing prospective teachers (Yinger & Hendricks, 1990), professional development schools have four main goals: to maximize student learning, to support professional teaching practice, to enhance the professional education of novice and veteran teachers, and to encourage research and inquiry related to educational practice (Holmes Group, 1990; Levine, 1988, 1992).

In the program, project management teams (including university faculty, school administrators, and teachers) design the specific program features stemming from the central goals. Team members have equal voices in decision making, and all ideas are discussed. Programmatic revisions are made each year based on ongoing formative evaluation activities which include formal questionnaires, interviews, group discussions, and document collection. The management team developed the team teaching component as part of the student teaching program, and each year the team collaboratively revised the approach based on collected data.

Data Collection and Analysis

Data for this investigation, collected over a five-year period, drew from four main sources: questionnaires, interviews, observations, and group discussions. As part of year-end evaluations, student teachers completed questionnaires which included Likert-type scales as well as open-ended questions. In addition, cooperating teachers and student teachers participated in semi-structured interviews at the end of each year; the interviews included a section of questions regarding the team teaching component. Interviews were audiotaped and transcribed. University supervisors completed regular observations of classroom instruction and informally observed team preparation sessions. Researchers made field notes of group discussions at student teaching seminars, cooperating teacher retreats, team teaching colloquia, and student teacher reunions. Sections of the notes relating to the team teaching component were compiled each year as part of the formative evaluation.

Following a model similar to that of Roland Tharp and Richard Gallimore

(1979), data collected each year provided an ongoing assessment of the team teaching component and suggested revisions for the coming year. The first year became the baseline for the second year and so on. On a yearly basis, data collection and analysis focused on program improvement. At the end of five years, comparisons were made across years, analyzing the different approaches. Data analysis followed an iterative process (Miles & Huberman, 1984) which includes coding and annotating the data; creating data displays and seeking disconfirming and corroborative evidence; and identifying patterns, themes, and explanations. In comparing the approaches, I initially examined the data according to advantages and disadvantages for student teachers and then for cooperating teachers. Subsequently, I analyzed the data according to five emergent categories: team configuration, roles and responsibilities, schedule, curriculum development, and benefits. Finally, I compared each approach with respect to the original goals of the team teaching component: collaboration, experimentation with teaching strategies, observation of colleagues, and collegial analysis of instruction.

Approaches to Team Teaching

In this section, I document the four approaches and describe the benefits and drawbacks associated with each approach. Since the specific approaches resulted from management team decisions based on formative evaluation, I examine them in a chronological sequence, highlighting the changes from year to year.

First Approach: Student Teacher Pairs

When team teaching was first implemented, the project management team decided to organize student teachers into pairs within the same subject area; they opted against including cooperating teachers as active members of teams. The team reasoned that avoiding a superordinate/subordinate situation would help student teachers to develop and implement their own strategies and to feel more ownership for the classes. Cooperating teachers offered general curricular guidance and provided specific help when directly asked, but, for the most part, they took a "hands-off" approach.

The team teaching component began immediately after spring vacation so that the change in teachers would occur during a natural break in instruction. A university faculty member introduced the concept of team teaching and identified strategies for working together. Each week throughout the term, one session of the daily seminar was allocated for team planning. The daily seminars, planned and led by the cooperating teachers and university supervisors, take multiple forms and groupings to facilitate different educational activities. For example, one portion of the seminar divides participants by disciplines for subject-specific activities. Another grouping is devoted to one-to-one meetings of cooperating teachers and student teachers. These sessions focus on topics such as lesson plans, student

reactions, discipline, management, assessment, and teaching strategies. A different segment groups student teachers and experienced teachers separately. For these sessions, experienced teachers consider topics such as conferencing techniques, observation skills, and assessment of student teachers. Under the guidance of the university supervisor, student teachers focus on topics such as lesson planning, classroom management, grading and evaluation policies, and parent-teaching conferencing. Seminar sessions also bring cooperating teachers and student teachers together in a single group where a wide range of topics is addressed. The seminars provide opportunities for student teachers to learn under the supervision and counseling of numerous mentors in contrast to the typical one-on-one assignment. In addition, the already scheduled seminar sessions allowed consistent planning time each week for the team teaching component.

Ranking the overall team teaching experience on a four-point scale (1=poor, 4=excellent), student teachers responded across the board (mean=2.44). While one person referred to it as a positive highlight, another stated, "It was hell." The following quotes from interviews illustrate the range of their reactions. In discussing the team teaching experience, one person described it as:

> Stellar. Working with the other student teacher has been an absolute delight. We work very well together and we came up with some really good lessons. I think the students learned a lot more because they have two different people with two different types of delivery.... I got to see another student teacher teach. He gave me some ideas about delivery and ways to interact with students. Now I am making some alterations.... With the appropriate person, I would love to team teach again. The key is the person you work with...and we were able to get together after school to meet.

Embedded in the comments are suggestions that the experience, at least for this student teacher, prompted changes in teaching strategies and enhanced his professional growth. In addition, the student teacher states his belief that the team teaching approach held benefits for the students in the class. His reflections focus on the collaboration with his fellow student teacher and include little about the cooperating teacher.

The next quote characterizes the stark contrast in perspectives. When asked to describe the team teaching component, this student teacher's reaction was:

> Nightmarish. Hellish. It was apparent from Day 1 that we were not welcomed there as a team. From my perspective, the cooperating teacher didn't want to relinquish that class. He didn't seem to want to let anyone take it over—let alone two people. He did not make an effort to find out anything about me. He didn't make himself available to meet together.... It wasn't worth it for us and it wasn't really worth it for the kids.... I wouldn't do it again unless I was completely secure with that person. We would have to both agree on things ahead of time. It would have to be voluntary with a loophole to back out if it was obviously not working.

For this student teacher, the relationships with both the fellow student teacher and

the cooperating teacher appear problematic. The student teacher's reflections about team teaching are wholly negative, and he posits that the experience did little for the team members or the students in the class. Although team teaching increased collaboration between the student teachers, the collaboration apparently did little to foster professional growth.

But not all student teachers viewed the experience as either terrific or terrible. The following quote exemplifies the perspective that it was simply mediocre:

> That's kind of a hard one. My partner and I have very different teaching styles. But we have worked out a good system where she takes one aspect of teaching and I do another aspect.... I guess it was worthwhile but I wouldn't say it was mandatory to go through that experience. I wouldn't say it was so helpful that it would make me that much better a teacher. One thing that was beneficial about it was to be able to work with different teachers in the same classroom. The class is easily controlled and there is time for us to meet with individual students. We've done some different styles of presentation.

With this team, the collaboration may have become more an allocation of responsibilities rather than cooperative planning and instruction. From this student teacher's perspective, the primary benefits resulted from the decreased student/teacher ratio which made classroom management easier and provided more opportunities to help individual students. The student teacher is uncertain about the overall value of the experience and sees little relationship between the experience and her teaching skills.

When asked what changes they would recommend for the team teaching component, half of the student teachers suggested either making it optional or eliminating it completely. Moreover, they questioned the importance of team teaching since it rarely occurs in the "real world" of high school teaching. If they were unlikely to be asked to team teach in their future teaching positions, they saw little point of doing it in their teacher preparation program. Other student teachers recommended more modeling and more planning time. As one student teacher commented,

> Guidelines were vague and we really didn't know what we were supposed to do once we started team teaching. We didn't know how to develop a style. Some of that you just have to do because it will be different for each team. But maybe more information about how to become a team.

For a number of student teachers, finding a common time to meet and plan was particularly problematic. Although they had been allotted planning time each week over the course of the term, they described needing more time right before team teaching began. The following comment typifies the response of many student teachers to advanced planning time:

> It hasn't gone as smoothly as it could have if we had more time to get together. The Fridays that we had ahead of time were so far in advance that it was hard to get

> motivated to do it. We did some planning but it wasn't as much we could have done. It was hard to think of something so far ahead when you have so much other stuff going on. I think we need the goal to be closer to us.

The primary concern of cooperating teachers was relinquishing their classes so late in the year. By the spring, they had well-established classroom practices and routines. They worried about not only maintaining continuity in their instructional programs but also sustaining their classroom management systems. In addition, they had fostered relationships with students, and some teachers found it difficult to step back from their daily classroom interactions. In essence, teachers experienced discomfort with the "hands-off" approach which they had recommended for the team teaching component.

Second Approach: Student Teacher Teams with Advisors

The following year, the management team made five main changes. First, we introduced the concept of team teaching earlier in the school year. We hoped to lay the foundation for team teaching early and avoid the impression of unanticipated, additional responsibilities being added in the last quarter. Second, cooperating teachers became advisory members of the team. Based on input from and discussions with cooperating teachers, the management team decided that, as advisory members, cooperating teachers would be involved in all planning but not instruction. The team believed that this approach would address the concerns about the continuity of instructional programs and classroom practices while allowing student teachers sufficient opportunity to implement their own ideas and strategies.

Third, we created various team configurations. In addition to teams of two student teachers, we included some interdisciplinary teams and teams of three student teachers. Fourth, we provided additional planning time in the daily seminar schedule. An entire week of planning was included in the daily seminar schedule shortly before the team teaching component was slated to begin, and thereafter one session each week was allocated to team planning. In addition to this scheduled time during the school day, teams would meet as needed after school hours. Fifth, in response to stress, we reduced the length of team teaching by three weeks.

In contrast to the previous year, no one ranked the experience as poor, but only one person rated it excellent (mean = 2.66). In general, student teachers described it as a practical experience that allowed them to share teaching responsibilities and try new approaches with students. By having an improved teacher-student ratio, student teachers began to see how student understanding is linked to the instructional process. A student teacher in math described the differences he noticed between lecturing and individual instruction:

> In math it worked out nice because the problem of the students we were dealing with is they just couldn't learn listening to a lecture. Having three teachers in the classroom helped...all three would go around helping students. They just needed

> the individual instruction. Once you can show it to them, boo—learning took place. Even when they *were* paying attention, they just still didn't understand. They needed their own problems dealt with on an individual basis. I think that's a big problem in math; it is not like information you take with you—it's a matter of process. Some people prefer it one way, some people prefer it another. It needs a little variety of instruction.

Those in interdisciplinary assignments pointed out the value of being exposed to another discipline and learning how other classes operate. As one student teacher commented,

> The good part is that it is extremely valuable in exposing you to another discipline, because I have a summer job lined up and I'll most likely be teaching out of my discipline—in the one that I was team teaching in. So it was extremely helpful to me to see how another class operates. It was nice to work with another teacher, to share the work.

Student teachers also noted the value of observing their peers and witnessing the variation in teaching approaches. Typically, student teachers have few opportunities to observe each other in the classroom. One student teacher proposed that:

> Working with another student teacher is especially valuable. Instead of just seeing her in P-4 [the partnership's room] and talking about. "Well this is going this way and this is going that way" I actually see her teaching and we learn from each other—strengths and weaknesses.... It is neat getting to see how somebody else would go about teaching something. There are a million ways to teach something, and one way isn't going to be right all the time.

Despite the benefits that student teachers described, they continued to question scheduling the team teaching component during the spring. As one person said, "I liked the experience. The kids were neat; it was neat teaching something different. Just the timing I think was bad." Another suggested, "I liked it and I didn't like it. I didn't like it because it came at such a late part of the year with so many things going on." Only one student teacher proposed eliminating team teaching, but a majority recommended reducing the length and scheduling it earlier in the school year.

Third Approach: Open Configurations

After two years of mixed results, complaints about the student teaching load, and cooperating teachers' concerns about relinquishing their classes, the management team discussed dropping team teaching but instead decided to make it optional. With this approach, student teachers who could handle the workload and desired this experience could be accommodated.

Early in second semester, faculty held a seminar on team teaching to present the idea and propose various opportunities student teachers could pursue. As long as the supervisor and team members agreed, the possibilities were completely open. Student teachers expressed enthusiasm about the idea, immediately suggested

options for forming teams, and believed that the experience would be advantageous in seeking jobs.

However, as the semester progressed, the press of student teaching and job hunting overwhelmed their interest in team teaching. In the absence of strong urging from the supervisor, no one completed a team teaching assignment. However, in year-end evaluations and subsequent reunions, student teachers expressed contrasting views over whether or not team teaching should be a required element of the program. The following quote typifies the perspective that team teaching would add too much to an already rigorous program:

> I don't think it should be a requirement for student teaching. I would like to do it maybe when I'm established because there's a lot of relationship between math and other subjects. You don't realize how much of a burden the credential program is on us.

Ironically, in contrast to that view, over half of the student teachers expressed their regret at not doing team teaching and suggested it should be a requirement. In retrospect, they could see professional development benefits that they desired; for example, student teachers pointed out the value of collaborating with others and developing collegial support:

> I think it would be nice to work with somebody else, to get used to working with somebody. When you're in school, it shouldn't be just you and the classroom. You should have your supports. So though you may not be team teaching outside of student teaching, you'd still know how to work with somebody else.

> I think it would have been a very good experience to work with another teacher or student teacher just to hear their ideas. It would have been fun to work with [Mary] because she's so creative. I mean, somebody who is an opposite would have been interesting.

Fourth Approach: Interdisciplinary Triads

The next year, the management team again instituted the team teaching component for all student teachers but made important revisions. First, at their suggestion, cooperating teachers became full team members involved in joint planning, instruction, and evaluation. Supervisors negotiated the assignments with those teachers who were most open to the team approach, and, in some instances, involved teachers not already serving as cooperating teachers. Second, we formed primarily triads with two student teachers and one cooperating teacher. Third, we focused on interdisciplinary assignments. Fourth, we once again adjusted the schedule to incorporate more observation and planning time.

The teams combined disciplines in a variety of ways. For example, a math, social studies, and Spanish team designed a unit of measurement using antique postal scales and other historical artifacts. Student teachers in English and social studies worked with an art teacher and developed a ceramics project based on a story

encompassing an aspect of each student's cultural background; the project included written, oral, and artistic components. A science, math, English team implemented a unit for a sheltered class which had students measuring, plotting, and planning the best escape routes for a school-wide disaster plan. A math and language arts team focused on word problems, helping students bridge between parts of speech and mathematical operations.

The changes resulted in a number of benefits. In the new configuration, cooperating teachers and student teachers worked together as colleagues on a joint task, and the full involvement of cooperating teachers solved their concern about relinquishing classes late in the year. The interdisciplinary teams altered the expert-novice roles and provided an opportunity to highlight and draw upon the strengths and expertise of team members. In addition, teams developed and implemented interdisciplinary strategies and, taking advantage of the lowered student/teacher ratio, experimented with strategies aimed at improving individual student performance.

Student teachers gave significantly higher rankings for team teaching (mean=3.46). They noted the value of collaborating with other teachers, learning about another academic discipline, and working with different students. They recommended more planning time, and, in contrast with previous years, extending the team teaching experience.

Cooperating teachers, though initially reticent about team teaching, reported benefits for themselves, their students, and the student teachers. In terms of their own professional growth, cooperating teachers found it beneficial to learn academic content in new fields, observe the expertise of student teachers, and experiment with innovative strategies. One cooperating teacher proposed, "The strengths of the team teaching component are that it incorporates new aspects into the curriculum, it provides a chance to do cross-disciplinary teaching, and it builds staff awareness of other programs." Cooperating teachers reported similar benefits for student teachers, as this teacher described:

> Student teachers have the opportunity to work outside their discipline and see the threads of learning which link all subject areas. Their collaborative skills are enhanced and their knowledge and curriculum skills are broadened.

Perhaps most significantly, teachers believed that their high school students gained from the interdisciplinary teaming:

> My students not only learned parts of speech, but now approach word problems with more confidence.... I witnessed transfer of word attack skills to the solution of problems of practical application. Students gained confidence in language which transferred to less phobia of word problems.

> Team teaching is a positive method of working with students. Each team member brings to the students their unique and usually effective way of relating curriculum to the class being taught.

Based on their positive experiences, cooperating teachers argued for retaining the team teaching component in the program. Their hesitation about being involved in team teaching dissolved as they experienced favorable outcomes for themselves and their students. Moreover, they felt the team-teaching component helped develop skills in student teachers that would hold long-term advantages.

Designing Team Teaching for Professional Development

Comparison of the four approaches illuminates five main areas to consider in designing team teaching components aimed at fostering professional development: team configuration; roles and responsibilities of team members; schedule and time; curriculum development; and benefits for students and teachers.

Team Configuration

Despite the valid reasons behind the decision, not including cooperating teachers as active team members presented a number of problems. For example, cooperating teachers had difficulty relinquishing their classes late in the year and worried about maintaining continuity in their instructional programs. The formation of interdisciplinary triads solved cooperating teachers' concerns while also offering additional benefits. Teams of three, which included a cooperating teacher and two student teachers, altered the expert-novice relationships and provided a way for cooperating teachers to continue to teach their classes. The interdisciplinary approach further dissolved the expert-novice distinctions. With teams of three, there were fewer direct personality conflicts. In addition, team teaching triads offered a chance for cooperating teachers to observe more student teachers in a natural setting, thereby giving them broader insights into the skills and needs of beginning teachers.

Changing the team configuration to interdisciplinary triads also promoted the involvement of teachers who were not already serving as cooperating teachers. It proved to be a positive way to bring in departments that may not typically be assigned student teachers. For example, an art teacher who rarely has the chance to work with student teachers found team teaching to be a viable and valuable way not only to contribute to the teacher preparation program but also to experiment with a new approach in her classroom.

Related to the issue of team configuration is the question of whether to assign or have people create their own teams. Personality conflicts are often lessened when people make their own choices about team membership. In addition, the team relationship tends to begin on a stronger basis when members have individually agreed to work together. In our experience, student teachers felt comfortable selecting fellow student teachers for team teaching, particularly because they had been interacting as part of school-site cohorts throughout the year. But they often were at a loss with respect to identifying cooperating teachers outside their

discipline. The university supervisor and primary cooperating teachers proved to be important resources in shaping workable interdisciplinary teams.

Roles and Responsibilities of Team Members

Closely related to team configuration is the issue of roles and responsibilities. Having equal roles—in which all team members are comparably involved in planning, instruction, and evaluation—establishes a foundation of colleagues working on a joint task. In addition, equal roles promote central goals of team teaching such as collaboration, experimentation, and collegial analysis of instruction.

When cooperating teachers function in advisory roles, the nature of collaboration changes and may lessen opportunities for experimentation by the team. Cooperating teachers often feel more concerned about experimentation when they are not involved in carrying out the strategies in the classroom. Moreover, critical analysis of instruction takes on more of an evaluation function when cooperating teachers critique instruction in which they did not directly participate. Rather than jointly examining the effectiveness of a particular instructional strategy and determining what to do differently, team members may fall into a pattern where the observations and advice of the cooperating teacher carry more weight.

The equality of team members' roles is reflected in the allocation of responsibilities. Although there is naturally some division of responsibilities along lines of expertise, the primary responsibilities related to planning, instruction, and evaluation should be cooperatively shared rather than divided among team members. When responsibilities are simply allocated among teachers, the collaboration dissolves into team teaching in name only with few opportunities for professional growth. In our experience, interdisciplinary team teaching proved to be a natural way to decrease expert-novice distinctions and facilitate equal roles and responsibilities.

Curriculum Development

Although not typically viewed as directly related to team teaching, curriculum development is a key aspect in designing team teaching components aimed at enhancing professional growth. Curriculum development is important for three main reasons. First, if the team teaching component involves curriculum development, there is a genuine reason for collaboration, and the experience tends to move beyond simply assigning people to teaching tasks based on the established curriculum. Second, curriculum development promotes experimentation. If new curriculum is being designed, team members are more likely to incorporate new approaches rather than rely on previous methods. Third, the process of developing curriculum inherently draws upon the strengths and expertise of individual team members.

Interdisciplinary team teaching became a key means of prompting curriculum development without making it a set requirement. Since the cooperating teachers were not already involved in interdisciplinary instruction, team members had to develop curriculum and methods that combined their disciplines. This promoted

greater collaboration among the team members and created a situation in which they all were novices in a sense. In contrast, the same-subject teams tended to go with the curriculum already developed by the cooperating teacher.

Schedule and Time

A major challenge in implementing a team teaching component is scheduling. Teams need sufficient time allotted for joint planning, instruction, and evaluation. A related matter is determining when to schedule team teaching during the course of the teacher preparation program. The bottom line tends to be: there is never a perfect time or enough time.

Even in teacher preparation programs that extend over an entire school year, the issue of scheduling involves trade-offs. Team teaching scheduled at the beginning of the school year can serve as an introduction to teaching. It allows student teachers to gain initial experience in a setting that includes the support of working with others and that focuses less on individual teaching skills. In addition, student teachers are able to observe their peers in a collaborative, less-threatening situation. However, at the beginning of the year, student teachers have heavier university course loads, are trying to get established in their schools and classrooms, and often don't have enough experience to gain the most benefit from working together.

Later in the year, student teachers have more experience to bring to team teaching, thus enabling them to plan and carry out more developed approaches. They feel more confidence in their individual skills and expertise which enhances the team effort, particularly with respect to interdisciplinary instruction. In addition, they are in a stronger position to recognize what can be gained from observing and working with peers. However, at the end of year, student teachers often are in the midst of job applications and interviews. They are highly focused on the classes they are already teaching, and team teaching may be viewed more as an additional responsibility rather than an opportunity.

Team teaching assignments extending over the full school year may be an option in some programs, depending on both school and university support. However, school schedules frequently don't allow for the ongoing planning time needed to sustain this arrangement among cooperating and student teachers. Prior to the actual team planning, student teachers benefit from allotted time to observe classes and get a feel for the students and the curriculum. During the period of team instruction, time is needed for joint planning, reflection, and revision of plans. In addition, time needs to be allocated, during and following the period of team instruction, for student assessment and evaluation. Our program secured time by adjustments to the master schedule which provided common preparation periods for cooperating teachers. While this provided set time during the school day, additional time for team meetings was a continual need and challenge.

Benefits for Teachers and Students

Ultimately the most important aspect of team teaching is whether the teachers—student teachers *and* cooperating teachers—see benefits for both themselves and their students. The process by which teachers come to embrace team teaching is similar to the adoption of other innovations. Serious commitment from teachers occurs only after they use the new program or innovation and see that it really does assist them in teaching their students (Gersten & Guskey, 1985). Whereas team teaching might initially be viewed as an increase in workload, these perspectives frequently shift with time and experience as a team.

Interdisciplinary teaching among cooperating teachers and student teachers provided a way of increasing the advantages of teaming and lessening the disadvantages. With interdisciplinary instruction as the purpose, the value of working together and capitalizing on individual areas of expertise became clear. Teachers had a reason to develop and experiment with an instructional approach that many hadn't tried previously, and, in doing so, they became exposed to other disciplines and began to see links across subject areas. The perceived value of working outside one's primary discipline combined with other benefits of teaming, such as collegial support and interaction, to increase teachers' sense of personal professional growth. In addition, teachers felt that students benefitted from interdisciplinary instruction and the reduced teacher/student ratio. With this sense of advantages for themselves and their students, both cooperating teachers and student teachers viewed team teaching less as an increased workload and more as a valuable component of the program.

Conclusion

Although interdisciplinary instruction was not an original goal of team teaching in our program, it proved to be a critical element in designing a viable team teaching component. Interdisciplinary team teaching became a more effective means of achieving our four initial aims: to increase collaboration; to encourage experimentation with new teaching strategies; to enable observation of colleagues in a natural setting; and to foster collegial analysis of instruction. Whereas team teaching relates to each of these aims, the interdisciplinary element increased the amount of experimentation, collaboration, and collegial analysis that occurred because it placed teachers in different working configurations which involved designing new curriculum and accompanying teaching strategies. Moreover, interdisciplinary team teaching enhanced the professional growth of not only the students teachers but also the veteran teachers who collaborated with them.

In designing and implementing a team teaching component, the partnership's management team similarly exchanged in a process of experimentation and collegial analysis. Our experience supports the concept that change is not linear but results from a process of reasoned attempts and adjustments extending over time.

Through experimentation based on formative evaluation, an inconsistent program component became a positive and ongoing form of professional development.

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