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# Collaborative teaching of an integrated methods course

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**Abstract**

With an increasing diversity in American schools, teachers need to be able to collaborate in teaching. University courses are widely considered as a stage to demonstrate or model the ways of collaboration. To respond to this call, three authors team taught an integrated methods course at an urban public university in the city of New York. Following a qualitative research design, this study explored both instructors' and pre-service teachers' experiences with this course. Study findings indicate that collaborative teaching of an integrated methods course is feasible and beneficial to both instructors and pre-service teachers. For instructors, this collaborative teaching was a reciprocal learning process where they were engaged in thinking about teaching in a broader and innovative way. For pre-service teachers, this collaborative course not only helped them understand how three different subjects could be related to each other, but also provided opportunities for them to actually see how collaboration could take place in teaching. Their understanding of collaborative teaching was enhanced after the course.

**Keywords:** Collaborative teaching; integration; methods course; elementary teacher education.

## Introduction

Collaborative work is defined as two or more people working together. Effective collaboration is mandatory for success in the context of a workplace such as today's business environment (Beyerlein & Harris, 2003). In the area of education, scholars and practitioners have advocated the importance of collaboration as well for a while. As a result, collaboration between university

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and industry, college and community, and teacher education institutions and k-12 schools is no longer new to many people. However, collaborative teaching within k-12 schools appears to be an untapped area. The current categorical approach to teacher preparation and lack of attention to collaborative skills are the first barriers to effective collaboration in schools (Villa, Thousand, Nevin, & Malgeri, 1996). Friend (2000) reminds us that collaborative skills do not come naturally; they need to be honed and cultivated. Many scholars therefore suggest that university courses should be employed as the stage where pre-service teachers are exposed to various collaborative practices (Kluth & Straut, 2003; Quinlan, 1998).

To respond to this call for collaboration in teacher education courses, three authors collaboratively taught one multidisciplinary methods course (EDE 303) for three semesters at an urban public university in the city of New York. This course was designed for an elementary teacher education program. It covered three subjects: science, math, and music. The fundamental purpose of this course was to develop pre-service teachers' pedagogical content knowledge in three subjects through an integrated approach. Given the innovative nature of this course, three instructors conducted a self study over three semesters to answer the following question: how does this course impact pre-service teachers' perspective of collaborative teaching? In addition, this study documented how three instructors worked together during the course and reported their findings about the benefits and challenges of such collaboration.

## Literature Review

Collaborative teaching happens when two or more educators take responsibility for planning, teaching, and monitoring the success of learners in a class. Each instructor contributes to the class based on his or her experience and expertise. Particularly, since many new programs/courses emerge out of more than one traditional discipline, faculty members find it necessary to combine their expertise in order to address the needs of these courses or programs (Kulynch, 1998). Collaborative teaching can also happen when faculty work together planning several classes as "cluster courses" (Dugan & Letterman, 2008). In this case, the clustered courses share the same large issues or one course serves as a base for another course. For example, Potterfield and Majerus (2008) described the collaboration between a physiology class and a statistical class. Real data such as heart rate, blood pressure, and lung volume collected by the physiology students were provided to the statistical class. Two classes shared their investigation through multiple formats including a course website, large group discussion, and final presentations.

Although collaborative teaching can happen within one course or between courses, the literature often focuses on the one-course case. Such collaboration can take place in different formats. Vogler and Long (2003) summarize various types of collaboration including: 1) faculty from diverse

departments teaching an interdisciplinary course, 2) faculty from the same department teaching different sections of the same course by individually rotating section to section, repeating lectures in their areas of expertise, 3) team members presenting together in all sections of the course. Helms, Alvis, and Willis (2005) describe three team teaching styles: the interactive model, the participant-observer model, and the rotational model. In the interactive approach of collaboration, collaborators participate in the lecture or activities together with a great deal of interaction and dialogue between them and their students. The participant-observer model requires collaborators to be present simultaneously in the class, but with one independently teaching while the other observes (the collaborators alternate the teacher and observer roles). The observing faculty interacts only when asked questions. Under the rotational model, collaborators teach separately and attend class only when teaching their specific areas of the course. This model involves less interaction between collaborators and less integration of course materials.

Recent studies of collaboration in teaching have suggested that collaborative work is beneficial to both students and instructors. For students, collaborative teaching can foster their interest and enthusiasm (Hinton & Downing, 1998; Letterman & Dugan, 2004), improve their achievements (Johnson, Johnson, & Smith, 2000), enhance their team work abilities (Kapp, 2009), and promote their interdisciplinary learning (Davis, 1995; Letterman & Dugan, 2004; Wilson & Martin, 1998). For instructors, collaborative teaching provides them with opportunities to be engaged in more philosophical discussions and to learn from each other's experiences and teaching styles (Davis, 1995; Letterman & Dugan, 2004; Robinson & Schaible, 1995). Particularly, collaborative teaching is beneficial for both students and instructors when it promotes diversity by including teaching members from different disciplinary areas in addition to different ethnic and cultural backgrounds (Hinton & Downing, 1998).

In teacher education, collaboration between the education faculty and k-12 schools is gaining popularity and is even mandatory in many places. The idea of schools as teaching practice clinics has been adopted by a number of teacher education institutions. School teachers are invited into teacher education classrooms as guest speakers or collaborative teachers. Education faculty members go to schools to supervise student teaching, teach courses at the school site (Sluss & Minner, 1999; Surbeck, 1994), and/or provide mentorship to classroom teachers (Justiz, 1997). Studies of these collaborations have documented improvement in the development of pre-service teachers' knowledge and skills, the relationship between schools and universities, and the mutual support and respect between faculty and classroom teachers (Freeman, 1993).

Another popular type of collaboration in teacher education is between general education faculty and special education faculty (Murawski & Swanson, 2001). Given the increasing diversity in American schools in terms of learning ability, social-economic status, ethnicity, and culture, education

faculty members have found that it is hard to be effective when delivering teacher education in isolation. Teacher educators who came from different disciplines and differ in cultural backgrounds and research expertise need to teach together in order to prepare pre-service teachers for inclusive instruction. Kluth and Straut (2003) report a collaborative case of this type including two instructors, one from special education and the other from general education. In two college courses, they co-taught most of the sessions modeling different types of co-teaching such as parallel teaching, station teaching, and one teach/one assist models. In parallel teaching structure, they split the large class into equal sections and chose one of two following options. They either provided each group with the same lesson or activity carried out simultaneously by the two faculty members or they individually taught different topics to a group of students and then switched the student groups and repeated the lesson. In station teaching structure, they divided instructional content into segments and presented the content concurrently at separate locations within the classroom. In the one teach/one assist model of collaboration, one served as the main instructor, and the other acted as an assistant who facilitated group work or provided assistance to individual students in the class.

The collaboration reported in this paper represents a different rationale for collaboration, namely integrated curriculum among traditional subjects such as science, math, and music. Curriculum integration was proposed in a contrast to the conventional school subjects that were designed to parallel major academic disciplines of mathematics, science, arts, philosophy, and humanities. One of the most cited reasons for curriculum integration is the disconnection between a discipline-based curriculum and the real world. Cumming (1994) claimed that this disconnection between a disciplinary curriculum and the real world causes students to think school education is irrelevant to their life experience. Another argument for curriculum integration comes from a unified view of knowledge. More than thirty five years ago, Hirst (1974) suggested that an integrated curriculum could be justified through a holistic view of knowledge, which looks at knowledge as connected, embodied, ecological, and harmonized. Employing this view of knowledge, Perkins (1991) criticized individual school disciplines as artificial partitions with historical roots of limited contemporary significance. A third angle that integration supporters take is to look at the way students learn. The disciplinary curriculum is based on the assumption that students will get a holistic picture of knowledge after they learn its parts. This mechanical and analytical point of view has been criticized by scholars who believe that individuals construct knowledge holistically, based upon their life experiences (Bredekamp, 1987; Mid-Continent Regional Educational Laboratory, 1993).

In the last two decades of the 20th century, a number of national science and mathematics educational associations such as the American Association for the Advancement of Science (1998), National Research Council (1996), National Council of Teachers of Mathematics (2000), and National Science

Teachers Association (1997), began recommending the use of integrated curriculum as a tool for education reform. Integrated curriculum has since become increasingly popular in the field of education (Berlin & Lee, 2005). As a result of this movement, few of today's educators would argue against the need for an integrated curriculum. However, for many teachers the implementation of curriculum integration is still not an easy job. They are simply not prepared for it. Most teachers took disciplinary curricula at post-secondary institutions where subjects were taught separately. They had no opportunity to think of the connectedness between disciplines. Particularly, the methods courses they took from teacher education programs were often arranged by subjects. They received little training to teach subjects in an integrated way. Therefore, although elementary teachers usually teach multiple subjects and have the convenience to integrate them in teaching, they fail to take the opportunity. In order to prepare pre-service teachers to teach an integrated curriculum in elementary schools, the three authors with backgrounds in science, math, and music respectively, collaborated in teaching an integrated methods course. To our knowledge, there is limited research in the literature regarding this type of collaboration, which makes our study unique and significant.

## Course Design and Description

The course was a multidisciplinary methods course designed to equip pre-service teachers with knowledge and skills that are essential for integrated instruction of math, science, and music in elementary schools. It involved field teaching experience as well as university classes. For the first five weeks of the course, the whole class met at the university three times a week: Tuesday morning and afternoon (two sessions) and Thursday morning (one session). Each session lasted three hours and focused on one of these three subjects. Beginning in the sixth week of the course, the class was randomly divided into three groups. Each group met twice a week led by one of the three instructors. On Thursdays, the instructor facilitates his or her group at the university to prepare a lesson in his or her specialized subject area. The lesson topics were pre-determined and published in the syllabus. The pre-service teachers were required to think of the topic ahead of time so that they came to the Thursday class with their own draft lesson plans or ideas for teaching this topic. A final agreed-upon lesson plan was developed through the class discussion.

On the following Tuesday, the group went to their assigned schools to teach their prepared lesson and spent the rest of day observing classroom teachers. Each participant from the same group taught concurrently a group of pupils at a large area, such as the student lunch hall. The assigned instructor of this group observed their teaching practice every time. Immediately following the observation, while still on the school site, the instructor debriefed the group about their teaching. This pattern of Thursday prep and Tuesday execution was continued in three week segments, rotating

for each of the three subjects so that each pre-service teacher taught three lessons for each subject.

As described above, this course involved field teaching experience as well as university classes. While a combination of university courses and field experiences is common in teacher education programs, our integration of field experience with university classes in a single methods course is quite innovative. In the practice of teacher education, university methods course instructors and pre-service teachers' faculty advisors for their teaching practicum are often different people. This has the potential to create inconsistencies between what is taught in university courses and what is advised in school teaching practice. This concern, however, did not exist for our collaborative methods course. The three instructors helped the pre-service teachers prepare the lessons, and then observed how they implemented these lessons in the school classrooms. This arrangement allowed the instructors to examine whether pre-service teachers understood and appropriately applied what they learned in their coursework. It also provided instructors with the opportunity to modify their university lessons for pre-service teachers' needs.

**Research Design and Data Collection**

Participants came from the university's Science, Letter and Society program, specially designed for undergraduate students who aimed to become elementary teachers. The program engaged university students, mostly females, in a balanced curriculum between academic disciplines including science, arts, social studies, and humanities before they registered for pedagogy courses. This study was conducted over three sequential semesters in the Department of Education. All pre-service teachers enrolled in the pedagogical course described above participated in the study. In the first semester, the class size was 25 with one male. In the second semester, the class had 22 pre-service teachers, all females. The third semester had the largest enrollment, 47, with two males.

This study had an explorative nature and therefore employed a qualitative research design (Creswell, 2008). Reflective journals, field notes, and meeting minutes were the data source. In the first semester, student participants were asked to write reflective journals at the beginning of the course, after each lesson, and at the end of semester. To reduce the course workload, participants in the second and third semesters were asked to write only initial and exit reflections at the beginning and end of the course, respectively. In their initial reflective journals, participants were asked to respond to several questions regarding their knowledge competency in each subject, the skills they had to teach each subject, where they had developed the knowledge and skills, their interest in each subject, confidence in teaching it, and initial perspectives of collaborative teaching and curriculum integration. In their after-lesson reflections and particularly exit reflections, participants were asked to write what they had learned from the course in

terms of subject knowledge, skills to teach each subject, and confidence to teach it, as well as any changes they experienced regarding their perspectives of collaborative teaching.

For the instructors, brief minutes were taken for their meetings at various stages of this course to record the discussed issues, emerging ideas, and agreed-upon decisions of each meeting. Each instructor also noted down his or her experience when observing collaborators' teaching. In addition, at the end of each semester, the three instructors reflected on their collaboration. A few questions were used to guide the scope of their reflections including what they learned about each other's subjects and their collaboration.

A content analysis approach was employed to analyze the pre-service teachers' reflective journals (Berg, 2009). We first used open coding to annotate each participant's journals with regard to the topics described above. Then, we focused on the segments that report participants' experiences and perspectives of collaborative teaching. The following themes were identified: participants' learning experiences with this collaborative course and the reported changes in their perspectives of collaborative teaching. Instructors' meeting minutes, observation notes, and reflective journals were analyzed through a similar approach, with a focus on their learning through the study. Data coding was cross-reviewed by two researchers.

## Findings and Discussion

### *Working Together for the Benefit of Instructors and Students*

At the university where this study took place, elementary teacher education program designs methods courses in an integrated format due to the limited number of program credits and the concern of curriculum integration. It offers two methods courses to cover subject pedagogy: Social Studies, Art, and Language Arts in Elementary Education (6 credits) and Mathematics, Science, and Music in Elementary Education (6 credits). The later course had been offered to pre-service teachers for over ten years before this study took place, however it was primarily taught as three separate methods courses with little connection addressed between the subjects. When the three authors took over the course, they decided to make it more of an interdisciplinary course. They met several times during the university break to prepare and discuss the course before the first semester of this study.

During this initial planning, one comprehensive syllabus was developed to replace the three separate syllabi used in the past. The syllabus clearly described the nature of collaboration and integration of the course, and created a common, parallel curriculum sequences and assignments for the three subjects. The assignment guidelines were also included in the syllabus so that the pre-service teachers could follow the directions no matter which group they were in. The schedule for the different groups was listed in

a table format. The three instructors decided to use the Blackboard learning management system as a convenient communication tool. The course outline and assignment requirements were posted on Blackboard. Pre-service teachers could electronically upload all of their assignments, which included lesson plans, observational papers, and reflective journals. The use of Blackboard was also beneficial to the instructors because, through its online grading system, they could easily allocate the grading workload. More importantly, the three instructors made an effort to identify connections or overlaps between the subjects and coordinate their curriculum sequence accordingly.

In addition to the collaboration in the course planning, the three instructors met regularly throughout the semester on Thursdays after the university class, particularly during the first semester of this study, to discuss the course progress. Additionally, when there was a need to discuss emergent course-related issues, conferencing was conducted face-to-face and via email for the purpose of idea sharing and decision making. Most meetings took place at the lunch hour in their offices, lunch room, or restaurants in a format of formal/informal dialogues. By having lunch together, they gained the opportunity to get to know each other through informal conversation and shared thoughts that might have not come up during formal meetings. Meeting and eating together built a close personal relationship among the instructors and provided them with excellent opportunities to share teaching ideas and get to know each other's teaching, subjects, personality, and family and cultural background. For example, during one lunch meeting, the music instructor and math instructor shared their understanding of the connection between musical notes and the concept of fraction in math. The results of the discussion were implemented in the following music session to facilitate students' understanding of musical notes such as half, quarter, or eighth note symbols.

To better enhance collaboration, the three instructors observed each other's sessions at least twice in one semester and recorded brief observation notes and reflections. The observer could join in the class discussion as well or even act as a discussion leader when the topics were relevant to his or her subject. For example, when the music instructor observed the science session on pendulum, she was called on by the science instructor to link the pendulum with the musical instrument "metronome" and demonstrate the integration between science and music. As she held the pendulum at different lengths (resulting in different frequencies of swing), pre-service teachers were asked to sing a common children's song along with her in a pace that matched the frequency of the pendulum.

Peer observations made the three instructors familiar with each other's teaching styles and instructional emphases, and more important, they often resulted in new ideas about integration between sessions and subjects. For example, while the math instructor was observing, the science instructor discussed constructivism in one morning session on inquiry-based learning.

During the math session in the afternoon of the same Tuesday, the math instructor referred to what pre-service teachers had learned from the science session about constructivism and used it to set up the theoretical platform for her math instruction. Another example entails the science instructor's observation of a music session. In the middle of the class, the music instructor commented how the different thickness of string would generate sounds with various pitches and the length of string will matter as well. At this moment, the science instructor realized the connections between this comment and what he taught in one science session. He politely joined in the class discussion by questioning pre-service teachers: "Does the thickness of the string influence the frequency of a pendulum?" Scientifically speaking, the pitch was related to vibration and resonation. Different types or sizes of materials will vibrate differently and therefore generate differing sounds. Therefore, the thickness of string does matter in the generation of the sound. However, the scientific model of a pendulum takes the string as an imaginative line. The thickness of the string is not a concern of the scientific description of a pendulum. This episode helped students understand the connections and differences between music and science and become aware of the limitations of science.

To assist the music instructor with pre-service teachers' full understanding of the fact that varying lengths and thickness of a string can generate different sounds, the science instructor took it upon himself to relate the science concepts to the music session. He changed his plan for the next science session in order to teach pre-service teachers scientific understanding of vibration and resonation so that they would understand music concepts better. He believed that in-depth knowledge about vibration and sound would help pre-service teachers make sense of what they were playing in the music sessions.

The benefit of this observation was clear to the science instructor: questions generated from other subjects created moments or topics for his science session to cover. His modification to the pre-planned curriculum was necessary for the generation of a holistic understanding among pre-service teachers about what they learned from different subjects. Constructivists suggest that teachers should let students' learning drive what they teach (Von Glaserfeld, 1995; Zhou, 2010). These constructivist notions were clearly reflected in the science instructor's reaction. To further the collaboration, the science and music instructors discussed the possibility to develop a joint session on vibration, sound, etc. for the coming semester.

*Instructors' Reflections on the Collaboration*

All three instructors agreed that the collaboration was a process to learn about "working together" as well as "collaborative teaching." They found that they shared very similar teaching philosophy and possessed a constructivist teaching style. Through this collaboration, they were excited to learn that there were many connections between the three subjects. Observation,

reflection, and discussion helped the three instructors gain ideas to connect one subject to another and made it possible for them to teach beyond what was originally planned so that their teaching better met pre-service teachers' needs.

The three instructors' collaboration in this course happened both outside and inside the classroom. Outside the classroom, they met for planning and discussion. Inside the classroom, they taught through two collaboration models described by Kluth and Straut (2003): parallel collaboration model, where each of them taught a session in his or her subject area, and one teach/one assist model, where one of them taught the class and the other one facilitated discussion or group work. They also tried some joint sessions as well. For example, three instructors taught a joint session on integrated curriculum at the beginning of the semester. All three instructors felt that they had the desire and interest to develop more joint sessions, such as measurement (math) and matter property (science), sound (science) and pitch (music), notes (music) and fraction (math), etc. so they can model various collaborations to pre-service teachers.

The science instructor, who was then a new faculty member at the university, reflected his great appreciation of the benefits the collaboration generated for him. At the end of the first semester of this study, he described the collaboration with two experienced faculty members as a process of being mentored:

> As a new faculty member, the complexity of this course was initially overwhelming to me. It involves collaboration between three instructors, connections between three subjects, and combination of university learning and school experience. It took me a while to understand how the rotation works between three subjects and three host schools. Collaboration with two veteran instructors definitely helped me pass the hurdle.

The math and music instructor, who taught this course before, were happy to see the differences this collaboration generated to the course. They appreciated the fresh ideas the science instructor brought into the courses. The music instructor wrote in her reflection:

> I had been articulating my music sessions only in terms of musical knowledge and skills before the collaboration because I was not teaching mathematics nor science sessions. The collaboration made me see the course in a more integrated way. Although I knew that the concepts of musical note symbols could be related to the fraction concept in math, I didn't know how I could relate musical concepts to science. In this sense, the science faculty gave me many great insights.

*Pre-service Teachers' Reflections on Collaborative Teaching*

Most participants' comments indicated that they had little difficulty getting used to this new format of methods course and applauded the fresh ideas and unique experience this course provided for them. Their positive feedbacks confirmed the feasibility of formatting methods courses in a new way through combining: (a) university classes and school teaching experience and (b)

multiple subjects. The following are two typical comments from participants' final reflective journals:

> Overall, the format of the course was something positively different. Combining the class is a good experience but can also be frustrating. It is hard to focus on one subject when you know you have two other teachers trying to show you different material all in the same week. That was something I had to get used to over the first few weeks of lecture class. I have always enjoyed collaborative work when it comes to teaching lessons. The experience for me was great and it did really help me understand what it is going to be like in a classroom environment.

> EDE 303 is a unique course. It is a course taught by three different faculties and three different subjects in one course. Although EDE 303 separated science, math and music into three different sessions; it integrated them together. While focusing on one subject, another subject was integrated in the lesson. It was amazing how these subjects related. I never realized that all subjects can be related and integrated. I believe integrated curriculum will help students improve their studies.

Pre-service teachers stated that this course prepared them to better teach children. They greatly appreciated the opportunity to work with an instructor in a smaller group while preparing their lessons at the university and be supervised at the school by the same instructor:

> I also like the idea that we have Thursday's class to prepare us for the future lesson. That helped me to make sure that I was ready to teach, and I had all weekend to gather materials and create an original lesson. I feel that all three professors did a good job in teaching their subjects, and teaching us about integrated curriculum.

> This was *the first collaborative course* [our italics] that I have taken at the college and I found it to be useful… It taught me what to teach and how to teach. I thought that taking the three different subjects as well as going to three different schools was good because now at the end of this course I feel better informed and that I know more about math, science, and music. I also feel that it gave me the opportunity to work with different age levels and different populations. Through this collaborative course … I do believe that the collaborative course was beneficial...

The course modeled how to work together in teaching. As Kluth and Straut (2003) point out, university teaching, particularly methods courses, has direct influence on pre-service teachers' understanding of teaching. Faculty collaboration in university teaching impacts future teachers' perspectives of collaborative teaching and motivates them to teach collaboratively at schools. Many participants applauded the collaboration during the course as they stated in the following comments:

> EDE 303 did an amazing job in integrating the different subjects. It was very useful and interesting. This course was good because it helped me to better understand integrated curriculum. Although three different professors taught the course, but they all worked together and integrated their lessons. The professors worked very well together in order to help make the course feel like it is being taught by one professor instead of three. The professors followed the same guideline and they made a good team.

> The collaborative work in this course helped me understand how important it is to be able to work together. When working in a school, I must be able to work together with other teachers and staff, this collaborative course helped me collaboratively work with others. I was able to listen to others and share opinions.

Not only did this course demonstrate the connections between subjects to pre-service teachers, but it also modeled the way to integrate them in school teaching. Students' understanding of curriculum integration was enhanced by the end of the course:

> At the beginning of the semester, when we were asked about integrated curriculum, I really didn't understand nor had much information about it. Now I have learned how important integrated curriculum is in our schools. It is important for the teachers to connect the subjects. The students will be able to understand the subjects better.

> This course has helped me better understand integrated curriculum, because each subject ties into one another somehow. There are many mathematical components in music, such as beats and rhythms... Throughout each class, I've heard all three professors mention something about integrated curriculum. I feel that all three teachers have helped me to understand, as well as better prepare me, for integrated curriculum.

## Conclusion and Implication

This study indicates that collaborative teaching of an integrated methods course is feasible and beneficial to both instructors and pre-service teachers. Through collaborative teaching, each instructor learned how to teach with partners, gained knowledge beyond the subject he or she normally teaches, and was engaged in thinking about his or her own teaching in a broader and innovative way. More significantly, the collaboration was a reciprocal learning process. The three instructors learned from each other's way of teaching and improve their own teaching. For the pre-service teachers, this collaborative course not only helped them understand how three different subjects can be related to each other, but also provided opportunities for them to actually see and experience how collaboration can take place in teaching. Pre-service teachers' understanding of collaboration was enhanced after the course.

Despite many benefits, collaborative work has its own obstacles. The lessons we learned from teaching this integration course are informative to other educators. Collaborative teaching can be time consuming because it requires more meeting time for planning, sharing, and discussion (Davis, 1995). To configure this course, the three instructors took a great amount of time in course preparation, meetings, and observations. Their dedication and desire for the course to be successful was a necessary condition for the success of the collaboration. Given its heavy load, this course carried 6 credits for pre-service teachers who satisfactorily completed it. However, each instructor only got 3 credits for teaching it, which did not reflect the amount of effort they made into the course. The department chair was made aware of this discrepancy and was suggested to find a solution to properly recognize

instructors' workload. Otherwise, the collaborative nature of this course will not sustain.

As Bakken, Clark, and Thompson (1998) stated, collaboration asks for individual member's 'good' personality in working together because there are more possibilities to have adjustment and compromise in decision making. In this study, despite their differences in subject backgrounds and teaching experiences, the three instructors were able to work together. They opened their sessions to collaborators to observe and discuss. Their mutual respect and open-mindedness made it possible for them to analyze each other's teaching and find solutions for effective curriculum integration.

An educator's dedication to student learning is essential for good teaching. However, it alone usually is not enough for collaboration to take place and succeed. Pleasant and fruitful collaboration starts with friendship. The collaborative experiences in this course convinced the three instructors that friendship and trust were a catalyst for successful collaboration. Throughout the course, the three instructors had lunch together once a week and informally discussed their teaching, communities, cultures, and many other topics. This enabled them to build a close relationship and establish trust, thus making them more open to different ideas from their collaborators.

Another important factor for collaborative teaching is a "sense of parity" among faculty members (Bakken, Clark, & Thompson, 1998). It is not easy to have a sense of parity among instructors who have differences in background, schedule, preferable ways of communication, and so forth. The three instructors built their sense of parity through mutual respect and group decision making. All of the course components such as the course outline, assignments, schedules, and policies were derived from their discussions and negotiations. Pritchett (1997) pointed out that communication, involving dialogues, sharing, and negotiation, is crucial for successful team building. Each member needs to beware of what is happening, share the information and ideas she or he has, and listen with an open mind to what others offer. During this course, the three instructors frequently used email communication to keep each other updated. Weekly meetings provided them with a mechanism for sharing ideas, discussing issues, and making collaborative decisions. As a result, none of them felt being left behind or forgotten in the process.

Finally, collaborative teaching can be confusing to students who are used to isolated teaching. At the beginning of each semester, instructors occasionally heard complaints from pre-service teachers. More than one subject in one course, group rotation, and going back and forth between the university and schools were too much for some pre-service teachers' initial understanding of the course. Although a well organized syllabus should be clear enough to address these confusions. However, the instructors found that other solutions needed to be in place to alleviate participants' confusions. In

addition to being available to participating pre-service teachers during office hours, the three instructors used the discussion and announcement tools provided in the Blackboard learning management system for timely communication between the instructors and pre-service teachers.

Although scholars have argued that collaborative teaching promises great benefits for students, Dugan and Letterman (2008) claimed that little systematic research exists to show how such benefits occur. In their survey-based research, Dugan and Letterman analyzed and compared student appraisals of team-taught classes to a norm of traditional, solo-instructed courses. Results indicated that there were no real differences in student attitudes toward team-taught and traditional classes. This report reminds us of the necessity of future research. Our study used the instructors' and pre-service teachers' narratives as evidence to support the type of collaboration we carried in the course. Future research may consider to use other methods such as interviews to verify or confirm the value of such a type of collaboration and generate deeper understanding of how this collaboration contribute to pre-service teachers' learning.

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