

## Difficulties of Building a Learning Community for Professional Development

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The purposes of this study were to understand mathematics teachers' difficulties under the context of community and to contribute to the research on professional development using a partnership between a high school and a university. I examined what struggles mathematics teachers had in building a learning community. I used data from a project in South East area in U.S.A. Three student teachers, three mentor teachers, and a university teacher participated in this study. Data sources included cluster meeting observations, interviews, and documents (such as open-ended surveys and e-mail responses). Data were analyzed using case study and narrative analysis methods. The results showed that the participants had power issues, issues about selecting topics to discuss, criticizing others, sharing goals, and managing time and the number of members.

### I. Introduction

While research on teacher learning is relatively young, we have evidence that high-quality professional development programs can guide improvement of teachers' instructional practices and student learning (Borko, 2004). Based on research findings on teacher development, teacher educators have created various professional development programs to find more effective ways for teachers to improve their teaching. Borko (2004) identified four elements having impact on teacher learning: professional development program, the teachers who are learners in the program, the facilitator who guides the teachers, and the context in which the professional development occurs. I have interest in a community, a context, as one of the elements.

In contrast to the traditional belief that teachers

work individually, collegiality and collaboration are now emphasized. In the case of mathematics teachers, teachers need to collaborate and share ideas and information about mathematics contents, teaching methods, curriculum, etc. Given the increasing interest in teachers' collegiality and collaboration, this study focused on a teachers' community and its members.

#### 1. Research Purpose

One purpose of this study was to understand mathematics teachers' learning under the context of community. A key reason for focusing on community is to understand what kind of learning teachers find meaningful for their professional development. For example, Franke & Kazemi (2001) showed that teachers who participated in a professional development project became better at

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describing students' mathematical reasoning and understanding their problem-solving strategies. However, to fully understand mathematics teachers' learning, research needs to focus on mathematics teachers' difficulties of participating in a community as much as investigating the effects of their participation.

The other purpose of this study was to contribute to the research on professional development using a partnership between a high school and a university. By considering a teacher as a member of a learning community, teacher educators engage in the novel conceptual task to make sense of teachers' work (Shulman & Shulman, 2004). Researchers are attempting to investigate the context of groups or communities in research on teachers. In spite of rising interest in communities, there is a little empirical research in mathematics education about communities or their members' learning. As one of the efforts, this study investigated a community of mathematics teachers for professional development using a partnership between a high school and a university.

## 2. Terms and Research Question

I use the term a *learning community* to mean an education community consisting of students, teachers, parents, administrators, or professional teacher educators. The concept of a learning community stems from Wenger's community of practice (1998), which is a group of people who share concerns about something they do and learn how to do it better by regular interaction. In addition, I use the term *professional development*

to refer both to teacher preparation and to the development of in-service teachers. Hence, in this study, I focused on a learning community that had the purpose of their professional development. A research question that I addressed here is what struggles participant teachers have in building the learning community.

## II. Background

In many efforts to understand teachers' learning and development, researchers suggested that teachers' communities such as study groups or video clubs are useful to support teacher learning and professional development (Birchak, Connor, Crawford, Kahn, Kaser, Turner, & Short, 1998; Sherin & Han, 2004). Lesson study (Fernandez & Yoshida, 2004) is also a kind of effort to investigate teachers' professional development in communities. The researchers have studied teachers' communities because the communities provide a context for ongoing teachers' learning.

Grossman, Wineburg, and Woolworth (2001) proposed a model of teacher community through a professional development project. By creating a community of teacher learners from two departments of history and English in a high school, Grossman and her colleagues attempted to discuss how a group of teachers form a community. They provided a schematic of community formation and of the growth of its members in four dimensions: (1) the formation of group identity and norms for interaction, (2) the navigation of fault lines, (3) negotiating the essential tension, and (4) the willingness of its members to share responsibility for colleagues' development.

Grossman et al. investigated the teachers' community evolution including both individual growth and community formation. However, since the community model came from groups of teachers in the department of history and English, I do not know whether the model applies to the community of mathematics teachers or not. I consider the schematic of community formation as a basis to think about creating a teacher community.

Previous research on teachers' communities not only provided information about teacher learning but also pointed out concerns and difficulties in creating a teacher community. For example, Arbaugh (2003) addressed a question of organizational aspects of study groups and summarized the responses of teachers in study group meetings according to four aspects: released time, requirements outside of study group meeting time, frequency and length of study group meetings, and number of study group members. Those responses reflected not just organizational aspects of the study group but also difficulties in creating a learning community as an organization of teachers. I focused on the Arbaugh's study because she investigated teachers' concerns of creating a community.

There exist a lot of ways to form learning communities for teachers. Teacher can form study groups with assistance from professional developers, or school districts can assist teachers to create group activities. As a way of developing teaching and learning, school-university partnerships have attracted considerable attention from educators since the 1980s. Partnerships have several purposes such as preservice teacher preparation, inservice teacher development, and research. The cooperation between universities and schools is often challenging because

of their different cultures and traditions. However, since these partnerships are based on collaboration in communities of teachers in schools and in universities, research on partnerships provides useful information on developing learning communities for teachers. In this study, I focused on a learning community of teachers based on a partnership between a school and university to find better ways to facilitate teachers' professional development.

According to Snow-Gerono (2005), most teachers "seek out school colleagues and people as resources for their inquiries, but they do not have formal, structural agendas for teacher inquiry learning communities" (p.253). In this sense, it is necessary to create formal and structured learning communities of teachers for assisting their development. For this study, I tried to find a structured learning community of teachers, hence I participated in a project which had a purpose of building a community for professional development of teachers.

### III. Methodology

#### 1. Research Design

I used narrative inquiry (Polkinghorne, 1995) and case study (Dyson & Genishi, 2005) in a qualitative research design. I generated data relevant to participants' thoughts about their learning in a learning community.

#### 2. Project

This study used data from the project, Partnerships in Reform in Mathematics Education (PRIME)<sup>1)</sup>, a

professional development effort related to high school mathematics teachers in the southeast region in U.S.A. From 2005 to 2006, PRIME aimed to build a learning community through interactions among inservice teachers, preservice teachers, and university supervisors. The PRIME researchers referred each high school meeting of these three groups as a cluster meeting<sup>2</sup>). I participated in one of the 12 local school's cluster meetings and collected data from the participant teachers. PRIME called the inservice teachers mentor teachers, preservice teachers student teachers, and supervisors *university teachers*. This study used the terms PRIME called.

### 3. Participants

I selected one cluster using criterion-based sampling(Merriam, 1998). For the purposes of this study, my criteria for selecting a cluster were based on the earlier year's activities. I selected a cluster which had three groups of teachers and some of the participants had prior experiences in a community that was similar to the 2006 PRIME structure. The selected cluster had three student teachers, three mentor teachers, and a university teacher except me. I played the role of a university teacher in the cluster meeting. All three mentor teachers had about ten years' experience in teaching mathematics at the time of data collection. All student teachers were participating in PRIME during their 2006 student teaching period. The university teacher was a third-year doctoral student

who worked in PRIME.

### 4. Procedure

During Spring 2006, I participated in the cluster meetings of Norris High School<sup>3</sup>). In the meeting, there were three mentor teachers, three student teachers, and a university teacher. The teachers negotiated when they would meet for cluster meetings and what they would do for next meetings. As the semester started, the seven participants met every Friday after school in Norris High School. I sometimes had a chance to observe the mentor teachers' teaching and the student teachers' teaching before the meeting. I joined all of the nine cluster meetings as a researcher. During one hour approximately, all the student teachers brought copies of students' work and discussed their work and their students' responses. The mentor teachers, university teacher, and I commented on the work or expressed ideas about them.

### 5. Data collection

I collected data from multiple sources including audio tapes of nine cluster meetings, my observation notes, and two interviews and written responses on open-ended questions for each participant. I made the observation notes during the cluster meetings and added detailed reflections after coming back. One week before conducting interviews, each participant

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1) Work on this project was supported by the National Science Foundation Grant [ESI-0227586]. Any opinions expressed here do not necessarily reflect the views of the National Science Foundation.

2) In this study, the cluster meetings considered as a learning community in that the meetings helped the mentor teachers understand their students' mathematical understanding and the student teachers learn how to teach mathematics.

3) All names are pseudonyms.

responded to open-ended questions about difficulties in writing. Based on the written responses, I conducted a 30-minute interview and then a one-hour interview with each participant using a semi-structured format during the last three weeks. All interviews were audiotaped and transcribed. Surveys from the project, written assignments of student teachers, and informal conversations such as e-mail responses contributed as secondary sources.

## 6. Data Analysis

I used the analysis of narratives (Polkinghorne, 1995). After reviewing all transcripts of interviews, responses to open-ended questions, and observation notes. I identified the narratives<sup>4)</sup> about difficulties of the participants in building the learning community and then organized data to identify common themes. I found several difficulties in building a learning community for teachers' professional development.

# IV. Results

## 1. Time Constraints

As research on communities has indicated (e.g., Arbaugh, 2003), deciding on a time to meet and the length of meeting time was a challenge for all members in organizing a community. For example, the student teachers were concerned both time to meet and the length of meeting. In the interviews, the student teachers mentioned that their high school students were not able to come

for extra help after school on the days of the cluster meetings. One of the student teachers complained that the length of the meeting was too long even though the discussion was valuable. The mentor teachers too were concerned with the time issue because they were very busy with other schoolwork such as bus duties or personal appointments. One of the mentor teachers, Ms. Perry, complained that she wasted time waiting for other members to arrive at the meetings. Although the reasons were different, for most of the members, finding the time required for building a community was a challenge. The time issue in building a community needs the help of school principals or district administrators who can arrange teachers' schedules so as to avoid conflicts with the teachers' teaching schedules and other duties.

## 2. Power Issues

Power issues were revealed in relationships between student teachers and mentor teachers, student teachers and the university teacher, and mentor teachers and the university teacher in the beginning of cluster meetings. One power issue was shown in the student teachers' hesitation to express their opinions about the mentor teachers' teaching during the first cluster meeting. For example, one of the student teachers, Ella, revealed her nervousness about expressing her opinion on her mentor teacher's teaching in initial cluster meetings. Ashley also said in her interview that she lacked confidence in talking in front of the mentor teachers because she was just

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4) I considered all the data as narratives.

a student teacher. The student teachers generally hesitated to give their opinions about anything related to their mentor teacher or other mentor teachers; however, their hesitations were decreased over time. In later cluster meeting, the student teachers mentioned their mentor teachers' instructional practice and showed their opinion about it. This showed the existence of a power issue between student teachers and mentor teachers.

Dissimilar views about the value of cluster meetings also revealed a power issue. Whereas the student teachers valued the various perspectives of the other members in order to reconstruct their thoughts, the mentor teachers and the university teacher valued the opportunity itself, discussing with teachers having different experiences. It seems like these were similar opinions, but they were different in the sense that one group took a position to receive information, and the other gave the information. In other words, the mentor teachers and the university teacher perceived themselves as the people who provide the opportunity, whereas the student teachers perceived themselves as receiving the benefits. The different perceptions originated from a difference in power.

The university teacher revealed another power issue. She was concerned about the power relations among the three subgroups in cluster meetings. Gabby said in the second interview that she held power over the student teachers because she assessed their field experiences, and the mentor teachers held power over her and the student teachers because they had years of teaching experience. She believed that the student teachers were relatively powerless because they had to get

credit for this experience and had little teaching experience. Although she wanted to talk more in cluster meeting discussions as a teacher who had different teaching experiences from the mentor teachers, Gabby was very careful in cluster meetings because she was aware that mentor teachers considered her as a facilitator from the university and also as a teacher who had less teaching experience than they did. Her awareness about the mentor teachers' expectations and considerations revealed a power issue.

In this research, those power issues did not seriously harm my participants from creating a learning community. However, those issues are inherent in impeding members from fully participating in a community and can harm the relationships among mentor teachers, student teachers, and university teachers in creating a community.

### 3. Understanding One's Responsibilities

Ms. Turner, a mentor teacher, discussed the difficulty in understanding participants' responsibilities in cluster meetings. Ms. Turner said in her second interview that student teachers had too much responsibility such as preparing copies of students' work or mathematical situations and videotaping their teaching, whereas, none of the student teachers talked that they had too much responsibility. Rather, the student teachers worried about a lack of talking. The mentor teachers came to the cluster meetings, gave advice in response to the student teachers' questions or classroom situations, and discussed their perspectives about mathematics and teaching and learning mathematics. Even though they did not

bring their students' work, the mentor teachers talked about their experiences with their students or classroom situations. The student teachers wanted to hear the mentor teachers' stories about situations that the student teachers had not yet encountered or to learn how the mentor teachers' experiences were different from their own. The mentor teachers might not have fully understood their responsibility as mentors in the cluster meetings.

#### 4. Insufficient Participation in a Planning Stage

The mentor teachers wanted to participate in the planning stage as well. For example, one of the mentor teachers, Ms. Perry, discussed partnerships between schools and a university in the last cluster meeting and gave her opinions about participating in setting the agenda for cluster meetings. She thought that she had not been involved in planning the cluster meetings although she had participated in the PRIME Spring meeting where all the mentor teachers and university teachers met and discussed each school's cluster meetings and student teaching. The PRIME had designed the Spring meeting to set up student teaching and cluster meetings. Nonetheless, the mentor teachers believed that they did not fully participate in making plans for the cluster meetings. On the other hand, the student teachers did not talk about planning the cluster meetings even though they suggested discussion topics for future cluster meetings in their interviews. I believe that the mentor teachers considered the issue of leadership in cluster meetings one of their responsibilities. As I observed the cluster meetings, the mentor teachers addressed questions, shared their experiences, and gave

suggestions. However, in some way, the mentor teachers were leaders in that they proceeded with the discussions originated by student teachers. This fact implies that the negotiating process might have been insufficient to allow the mentor teachers to understand their participation in planning.

## V. Conclusion and Discussion

Although the teachers found their learning valuable, there were some challenges in the cluster meetings. As shown in earlier studies of teachers' communities, the time issue was an unsolvable challenge in creating a learning community of teachers. In this study, power issues were revealed in relationships between the student teachers and the mentor teachers, the student teachers and the university teacher, and the mentor teachers and the university teacher. The Grossman et al.'s (2001) study discussed the issue of incivility as an obstacle of building a community; however, the present study found power issues as both an initial difficulty and assistance of building a teachers' community. Although the power issues can crack the relationships among members, in this study, the power issues played a significant role in building the cluster meetings. The mentor teachers discussed difficulties in understanding their responsibility in the cluster meetings and argued that they should have played a greater role in planning the cluster meetings. The findings in this study would help teacher educators or researchers create a learning community by considering ways to overcome challenges building a teachers' community. I hope that there would be continuous further efforts for

building learning communities of teachers.

### 1. Learning Communities for Teachers

Based on the results, I have several ideas for establishing learning communities for teachers. First, teachers need to consider their colleagues' professional development as well as their own by building learning communities. In this project, the mentor teachers helped the student teachers by discussing issues about students' mathematical thinking in a learning community. In other words, they helped their future colleagues' professional development. Similarly, teachers can assist their colleagues' professional development by building a learning community. For example, if teachers participate in a workshop, they can present the information to their colleagues who do not participate in the workshop and do the activities together during a meeting of the learning community. Creating a learning community of teachers who participate in professional development activities with teachers who do not participate in any activity is an alternative way to support their colleagues' professional development. Teachers do not need to participate in every workshop prepared by universities or county staff for professional development. They can consider alternative ways instead of joining every professional development activity for teachers. It makes it possible for teachers to help their colleagues' professional development. Hence, when teachers consider their colleagues' professional development, they can create various learning communities.

Second, building learning communities within schools helps teachers become more involved in school improvement. For example, in this study,

one of the mentor teachers mentioned that teachers in the school have small conferences regularly with their colleagues to share materials and discussions from national or international conference. All teachers in the school couldn't participate in the project because of the time issue, however the teachers involved in curriculum development within their school. Although there exists a time issue, it is possible for teachers to build a learning community within their school. Building learning communities within schools may be a way to resolve the time issue. I believe that teachers can change their colleagues and their schools by building learning communities instead of just having chats with their colleagues in the lunchroom or in the hallway. Learning communities in schools provide opportunities for teachers to share their ideas to develop their schools and make collaborative environments with their colleagues. In addition, schools are good places for inservice teachers to create learning communities because they spend most of their time in schools. Therefore, creating learning communities within schools may increase teachers' involvement in school improvement.

Third, teachers need structured learning communities more than informal meetings to promote their learning. Teachers' development can be more successful, and they can understand their colleagues' thinking through structured learning communities. In this study, the mentor teachers valued their colleagues' thoughts about mathematics and teaching in cluster meetings although they often had informal discussions about their teaching and mathematics during lunch or in the hallway. They might not discuss their beliefs about teaching



mathematics and students' mathematical thinking in depth in the informal meetings. Structured meetings can help teachers have serious discussions about subject matter knowledge and students' thinking. Such meetings promote teachers' interactions so that they know each other well and work collaboratively in their schools. Hence, I recommend that teachers build more structured learning communities for supporting their learning.

## 2. Future Research

This paper discussed difficulties that the participant teachers had in their learning community, however teacher educators need solutions to overcome the difficulties. In order to find the solutions, there would be continuous further efforts for learning communities. For example, the participants in this study were high school mathematics teachers, student teachers, and university supervisors. Since a community can have different cultures depending on its members, a replication of this study with different members might help professional developers determine the effectiveness of using partnerships for teachers' professional development. Moreover, investigating communities of teachers might help teacher educators understand the teachers' learning and further their students' understanding.

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# 전문성 발달을 위한 학습 커뮤니티 형성에 있어서의 어려움

권 나 영 (Inha University)

본 연구의 목적은 커뮤니티 환경 아래에서 수학 교사들을 이해하고 고등학교와 대학 간의 협력을 통한 전문성 발달에 관한 연구에 기여하기 위함이다. 본 연구에서는 학습 커뮤니티를 형성하는 데 있어서 수학 교사들이 어떤 어려움을 가지는가에 관해 조사하였다. 미국의 남동부 지역의 한 프로젝트의 자료를 이용하였으며, 세 명의 예비 교사와 세 명의 멘토 교사,

그리고 한 명의 대학에서 나온 교사가 학습 커뮤니티에 속하여 함께 일하였다. 연구 자료는 관찰노트, 인터뷰, 설문지, 이메일 내용 등이 포함되고, 사례 연구와 내러티브 분석법으로 자료를 분석하였다. 연구 결과, 참가자간의 파워 이슈, 논의할 주제 선택이나 서로에 대해 비판하기, 목표를 공유하거나 시간과 멤버 수 조절하는 것 등의 어려움을 나타내었다.

\* key words : a learning community(학습 커뮤니티), professional development(전문성 발달), high school(고등학교), narrative analysis(내러티브 분석법)

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