

Content Mentoring in Teacher Education: Its Value for Teacher Candidates and Their Arts and Sciences Faculty Mentors

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Running head: CONTENT MENTORING

CONTENT MENTORING IN TEACHER EDUCATION:
ITS VALUE FOR TEACHER CANDIDATES
AND THEIR ARTS AND SCIENCES FACULTY MENTORS
BY
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Abstract

This qualitative study examines the value of content mentoring for pairs of arts and sciences faculty members and teacher candidates in the same discipline. The researcher utilized participant interviews, demographic surveys, and student teacher performance assessments of four pairs of arts and sciences faculty members and student teachers (eight total participants) who participated in Boston College's semester-long One-on-One Content Mentoring program during the Fall 2008 semester. The researcher used a sociocultural theoretical perspective and interpretive qualitative analysis techniques to explore this problem and describe how content mentoring influences mentors and mentees. This study's focus on a content-specific mentoring initiative—especially its influence on mentors as well as mentees—has rarely been used in education research. Results indicate that content mentors gain increased exposure to and understanding of K-12 school realities, a better understanding of the Boston College Lynch School's mission "to teach for social justice," new perspectives on K-12 teacher preparation, and a renewed interest in pedagogy in their own classes. Analysis of content mentor results also raise cautions that professors' views on social justice not be reflective of a deficit model of education. Results also indicate that teacher candidates gain content knowledge, pedagogical content knowledge, confidence in their teaching abilities, better understanding of professional development, and a deeper understanding of social justice in teaching. Limitations to the study include a small sample size and the duration of the study. Recommendations for future study include increasing sample size and expanding research over a longer period of time. The researcher provides implications and recommendations for content mentoring program initiatives.

Content Mentoring in Teacher Education: Its Value for Teacher Candidates
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Chapter I

Statement of the Problem

Subject Matter Knowledge in Teacher Education

A Tradition of Importance

The importance of subject matter knowledge, defined as “how teachers need to know a subject to teach it to others” (Phelps & Schilling, 2004, p. 31) is not a new topic in teacher education. Since the 1980s, there have been many research studies and programmatic efforts focused on understanding and strengthening the subject matter knowledge of teacher candidates (Floden & Meniketti, 2005; Goldhaber & Brewer, 1997; Hawk, Coble, & Swanson, 1985; Hawkins, Stancavage, & Dossey, 1998; Monk, 1994; Murray & Fallon, 1989; Rowan, Chiang, & Miller, 1997; Wenglinsky, 2002). In the late 1980s, the Carnegie Corporation-sponsored Project 30 was one significant effort to examine and redesign teacher education programs at colleges and universities. It was a collaborative effort involving 30 representative, four-year institutions in the U.S. that prepare teachers for certification, and it uniquely involved faculties of both arts and sciences and education (Murray & Fallon, 1989).

Although Project 30 did not privilege content knowledge over pedagogical knowledge in teacher education, it was motivated in part by the belief that teacher education should refocus on the importance of building teacher candidates’ content knowledge: “Teachers study the wrong things: They study too much pedagogy, a field that at best has slight claim to a scholarly base of

knowledge, and they study too little of the disciplines that are, by contrast, well-grounded in long-standing traditions of scholarly work and substance” (Murray & Fallon, 1989, p. 8).

Project 30 identified subject matter understanding as one of several core themes important in the development of teaching as a profession, stating, “Teacher education graduates must have a thorough knowledge of the discipline(s) they are licensed to teach” and furthermore, “the traditional college major in the teaching field is often insufficient preparation” (Murray & Fallon, 1989, p. 10).

What Does Research Actually Say about the Importance of Subject Matter Knowledge?

Although there was widespread assumption that subject matter knowledge was essential to effective teaching and merit more attention in teacher education programs, research has not consistently supported this assumption. There has been much research on teacher content knowledge, especially its possible connection to student achievement, particularly in math and science (Floden & Meniketti, 2005; Phelps & Schilling, 2004). However, research seeking to establish a clear connection between teachers’ content knowledge and student achievement has yielded mixed results (Goldhaber & Brewer, 1997; Hawkins, Stancavage, & Dossey, 1998; Rowan, Correnti, & Miller 2002). Floden and Meniketti’s (2005) review of studies examining the association between teachers’ study in their subject area and measures of student achievement concludes that the “findings have generally supported claims about the value of subject matter preparation, especially for secondary-school mathematics. But the results are inconsistent, with complex variation by course level and prior student achievement” (Floden & Meniketti, 2005, p. 269).

Most studies focused in mathematics reported positive correlation between teachers’ study of mathematics and the measures of student achievement, but results were not wholly

consistent. Some studies had positive correlations (Goldhaber & Brewer, 1997; Hawkins, Stancavage, & Dossey, 1998, Rowan, Chiang, & Miller, 1997, Wenglinsky, 2002); some studies had no significance (Hawk, Coble, & Swanson, 1985; Monk, 1994); one study even had a negative correlation (Rowan, Correnti, & Miller 2002). Floden and Meniketti point out: “The effect on student achievement varied according to the total number of courses. Course taking had the greatest effect for the first five courses that a teacher took, and then diminished” (Floden & Meniketti, 2005, p. 268). This “leveling off” effect of number of courses taken in the subject matter area even seems to have an eventual negative effect, as seen in Rowan, Correnti, and Miller’s (2002) case study of a mathematics teacher that had multiple degrees in mathematics but whose students demonstrated lower growth in mathematics achievement. Rowan, Correnti, and Miller (2002) surmise that advanced content background “somehow interferes with effective teaching, either because it substitutes for pedagogical training in people’s professional preparation, or because it produced teachers who somehow cannot simplify and clarify their advanced understanding of mathematics for elementary school students” (p. 1541).

What Does the Research Suggest?

Floden & Meniketti (2005) concluded that a dominant theme in the findings for mathematics studies was that “the prospective teachers who had completed some subject matter coursework had mastered basic skills in school subjects, but lacked a deeper understanding of the concepts they would later teach (e.g., division of fractions)” (p. 270). Similarly, a study of English and language arts teachers (Kennedy, 1998) found that although these teachers knew many aspects of English, they lacked the understanding of grammar principles that would allow them to move beyond simple statements of language principles as rules. This leveling off effect of content area knowledge parallels results about knowledge of mathematics, in which students

completing teacher education programs “often had mastery of computational rules, but lacked understanding of the underlying concepts” (Floden & Meniketti, 2005, p. 271).

A general premise held by those who expect a correlation between teacher content knowledge and student achievement is that teachers who know their subject matter well are better able to teach their subject matter (Philips & Schilling, 2004). Floden and Meniketti (2005) point out that none of the studies in their review addresses questions about *what* professionally valuable knowledge teachers gained through their study (Floden & Meniketti, 2005, p. 270). In other words, there was no examination of the link between teacher knowledge and student achievement. The *teaching* aspect was not part of the equation.

Another notable aspect of this research is the understanding that content knowledge of prospective teachers is developed primarily by arts and sciences faculty in arts and sciences courses (Floden & Meniketti, 2005). The assumption of where content knowledge should be developed is widespread and even supported by teaching standards. The National Science Teachers Association (1998) asserts: “The content knowledge of the prospective science teacher is developed primarily in science courses taught by science faculty” and moreover, “Assigning the development of the skills and knowledge required by this standard to one or even several science methods courses is unlikely to produce the depth of understanding needed for effective teaching practice” (p. 7).

The inconsistent findings regarding teacher content knowledge and student achievement speak to the need for more exploration about the connections between teacher candidate’s content knowledge study and student learning, and perhaps an understanding that the path might not be linear. Phelps and Schilling (2004) suggest, “One explanation is that teachers need to know content in ways that differ from what is typically taught and learned in university courses”

(p. 32). Additionally, the separation of content knowledge and pedagogical knowledge in teacher education programs seems problematic. For example, research has shown that science teachers approach scientific problems differently than scientists due to their understanding of the pedagogical implications of learning science (Borko & Putnam, 1996; Van Driel, Verloop, & De Vos, 1998). The separation of teacher candidates' content knowledge development and pedagogical knowledge development leads to teacher candidates' fractured views of education within their discipline, which may contribute to inconsistent and disappointing research findings in student achievement.

University-Wide Involvement in Teacher Education

With respect to research on teacher preparation, and subject matter knowledge in particular, there has been a constant call for universities to view teacher education as a university-wide endeavor. While university administrations have not traditionally taken an active role in teacher education leadership (Cochran-Smith, 2006), at the end of the 20th century, a number of resolutions from educational associations issued a call for university presidents to consider teacher preparation a university-wide responsibility rather than one that rests only in schools and departments of education (American Association of State Colleges and Universities, 1999; American Council on Education, 1999; Association of American Universities, 1999). These calls are echoed by individuals, critical policy shapers and leaders in the field of teacher education, (Fallon, 1999; Goodlad, 2002; Imig, 1999), who believe universities and colleges should make teacher education one of their central foci. Advocates of university-wide teacher education efforts reason that universities and colleges should take on responsibility for teacher quality and view teacher education as their "grand opportunity" to help improve the country's schools (Fallon, 1999).

The call for a university-wide approach focuses especially on the increased involvement of schools of arts and sciences (Broad, 1999; Friedman, 2002; Imig, 1999). Additionally, supporters of this growing partnership point out that both sides benefit from the collaboration: Teacher candidates gain the discipline expertise of arts and sciences faculty while arts and sciences departments learn more about the realities and context of K-12 classrooms (Friedman, 2002). This “border crossing” (Broad, 1999) between individuals usually encamped in their own departments and schools is endorsed by teacher education researchers, educators, and the teacher candidates themselves for its ability to bridge the gap in teachers’ content knowledge and student learning. “Border crossing” allows teacher candidates to learn instructional strategies specific to each discipline, the missing link in the research on teacher content knowledge and student achievement (Friedman, 2002; Friedman & Wallace, 2006).

The Era of Standards and High-Stakes Testing

Teacher Knowledge and Student Outcomes: Continued Critical Issues

The era of standards-based reform and high-stakes testing has both re-energized and maintained the focus on teachers’ subject matter knowledge. In the 1980s, state governors introduced mandatory standardized testing at scheduled intervals for all students in public schools. State officials wanted to refocus debates about school reform on establishing some measure of student learning (Fallon, 1999). These state mandates served as a precursor to the federal Elementary and Secondary Education Act, “No Child Left Behind” (NCLB), which officially ushered in a national era of high stakes testing as well as a mandate for a “highly qualified teacher” in every classroom by 2006 (Cochran-Smith, 2004; Paige, 2002).

Defining “highly qualified teacher” and deciding how to accomplish the goal of ensuring every classroom has one was left to state legislature, but the law’s predisposition towards

standardization had significant influence. Increasingly, the job of a “highly qualified” teacher became primarily to prepare students for standardized testing (McLaughlin & Burnaford, 2007). A “highly qualified teacher” was soon seen as someone highly knowledgeable in his or her content area. While the research does argue that a highly qualified teacher is one who is both well-learned in subject matter and pedagogy, there was a growing call for more subject preparation of teacher candidates (Arthur, Davison, & Moss, 1997; Cochran-Smith & Fries, 2001; Darling-Hammond, 2000). In 2002, the U.S. Secretary of Education issued the Secretary’s Annual Report on Teacher Quality (Paige, 2002) titled *Meeting the Highly Qualified Teachers Challenge*. Not surprisingly, the Secretary argued for a redefinition of teacher qualifications. Specifically, certification should be redefined to emphasize higher standards of content knowledge and verbal ability and to deemphasize education coursework requirements. Moreover, student teaching and matriculation at schools of education were lumped together as “bureaucratic hurdles” (p. 19). Darling-Hammond and Young (2002) point out that the report’s conclusions rest on the premise that “verbal ability and subject matter knowledge are the most important components of teacher effectiveness” (p. 13).

From the early 1980s through the late 1990s, teacher education was clearly driven by “the knowledge question”: “What should teachers know and be able to do? What are the knowledge, skills, and dispositions prospective teachers should have? What is the knowledge base of teacher education” (Cochran-Smith, 2001, p. 529)? This paradigm was advocated by research, policies, and program revisions with the intention of ensuring that “the codified knowledge base was at the center of the curriculum” (p. 529). At the start of the 21st century, the major question fueling the teacher education field then became the “the outcomes question.” The outcomes question raises assumptions about what teachers, teacher candidates, and students should know and be

able to do (Cochran-Smith, 2001). There was a growing sense that teacher education programs should be “accountable,” “effective,” and “value-added” (p. 529). Today, teacher education programs have clearly been shaped by assumptions that teacher content knowledge and outcomes based on standardized testing are key ingredients in their retention and revision.

Reframing the Era: Seizing an Opportunity

Understandably, those involved in teacher education argue about the good and bad aspects of the current era in teacher education, one that is portrayed as a public policy problem, rooted in research and evidence, and driven by outcomes (Cochran-Smith, 2008). Cochran-Smith (2001) suggests that education scholars who fear that the outcomes era might make the education reform debate too narrow should change the assumptions of the debate. She points out that one can still work within the system by considering questions such as: “What should the outcomes of teacher education be for teacher learning, professional practice, and student learning?” “How, by whom, and for what purposes should these outcomes be documented, demonstrated, and/or measured?” (Cochran-Smith, 2001, p. 530) After all, no one claims that standards necessarily should be confining. In fact, standards and assessments “must incorporate the nature of work and civic life in the 21st century: high-level thinking, learning, and global understanding skills, as well as sophisticated information, communication, and technology literacy competencies” (National Conference of State Legislatures, 2005). The National Education Association (2006) argues that too narrow a focus on basic skills threatens our education system as well as the nation’s economic viability. Meaningfully assessing 21st century skills will require tests that measure higher-order thinking and problem solving. The National Education Association (2006) asserts, “Too often we are holding students to obsolete standards that don’t reflect contemporary challenges” (p. 22).

Clearly, standards in education policy are not inherently evil. However, they are sets of criteria that reflect the current dominant view of what is important in a discipline. So it is useful to have such standards to examine the assumptions, values, and beliefs of teaching and learning in the various subject areas and consider their worth and even potential in teacher preparation. McLaughlin and Burnaford (2007) stress that teacher education programs should challenge prospective teachers to consider the potential of their profession even if the constantly referenced standards “seem to convey a time of stunted possibilities and constricted intentions” (McLaughlin & Burnaford, 2007, p. 332). For example, the National Science Teachers Association Standards for science teacher preparation (1998) suggest that science teachers should be able to provide all students the opportunity to learn from science instruction, make sense out of science, and want to do more science. While this statement is in line with the NSES (National Science Education Standards, 1996) it is no simple task. The National Research Council (1996) points out that that the suggestion requires multiple pedagogical tasks including addressing all students’ needs, planning activities that allow and encourage students to learn and reason about scientific problems, encouraging students to make sense of the world, and instilling in students a desire to learn more science.

Content Mentoring: What It Is, and What It Is Not

In this dissertation, I focus on a content mentoring initiative for teacher candidates at Boston College. Content mentoring differs from the typical mentoring program for teacher candidates that focuses on “essential elements for effective mentoring, particularly method and manner of mentoring” (Hudson, 2004). Traditional mentoring programs for teacher candidates occur within field experience programs and at the actual classroom site of the teacher candidate’s practicum. The mentor is usually a current K-12 classroom supervisor teacher who can model

effective teaching practice for the teacher candidate (Barab & Hoy, 2001). The volumes of generic mentoring knowledge rooted squarely within the school site practicum experience have increased considerably over the last fifteen years (McIntyre, Hagger, & Wilkin, 1993; Tomlinson, 1995, Edwards & Collison, 1996; Reiman & Thies-Sprinthall, 1998).

In content mentoring, the mentors are not current K-12 classroom teachers who have insider knowledge of K-12 school realities, but rather university arts and sciences professors who leave their higher education campuses to spend time observing and conversing with teacher candidates at the candidates' practicum school sites. This "border crossing" (Broad, 1999) by arts and sciences professors is a unique aspect of content mentoring, one that helps break the "tense and troubled borders [crisscrossing] the geography of teacher preparation" (Broad, 1999, p. 373). By coming to the K-12 classroom to mentor their mentee, arts and sciences mentors establish that they too are stakeholders in teacher preparation and prove that teacher professional growth does not have to occur in separate, static territorial spaces such as the K-12 classroom, education classrooms, and arts and sciences classrooms.

Additionally, content mentoring lacks the formally evaluative quality typical in most mentoring programs for teacher candidates (Hudson, 2004). Typically, teacher education programs assume formally evaluative feedback is an essential ingredient in the mentoring process because feedback allows mentors to articulate, constructively, expert opinions on the mentee's professional development (Bellm, Whitebook, Hnatiuk, 1997; Haney, 1997; Bishop, 2001). There is an assumption that assessments and knowledge flow in only one direction: from mentor to mentee. Content mentoring is presented more as an opportunity for a respectful dialogue and mutually-beneficial conversation between the mentor and the mentee. The traditional structure of the expert mentor dispensing knowledge and an evaluation to a nervous

mentee is absent from this kind of relationship. Both participants are invited to further their understanding: content knowledge and content-specific teaching strategies for the mentee and an understanding of K-12 school contexts and the importance of genuinely utilizing pedagogical knowledge for mentors (Friedman & Wallace, 2006).

A central goal of content mentoring is to encourage and nurture teacher candidates' discipline-specific "habits of mind" as demonstrated or possessed by their arts and sciences faculty mentors. Part of how teachers view their subjects involves understanding of how they think that subject is best taught and learned. Developing this understanding requires teacher candidates to confront fundamental issues including the nature of a subject's study, the nature of knowing in that subject, and the teaching of that subject (McDiarmid, 1995). When mentors encourage "habits of mind" in a teacher candidate, they are not simply imparting straightforward bodies of knowledge. Rather, they are encouraging more of a dispositions approach. Dispositions are teachable by means of patterns or cultivation intended to foster intellectual character (Harpaz, 2003). Elements of teachers' "habits of mind" include thinking and communicating with clarity and precision about one's discipline, questioning and posing problems fundamental in the discipline, applying past knowledge in the discipline to new situations, and remaining open to continuous learning (Costa & Kallick, 2000). Encouraging "habits of mind" is about teacher candidates developing deep understanding. The expertise of arts and sciences mentors is critical because these "habits of mind," this deep thinking, require a strong knowledge component upon which one can think and flex. Good thinking of any kind is "parasitic upon the *knowledge* component" (McPeck, 1994, p. 111).

Pedagogical Content Knowledge

An essential component of teacher candidates' professional growth is learning how to convert their knowledge of subject matter into a teachable subject for a wide range of pupils. Murray and Fallon (1989) claim this is the “weakest link in teacher education programs” and “requires the most intense and lively cooperation between faculties in education and in the arts and sciences” (p. 10). They explain that all teachers know that the subject matter they teach is different from the subject matter they learned from their own teachers. The teacher “inevitably transforms the subject matter into something else—a teachable subject that has its own structure and logic and makes sense to the pupil... something that has meaning for the pupil” and this understanding of how to carry out this transformation is called “pedagogical content knowledge” (Murray & Fallon, 1989, p. 23)

What Is Pedagogical Content Knowledge?

Shulman (1986) introduced the phrase “pedagogical content knowledge” and initiated a whole new wave of research on teacher knowledge and teacher education. In Shulman's theoretical framework of pedagogical content knowledge, teachers need to master two types of knowledge: (a) content or “deep” knowledge of the subject itself, and (b) knowledge of the curricular development which deals with the teaching process. Pedagogical content knowledge “represents the blending of content and pedagogy into an understanding of how particular topics, problems or issues are organized, represented, and adapted to the diverse interests and abilities of learners, and presented for instruction” (Shulman, 1987, p. 4). Simply put, pedagogical content knowledge “can be seen as the intersection between pedagogy and content” (Koppelman, 2008, p. 125). It is a “practical way of knowing the subject matter, which is used by instructors when

they are teaching” and “is a form of instructors’ professional knowledge that builds upon but is different from teachers’ subject matter knowledge” (Koppelman, 2008, p. 126).

A Beginning in the Standards Movement

The focus on standards and teacher certification in the 1980s focused the debates about what constitutes professional expertise and what such expertise implies for teacher preparation and policy decisions (Ball, Thames, & Phelps, 2008). Shulman (1987) was especially concerned with the dominant views of teacher competency then, which mainly focused on generic teaching behaviors. He argued that “the currently incomplete and trivial definitions of teaching held by the policy community comprise a far greater danger to good education than does a more serious attempt to formulate the knowledge base” (Shulman, 1987, p. 20). Shulman (1987) believed that for teachers to teach all students to the newly established standards, teachers needed to understand subject matter deeply and flexibly so they could help students create useful cognitive maps, which would in turn enable students to relate one idea to another and address knowledge misconceptions. Shulman believed that teachers needed to see how ideas connect across fields and to everyday life. This kind of interconnected and applicable understanding provides a foundation for pedagogical content knowledge that enables teachers to make ideas more accessible to students.

Aspects of Pedagogical Content Knowledge

First, pedagogical content knowledge develops gradually, through practice, and in the course of many years of face-to-face interaction with students. Experienced instructors possess it, but novice instructors usually do not (Koppelman, 2008). Pedagogical content knowledge “makes the difference between the way experienced instructors know their subject matter and the way novice instructors do” (Koppelman, 2008, p. 126). Secondly, pedagogical content

knowledge bridges content knowledge and the practice of teaching, and does so in each discipline separately (Ball, Thames, & Phelps, 2008). Thirdly, pedagogical content knowledge includes "... the most useful forms of representation of... ideas, the most powerful analogies, illustrations, examples, and demonstrations – in a word, the ways of representing and formulating the subject that make it comprehensible to others" (Shulman, 1986, p. 6). Fourthly, pedagogical content knowledge also includes "an understanding of what makes the learning of specific topics easy or difficult: the conceptions and preconceptions that students of different ages and backgrounds bring with them to the learning of those most frequently taught topics and lessons" (Shulman, 1986, p. 7). Finally, the acquisition of pedagogical content knowledge cannot occur in college classrooms separated from practice or in school classrooms separated from knowledge about practice. Its acquisition takes place in classrooms that provide opportunities for trying and testing, research and inquiry, and evaluations and conversations (Miller & Silvernail, 1994).

Shulman (1992) provides an example of a scenario containing pedagogical content knowledge in the domain of teaching arithmetic to children. The fictional case describes the problems children have understanding what it means to divide by zero, since it is not possible. Then the case explains the "subject matter" of dividing by zero and gives an account of the common mistakes children make and the recurrent difficulties they have. The case shows examples of the errors children make. The case then presents an instructional strategy of emphasizing the part-whole relationship of fractions as an analogy for division, highlighting the impossibility of having "zero" portions of a whole, to correct these problems and shows the results of that strategy.

Recent Focus on Pedagogical Content Knowledge

The concept of pedagogical content knowledge has been explored the most in the context of several disciplines, including mathematics, biology, and chemistry (Bucat, 2004; Ma, 1999; Shulman, 2004). Each discipline has its own specific pedagogical content knowledge because the knowledge is at the unique intersection of each discipline's content and pedagogy. Recently, a new specialty in pedagogical content knowledge has emerged. Technological pedagogical content knowledge (TPCK) is defined as "the knowledge and skills that teachers need in order to integrate technology meaningfully into instruction in specific content areas." This emerging subfield is rooted in the recognition that effective uses of technology in mathematics are quite different from effective uses of technology in social studies, and that teachers need specific preparation in using technology in the specific content area they will be teaching (American Association of Colleges for Teacher Education, 2008). This movement establishes just one more layer within each discipline's pedagogical content knowledge, stressing the importance of understanding and researching pedagogical content knowledge in all disciplines.

Professional Esteem

As part of study of content mentoring, I examine how content mentoring affects teacher candidates' professional esteem. I refer to the definition of *esteem* as a basis for my usage of professional esteem: "worth, value... especially high regard" (Merriam-Webster, 1995). In this dissertation, I define professional esteem as the regard individual in this case teacher candidates have for the teaching vocation. I am especially interested in teacher candidates' views based on their assessments of their own potential and capabilities as a teacher. As a result, my use of the term professional esteem is similar to the more specific term *efficacy* in educational research. Bandura (1977, 1997) describes self-efficacy as a mechanism of behavioral change and self-

regulation in his social cognitive theory. Self-efficacy is defined as “beliefs in one’s capabilities to organize and execute the courses of action required to produce given attainments” (p. 3).

Berman, McLaughlin, Bass, Pauly, and Zellman (1997) define teacher efficacy as “the extent to which the teacher believes he or she has the capacity to affect student performance (p. 4). Rizvi and Elliot (2005) believe that teacher efficacy is an important dimension of teacher professionalism, together with other dimensions such as teacher practice, leadership and collaboration. Bandura (1997) proposes that efficacy beliefs were powerful predictors of behavior because they were ultimately self-referent in nature. I am interested in teacher candidates’ professional esteem, particularly the dimension of their efficacy or self-confidence as a teacher.

There has been much research on the relationship between teacher efficacy and various aspects of teachers’ professionalism. Researchers have repeatedly related teacher efficacy to a variety of positive teaching behaviors, student outcomes, and student achievement (Ashton & Webb, 1986; Ross, 1992; Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998). Teachers high in efficacy tend to experiment more with methods of teaching to meet their students’ needs (Guskey, 1998; Stein & Wang, 1988). A tendency to encourage and enable students to carry out student-directed, open-ended scientific inquiry projects appears to be related in part to social constructivist views of science. Those teachers who utilize a social constructivist approach show higher measures of self-esteem and confidence in their teaching abilities, especially in the utilization of knowledge-building processes in their discipline (Bencze, Bowen, & Alsop, 2006). Additionally, there is growing interest in research on teachers’ confidence in science teaching (Milman & Molebash, 2008; Murphy, Neil, & Beggs, 2007). One study shows that half of the elementary teachers surveyed cited lack of teacher confidence and ability to teach science as a

current issue of major concern in primary science (Murphy, Neil, & Beggs, 2007). Lin and Cheng-Yao's (2008) study on mathematics teachers concludes that it is important to foster mathematics teachers' confidence and competence in using instructional technology, which promotes positive attitudes toward utilizing computers and technologies in the classroom.

I am interested in teacher candidates' professional esteem, especially the aspect based on one's self-assessment, which is similar to teacher efficacy. My focus on professional esteem includes elements of confidence in one's ability to teach effectively, which in turn include confidence in one's content knowledge, pedagogical knowledge, and pedagogical content knowledge. The research indicates that confidence in one's knowledge bases is essential for strong professional esteem and teacher efficacy, which can contribute to teachers' willingness to strive for effective teaching and student achievement in self-conceptualized knowledge (Cheung, 2008; Milman & Molebash, 2008; Murphy, Neil, & Beggs, 2007). Teacher efficacy has "emerged as an affective affiliate of pedagogical content knowledge" (Park & Steve, 2008). Research indicates a link between content knowledge and efficacy and between pedagogical content knowledge and efficacy. Because the goal of content mentoring is to enhance teacher candidates' subject knowledge as well as pedagogical content knowledge, I am interested in a possible connection between content mentoring and professional esteem.

Research Purpose

This study seeks to understand the effect of content mentoring that pairs arts and sciences faculty members and teacher candidates in the same discipline. This study utilizes participant interviews, demographic surveys, and student teacher performance assessments of four pairs of student teachers and arts and sciences faculty members (eight total participants) who have participated in Boston College's One-on-One Content Mentoring program. The interviews will

explore the influence of the content mentoring experience on teacher candidates' content knowledge, pedagogical content knowledge, and sense of professional esteem. The interviews will also explore the influence of the mentoring program on faculty mentors' instructional strategies, awareness of K-12 school and community contexts, and sense of commitment to teacher education.

In particular, the study explores the following sub-questions:

- What is the influence of the mentoring experience on teacher candidates' content knowledge?
- What is the influence of the mentoring experience on teacher candidates' pedagogical content knowledge?
- What is the influence of the mentoring experience on teacher candidates' sense of professional esteem?
- What is the influence of the mentoring experience on faculty mentors' pedagogical consideration in their own teaching?
- What is the influence of the mentoring experience on faculty mentors' awareness of K-12 school and community contexts?
- What is the influence of the mentoring experience on faculty mentors' overall interest in teacher education?

Theoretical Framework

A sociocultural theoretical perspective will ground this research. This perspective advocates that social interaction contributes and guides ongoing changes in individuals' thoughts and behaviors (Woolfolk, 1998). Sociocultural theory asserts that one's development and world view depends on interaction with people and cultural elements (Geertz, 1973). This theoretical

framework is particularly appropriate for a study focused on the effects of a mentoring program because of the suggested modes of learning through which cultural tools or knowledge can be passed from one person to another: imitative learning, instructed learning followed by self regulation, and collaborative learning (Tomasello, Krugner, & Ratner, 1993). Sociocultural theory holds that social environment in combination with cognition is paramount to how individuals develop their thinking and behavior. The One-on-One Content Mentoring Program does presume a sociocultural theory-based belief that teacher candidates will acquire new and more developed ways of thinking by interacting with a more knowledgeable person, a veteran teacher and discipline expert, and gain pedagogical content knowledge and the “habits of mind” of his/her discipline. Additionally, the arts and sciences mentor will also acquire knowledge and understanding of K-12 schools by spending time in their mentee’s classrooms, observing them teach, and having conversations about teaching within the context of their classrooms.

The Significance of this Study

This study offers several novel aspects, which I believe ensure its purpose as meaningful. First, this study will be part of a research movement aimed at recapturing the lost opportunity of significant research on subject knowledge preparation in teacher education. Through my study, I seek to respond to conclusions that subject knowledge of teachers does not make a significant difference in student achievement (National Research Council, 1990). Specifically, I will contribute to the limited research on the missing link between subject matter knowledge and student outcomes: discipline-specific pedagogical content knowledge (Floden & Meniketti, 2005; Murray and Fallon; 1989; Phelps & Schilling, 2004). Additionally, I intend for this research to promote the notion that subject knowledge *does* matter in teacher education. There are many ways to measure outcomes beyond standardized test scores. Through my research, I

will consider affective measures of teacher education efforts, including professional esteem, increased awareness by arts and sciences faculty of K-12 school contexts, increased pride and respect in the teaching profession by teacher candidates and university teachers, and a more wide-spread university commitment to teacher education. Through my study I will also contribute to the clear call for more research on content mentoring (Hudson, 2004) and pedagogical content knowledge, particularly outside of technology and science (Ball, Thames, & Phelps, 2008). Finally, I will contribute to research on the notion of “border crossing” in teacher education (Broad, 1999) and university-wide teacher education efforts (Broad, 1999; Friedman, 2002; Imig, 1999).

This proposal’s review of the literature will include research on content mentoring, especially with a focus on findings, gaps, and implications of the research. The research methodology will include sections on the appropriateness of a sociocultural theoretical framework, the appropriateness of interpretative qualitative research, the background and structure of the One-on-One Content Mentoring Program, the study’s research design, data collection process, and data analysis procedures.

Chapter II

Review of the Literature

Criteria for Inclusion

My intent in this dissertation's literature review is to review the academic literature on content mentoring. Although I define content mentoring in this study as subject matter mentoring of a teacher candidate by an arts and science professor, I do not consider the professional or educational designations of the mentors and mentees as limitations for this literature review. Instead, I include any academic literature focusing on mentoring of teacher candidates or teachers by a mentor in which development of subject knowledge and subject-specific teaching practices is the primary goal of the mentoring initiative or model.

I used several approaches to identify publications for possible inclusion in this review. First, I conducted an electronic search of ERIC and Education Abstracts using the descriptor words "content mentoring," "subject mentoring," "math mentoring," "science mentoring," "English mentoring," "language arts mentoring," "history mentoring," and "foreign language mentoring." Secondly, I scanned a recent review by Floden and Meniketti (2005) that addresses a related question on the effects of coursework in the arts and sciences on teacher education for studies that examine content mentoring in teacher education. Thirdly, I conducted manual searches among the reference sections of literature that I found using the previous two steps for other pieces that focus on content mentoring.

Not surprisingly, my search results emphasize the lack of significant research on content mentoring in teacher education. I found that several studies on content mentoring that were identified during the initial round of electronic searches are really about mentoring programs involving K-12 teachers and their students. For example, Maring, Schmid, and Roark's (2003)

study describes the origins of cybermentoring, particularly videoconferencing, and focuses on projects with elementary and secondary school students and their science and math teachers. Similarly, Emerson-Stonnell and Carter's (1994) conceptual article outlines principles K-12 teachers should consider when developing a math mentoring program for gifted students. I also found that some studies on content mentoring of university students were unrelated to teacher education. For example, Packard's (2004) study on content mentoring examined the effect of content mentoring on the retention of university science majors throughout their undergraduate academic careers. Of slight relevance was Kling and Brookhart's (1991) literature review which focuses on beginning teacher induction program. Their findings indicate that induction support of new teachers often has a critical bearing on new teachers' decisions to stay or leave the profession. Their conclusions include a list of recommendations aimed at increasing teacher retention rates, including continued research regarding the effects of different subject mentoring.

Only five articles from my search focused on content mentoring in teacher education (Friedman & Wallace, 2006; Goodnaugh, 2004; Hudson, 2004; Koch & Appleton, 2007; McKeon and Vause, 2001). Hudson's (2004) article is a conceptual piece that outlines general content mentoring principles in teacher education. The articles by Goodnaugh (2004), Koch and Appleton (2007), and McKeon and Vause (2001) all focus on science content mentoring. The article by Friedman and Wallace (2006) describes an English content mentoring initiative.

Literature on General Content Mentoring

Hudson (2004) highlights the possibilities of using a five-prong generic mentoring model as a starting point for subject-specific mentoring initiatives in teacher education. Hudson (2004) establishes constructivist theory as an appropriate framework for the mentoring model, "as it can be used to build upon prior understandings towards developing the mentee's knowledge and

skills for teaching” (p. 139). He stresses that constructivist mentoring in teacher education can be characterized by a model defined by five factors: personal attributes that the mentor needs to exhibit for constructive dialogue, system requirements that focus on curriculum directives, competent pedagogical knowledge for particular best practices, modeling of efficient and effective practice, and feedback for the purposes of reflection to improve practice (Hudson, 2004). He explains, “Mentoring practices... are generally generic in nature and need to develop subject-specificity in order to focus on the unique qualities of each subject” (Hudson, 2004, p. 142). Furthermore, “subject-specific mentoring within each of the five factors may aid in developing mentees’ pedagogical knowledge and act as a vehicle in education reform in such subjects” (Hudson, 2004, p. 142).

Literature on Science Content Mentoring

Goodnaugh’s (2004) qualitative study describes a collaborative school district-university project designed to foster teacher development in the context of elementary science education. The initiative involved four elementary teachers (three early career teachers and one veteran), a school district science mentoring teacher, and a school district science coordinator, and centered around eight group planning sessions. In these planning sessions, the group’s goal was professional development of K-12 teachers in elementary science teaching, particularly in the context of helping them prepare for a new set of curriculum standards in science and technology. The study’s methodology involved a qualitative action research project that used participant observation, interviews, documents, and journals. As a conclusion to the study, Goodnaugh (2004) describes strategies successfully adapted to foster collaboration and teacher learning. One strategy is the allowance of time to establish a learning community: “To achieve any degree of collaboration, the planning team believed it was essential to foster group rapport by

establishing an environment where individuals were free to be risk-takers, to share ideas and to give and receive feedback in a mutually support atmosphere” (p. 324). Clearly, rapport and trust were viewed as critical for the group’s growth. Another strategy is sharing results publicly: “Teachers were invited to present their preliminary findings to a class of pre-service teachers,” which the author describes as an overall positive experience (Goodnaugh, 2004, p. 324).

Koch and Appleton (2007)’s qualitative study describes a model of professional development involving mentoring by a university science education professor working with elementary school science teachers. It asks the question: What “pedagogical changes in elementary science pedagogy could be identified when university science educators engaged in one-to-one mentoring of elementary school teachers?” (Koch & Appleton, 2007, p. 212). The study involved two university science teacher educators, two teachers in elementary school, and 49 students. The study’s methodology involved pre- and post- interviews, observations, and field notes from classroom visits over a ten-week span. Koch and Appleton (2007) conclude that one-to-one mentoring has short-term implications for implementing constructivist science teaching practices. They explain that successful mentoring models include facilitating the understanding of science content, exploring elementary science pedagogical content knowledge through modeling, and off-site professional development workshops. For example, one mentor was better able to ascertain than the mentee teacher students’ level of science content knowledge. The mentor understood that students could use the terminology of “atoms” and “molecules,” but the students’ understanding of dissolution was limited to text book definitions. The mentor used a drama to explain the process of dissolution, and students became visibly interested and began to understand the process better. This growth in student understanding led to future discussions and drama simulations about the topics of evaporation and crystallization. By the end of the

term, the teacher mentee was asking more questions that prompted students to think and develop their own understanding of science concepts.

McKeon and Vause's (2001) qualitative study of 64 K-12 teacher mentors and 26 teacher candidates examines the trial use of mentoring support materials that involved primarily checklists and sample lesson plans. These guiding materials were intended to "identify elements that are especially pertinent in planning, teaching, and assessing science, rather than those that focus on generic teaching" (McKeon & Vause, 2001, p. 9). The mentoring process involved guidance by the teacher mentors regarding lesson planning over a six to seven week period, guidance by the teacher mentors for planning of individual lesson plans, and classroom observation and debriefing sessions. The study's methodology included pre-trial questionnaires of both groups of participants, observations of three science lessons in which checklists were used, individual interviews of members of both participant groups, and group discussions including individuals from both participant groups. McKeon and Vause (2001) conclude that teacher candidates "valued the highly specific advice which they considered had helped them to improve their science knowledge and science teaching" (p. 16). Additionally, "these trainees appeared to realize that they had to think about their own knowledge both before and during lessons so that they could respond more effectively to children's questions" (p. 16).

Literature on English Content Mentoring

Friedman and Wallace's (2006) qualitative study examines a collaborative content mentoring initiative involving university English faculty, university Education faculty, high school English teachers, and secondary English teacher candidates. It asks the question: "What happens when English, education, and high school faculty cross borders to prepare secondary English teachers to teach in urban schools?" (Friedman & Wallace, 2006, p. 15). This three-year

multi-level project involved collaborative seminars, collaborative mentoring, and individual mentoring by all three mentor groups of English teacher candidates. The study's methodology included multiple data sources, including tape-recorded group discussions, individual interviews, reflective essays, and field notes. Friedman and Wallace conclude that the interventions "enhanced the quality of teacher preparation" and as a result "mentees incorporated suggestions made by mentors that reinforced pedagogical content knowledge" (p. 15). Most teacher candidates valued the role of their content mentors, the English faculty, because the teacher candidates' saw that the English faculty's focus of observation was different from their clinical supervisors' and cooperating teachers' focus: "Mentees regarded having a content mentor as a bonus and valued the deeper pedagogical content understanding they developed as a result of the collaboration" (Friedman & Wallace, 2006, p. 21). Content mentors' "specific content-focused critique and suggestions enhanced student teachers' instructional repertoires and thus pupil learning" (Friedman & Wallace, 2006, p. 21).

Comparing and Contrasting the Conclusions

Throughout the literature on content mentoring, there is a pervasive theme that content mentoring can serve as a means of strengthening the subject-specific pedagogical knowledge of teachers or teacher candidates, especially teachers' or teacher candidates' sensitivity to students' level of content knowledge and teachers' or teacher candidates' affinity for building student content knowledge constructively (Friedman & Wallace, 2006; Hudson, 2004; Koch & Appleton; 2007; McKeon & Vause; 2001). A few conclusions also suggest that content mentoring benefits the mentor as well as the mentee (Friedman & Wallace, 2006; Hudson, 2004; McKeon & Vause, 2001). Friedman and Wallace (2006) note that as a result of content mentoring, both English and education faculty, "revised instructional practices" and "assimilated

changes in personal pedagogy based on observations and discussions with urban high school teachers” (p. 15). Hudson (2004) concludes the training and guidance of mentors for subject-specific mentoring also can be “used as a form of professional development for the mentor in the dual roles as teacher and mentor” (p. 145). Similarly, McKeon and Vause (2001) state: “Teachers also reported that their own practice improved and indicated that the [mentoring support] material would be valuable in science in-service training with their colleagues” (p. 5). The teachers considered the checklist questions helpful in giving them guidance on what science issues mentees often need help. Additionally, the teachers generally felt that using the checklists helped them “systematically analyze the teacher candidates’ difficulties in a way that had helped the teachers themselves gain greater insights into their own practice, helping them to become more effective practitioners” (McKeon & Vause, 2001, p. 17).

Along these lines of dual benefits in mentoring programs, Goodnaugh (2004) points out: “In order for... partnerships to be productive, each group within the partnership must have its goals met. At times, goals may be common goals shared by all, while at other times the goals for each group and for individuals within groups may vary” (p. 328). In other words, benefits for both mentors and mentees should not simply be an unexpected bonus but something strived for in order to maintain the notion of a successful partnership. Hudson (2004) also makes the insightful point that “mentor education is currently inadequate for... mentoring in specific subject areas” and “for mentees to receive equitable mentoring in specific subject areas would require mentors to be educated on mentoring skills for specific subjects” (p. 144). The research clearly suggests the benefits of content mentoring, and Hudson makes the reasonable point that front-end preparation efforts for the training of content mentors should receive more attention in mentoring programs.

Concentrations and Gaps in the Research

The literature on content mentoring conveys clear concentrations and gaps in the research. The inclusion of only five articles in this review, one conceptual (Hudson, 2004) and four empirical (Friedman & Wallace, 2006; Goodnaugh, 2004; Koch & Appleton, 2007; McKeon and Vause; 2001) indicates a clear dearth in the research on content mentoring. Additionally, only the Friedman and Wallace (2006), Hudson (2004), and McKeon and Vause (2001) articles address content mentoring of teacher candidates; Goodnaugh (2004) and Koch and Appleton (2007) examine content mentoring of K-12 teachers. The only two subject areas covered in subject-specific studies are secondary English (Friedman & Wallace, 2006) and elementary science (Goodnaugh, 2004; Koch and Appleton, 2007; McKeon & Vause, 2001). Additionally, the four empirical studies are all qualitative and involve a multi-strand methodology of data sources such as interviews, discussions, observations, and documents (Friedman & Wallace, 2006; Goodnaugh, 2004; Koch and Appleton, 2007; McKeon & Vause, 2001). Only Friedman and Wallace's (2006) and Koch and Appleton's (2007) studies examine mentoring initiatives involving university faculty. Furthermore, only Friedman and Wallace's (2006) study involves arts and sciences faculty. Finally, only one study (Friedman & Wallace, 2006) considers affective consequences of content mentoring, such as professional esteem or an increased university-wide commitment to teacher education. Friedman and Wallace (2006) conclude that discussions between English faculty, teacher candidates, and K-12 teachers, "challenged [English faculty's] personal beliefs about urban students and schools" (p. 15). Clearly, there is a need for more research on content mentoring in all disciplines, especially the humanities, content mentoring focused on teacher candidates, and content mentoring initiatives involving universities, particularly arts and sciences faculty. Additionally, there is a need for

more research that have a broader consideration of initiatives' outcomes. I hope that this dissertation will respond in part to these gaps in the research on content mentoring.

Chapter III

Research Methods

The purpose of this study was to examine the value of content mentoring for pairs of arts and sciences faculty members and teacher candidates in the same discipline. In this qualitative investigation, I used interviews with a group of teacher candidates and arts and sciences faculty mentors as the primary data source. I also used a sociocultural theoretical perspective and interpretive qualitative analysis techniques to explore this problem and describe how content mentoring influences mentors and mentees. As the literature review suggests, this approach of focusing on content mentoring—especially its influence on mentors as well as mentees—has rarely been used in education research. Interviews explored participants' initial hopes about their participation in content mentoring, most helpful and least helpful experiences, changes in their orientation toward teaching, sense of professionalism and collegiality, awareness of good pedagogical practices, sense of urban schools and urban students, and whether or not they would recommend content mentoring to others. The interviews also explored the influence of the mentoring experience on teacher candidates' content knowledge, pedagogical content knowledge, and sense of professional esteem.

In this chapter, I explain the appropriateness of sociocultural theory for this study. Next, I review interpretive qualitative methodologies and the appropriateness of these approaches for this study. Following, I explain the study's research design, including the research participants, data collection procedures, and data analysis procedures. Finally, this chapter will discuss considerations for maintaining the integrity of the study, including issues of rigor, reflexivity, and triangulation.

Appropriateness of a Sociocultural Theoretical Framework

Sociocultural theory holds that cultural reality guides and interprets social behavior (Geertz, 1973). In other words, it is through individuals' behaviors that cultural knowledge finds expression (Geertz, 1973). The theory also assumes that the dimensions of meaning in cultural experience can be uncovered through the study of language, and even though some cultural knowledge is expressed explicitly through language, a large part is tacit in language (Spradley, 1979). Sociocultural theory includes the notion that individuals' cognitive developmental processes, their learning processes, are products of their society and culture. Different cultures have various systems, including beliefs, values, manners, normative behaviors, and practices. Our socialization within a specific culture and society molds our behavior and teaches us right from wrong. Social constructionists believe meaning is socially, historically, and rhetorically constructed, and human thought is innately social – social in origin, function, form, and application (Geertz, 1973). This theoretical framework is appropriate for a study examining the effect of content mentoring on a group of mentors and mentees because both the predictor variable—the One-on-One Content Mentoring program—and the outcome variables—including acquired knowledge, awareness of new pedagogical strategies, and views of educational contexts—are shaped by social experiences.

Because this study is interested in examining the influence of a one-on-one content mentoring program, an inherently social experience, on mentors and mentees, the social interaction and personal growth elements of sociocultural theory are particularly relevant for this study. Sociocultural theory suggests that social interaction leads to continuous step-by-step changes in individuals' thoughts and behavior. The theory recognizes the combined effects of social environment and cognition on individuals. The theory suggests that individuals acquire

the ways of thinking and behaving that make up a culture by interacting with a more knowledgeable person, such as a mentor (Vygotsky, 1986). Furthermore, sociocultural theory holds that there are three major cultural tools by which an individual is influenced and develops new ways of thinking and new behaviors. First, through the tool of imitative learning, one person tries to imitate or copy another. Secondly, through the instructed learning tool, an individual remembers the instructions of a teacher or mentor and then uses these instructions to self-regulate. Thirdly, through the collaborative learning tool, a group of peers strives to understand each other and work together to learn a specific skill (Tomasello, Kruger, & Ratner, 1993). These learning opportunities based on social interaction are the intention of mentoring opportunities, making sociocultural theory highly appropriate for this study.

Appropriateness of Interpretive Qualitative Research

In this study, I utilized interpretive qualitative research methods, in which data was examined and analyzed to make meaningful explanations of “socially and culturally organized environments” (Shulman, 1986, p. 20). Interpretive qualitative research and sociocultural theory are a natural pairing because both are guided by a desire for in-depth understanding of the cultures in which individuals live and work. Qualitative research uses a naturalistic approach that seeks to understand phenomena in context-specific settings. It is the kind of research that produces findings based on real-world settings where the “phenomenon of interest unfold naturally” (Patton, 2001, p. 39). Unlike quantitative researchers who use causal determination, prediction, and generalization of findings, qualitative researchers seek illumination, understanding, and extrapolation to similar situations (Hoepfl, 1997). Qualitative researchers do not use a rigid a priori framework on the social world; they want to learn what constitutes important questions from the participants themselves. No formal hypotheses are cast prior to the

study, but researchers do bring a conceptual framework and guiding questions (Rossman & Rallis, 2003). Because I examined and analyzed participants' contexts, values, and beliefs in hopes of better understanding the nature of mentoring relationships, and because I conducted this study with a sense of openness to new ideas and new findings, an interpretive qualitative approach is appropriate.

Additionally, the deductive and inductive nature of my research fit well with an interpretive qualitative method. My analytical approaches used deductive reasoning based on my literature review as well as inductive reasoning based on interesting findings from the data and my own creativity and intuition. The deductive reasoning in my data analysis helped situate my findings in the research, and the inductive reasoning helped maintain the complexity of the research and prevented it from being oversimplified and trivialized (Rossman & Rallis, 2003).

Interview analysis also fit well with my sociocultural interpretive approach because as a researcher, I searched for meaning that participants made of their experience. Spradley (1979) explains that this type of meaning is expressed through symbols, which includes participants' spoken words. He argues that language is the primary symbol that encodes cultural meaning in every society. So, by decoding cultural symbols in an interview and identifying coding rules in an interview, a researcher can organize an understanding of interviewees' views of reality (Spradley, 1976). Geertz stresses that the cultural structures, such as those present in interviews, should be as codifiable as any other science: "There is no reason why the conceptual structure of a cultural interpretation should be any less formulable... than that of, say, a biological observation or a physical experiment" (Geertz, 1973, p. 25). Interpretive qualitative research not only values the meaning rooted in individuals' lives and perceptions, but strives to make it systematic and transparent, on par with other paradigms' knowledge production.

Research Design

This study sought to understand the value of content mentoring for both mentors and mentees in the same discipline. Each participant was asked direct questions about their mentoring participation motivation, initial concerns, perceptions of students and school culture, curriculum, pedagogy, the teaching profession, and what participants learned from their mentor or mentee. Participants were asked about the factors that influenced changes in their knowledge and views; questions probed to get at a deeper understanding of the relationships between these factors. Participants were encouraged to share specific examples and incidents. In other words, participants were not simply asked what aspects of the mentoring influenced changes in their knowledge and views, but *how* these factors influenced these changes. Interpretive qualitative analysis techniques revealed similarities and differences among participants and among and between questions, generating descriptive models.

Programmatics and Context

Boston College's One-on-One Content Mentoring Program originated in a funded initiative by the Massachusetts Coalition for Teacher Quality and Student Achievement and a Boston College Lynch School of Education Collaborative Fellows Grant. This initiative built collaborative efforts between Boston College's School of Arts & Sciences and its School of Education to strengthen teacher education. This initiative grew into the Boston Collaborative Fellows Program, which was solidified by a generous and anonymous endowment gift. The Collaborative Fellows Program was based on the assumptions that "the most effective preparation of teachers is collaborative and results from a dialogue of educational discourses that includes discursive subject mentoring" and that "collaborative mentoring has the potential to enhance not only student teacher's content and pedagogical content knowledge but also habits of

critical reflection and inquiry into practice of all stakeholders” (Friedman & Wallace, 2006, p. 16).

This initial endeavor and Boston College’s university-wide commitment to teacher education was strengthened by the university’s participation in the Carnegie Corporation’s Teachers for a New Era (TNE) initiative. As one of eleven TNE institutions preparing, assessing, and supporting teachers of tomorrow, Boston College committed itself to working further to improve teacher preparation and K-12 pupil learning through continued collaboration among education and arts and sciences faculty (Boston College Teachers for a New Era, n.d.). Teachers for a New Era is a teacher education reform initiative undertaken by the Carnegie Corporation of New York, the Annenberg Foundation, and the Ford Foundation to improve pupils’ learning and overall school effectiveness by developing college- and university-based teacher education programs in the United States (Boston College Teachers for a New Era, n.d.). Boston College’s Teachers for a New Era initiative (BC TNE) offers several types of mentoring opportunities to faculty and teacher candidates. The purpose of these opportunities is to support teacher candidates’ development of content knowledge for teaching.

The One-on-One Content Mentoring program is one such mentoring program. This program in the Lynch School of Education at Boston College pairs arts and sciences faculty with full-time student teachers from the Lynch School who are teaching in the Boston area. Before serving as mentors, arts and sciences faculty attend a three-part seminar that addresses the work of content mentoring. The seminars describe the mission of the Lynch School of Education—including its mission of teaching for social justice—and explore how faculty from arts and sciences can constructively address matters of teaching style, curriculum content, and skills. The seminar further discusses the role of high-stakes testing in teacher preparation, and it includes readings on the state of the profession, including such

topics as the status of particular content areas at the elementary and high school level. After completing the seminar, each arts and science faculty member is paired with a student teacher in his or her discipline. The mentors observe and conference with their student teachers three times throughout the semester. Mentors strive to support and guide teacher candidates during the critical student teaching stage of their professional development. A goal of the program is for teacher candidates to receive help shaping curriculum, devising assignments, and developing new approaches to teaching subject matter knowledge. The program also intends for mentors to benefit from the partnership by learning effective approaches for instruction in a particular content area and gaining a better understanding of school cultures, teacher expectations, and the realities of urban schools (One-on-One Mentoring Content Program Manual, 2008).

All previous mentors or faculty who have completed the training seminar are invited to be on a list of potential mentors that accompanies a letter of invitation to all teacher candidates prior to their full practicum experience. Teacher candidates are invited to participate in the program, and if they elect to do so also indicate a preference for their mentor. (See Appendices A and B for program invitation letters.) If student teachers do not request a specific mentor, the program director of the One-on-One Mentoring program assigns pairings based on participants' major and area of expertise. During the duration of the semester-long program, arts and sciences professors observe and mentor their teacher candidate mentees during his or her full-practicum semester in a Boston-area school. Before the first visit to the high school, the arts and sciences professor and the teacher candidate meet to discuss the teacher candidate's proposed syllabus and expectations for the mentoring process as well as to arrange the classroom visits. By making three class visits to the teacher candidate's school, the mentor becomes familiar with the teacher candidate's goals and hopefully engages the teacher candidate in a useful and

specific dialogue on matters relating to content (One-on-One Content Mentoring Program Manual, 2008).

Participants

Research participants included the arts and sciences faculty members and the teacher candidates from the Lynch School of Education who participated in the One-on-One Mentoring program during the Fall 2008 semester. At the beginning of the semester, six pairs of mentors and mentees were established and each program participant was informed of his or her successful match and the contact information for his or her mentor or mentee. Two of the six pairs did not successfully complete the semester-long program. In the case of both pairs, all individuals were not informed of their mentor or mentee's identity until several weeks into the semester. None of the mentors or mentees initiated contact with his or her partner to set up an initial meeting to meet each other, discuss the teacher candidate's syllabus, and arrange classroom visits. The relative lateness of the matches and the unclear expectations that mentors and mentees should initiate their own initial meeting contributed to the mentors' and mentees' lost interest in the program.

Table 1 includes demographic and background information for mentor and mentee participants gathered from the participants' demographic questionnaires. (See Appendices E and F for demographic questionnaires.) In this chapter, I refer to participants by their mentoring pair number, i.e., Mentor 1 or Mentee 1.

Table 1

Demographic and Background Information for One-on-One Content Mentoring Pairs

	Mentoring Pair #1	Mentoring Pair #2	Mentoring Pair #3	Mentoring Pair #4
Discipline	Spanish	English	English	Mathematics
School Setting	Suburban	Urban Public	Urban Public	Suburban Public

	Public Multicultural High School	High School	High School	Multicultural High School
Mentee Selected mentor	Yes	Yes	Yes	Yes
Mentee had mentor in class	Yes	Yes	Yes	Yes
Mentor's gender	Female	Male	Female	Female
Mentee's gender	Female	Female	Female	Male
Mentor's race/ethnicity	White/Caucasian	White/Caucasian	White/Caucasian	White/Caucasian
Mentee's race/ethnicity	White/Caucasian	Latino/Hispanic/Puerto Rican	Asian	White/Caucasian
Mentor has been a One-on-One mentor before	No	Yes	Yes	No
Mentor has taught in a K-12 school	Yes	No	No	No
Mentor's professional status	Senior Lecturer	Associate Professor	Senior Lecturer	Associate Professor

Data Collection Process

Consistent with the theoretical framework, this study utilized interviews to explore the value of a content mentoring program for both teacher candidates and their faculty mentors. A 60-75 minute semi-structured interview was audio recorded with each of the eight participants. I used an interview protocol of 12 or 15 questions for arts and sciences faculty mentors and teacher candidates respectively; some of the interview questions also had sub-questions. The questions addressed several themes, including mentoring participation motivation, initial concerns, perceptions of students and school culture, curriculum, pedagogy, the teaching profession, and what participants learned from their mentor or mentee. Data collection also included a 14- or 17-question demographic questionnaire for the teacher candidates and arts and sciences faculty mentors respectively. (See Appendices C and D for interview protocols and Appendices E and F

for demographic questionnaires.) Finally, data collection also included student teaching evaluation forms, Pre-service Performance Assessments (PPAs) for each teacher candidate completed by his or her practicum clinical supervisor, a staff member from the Boston College Lynch School of Education. The PPA includes seven field performance standards for teacher candidates developed by the Massachusetts Department of Education Standards and the Lynch School of Education. The seven standards are: (A) Plans curriculum and instruction, (B) Delivers Effective Instruction, (C) Manages classroom climate, (D) Promotes Equity and Social Justice, (E) Meets Professional Responsibilities, (F) Assesses and promotes pupil learning, and (G) Demonstrates and inquiry stance in daily practice. At the conclusion of a teacher candidate's student teaching experience, his or her practicum supervisor completes a PPA for him or her. I acquired copies of teacher candidates' PPAs from the Practicum Office at the Lynch School of Education, where they are kept on file. (See Appendix G for sample PPA.)

I conducted interviews in a variety of settings based on the needs and preferences of the participants. Interview locations included professors' offices, cafes, and libraries. To ensure that I informed participants of potential risks and the conditions of the research, I sent an application to the Institutional Review Board at Boston College for approval of the study, and I received an exempt status for the study. Informed consent forms were gathered from the participants prior to the interviews and administration of questionnaires.

The interview protocols are informed by research findings of studies examining content mentoring programs and protocols from similar qualitative interview-based studies exploring the experiences of mentors and teacher candidates. Integrate a few examples to give the reader a sense of the content of some of these questions. Some interview questions are based on research findings indicating which factors are important motivators or consequences of mentoring

programs in teacher education. Interview questions and questionnaire items are also informed respectively by previous interview protocols and questionnaires used by the Teachers for a New Era project at Boston College for research projects focused on content support programs for teacher candidates. Interview questions are based largely on previous interview protocols for the One-on-One Content Mentoring program used in previous semesters, which were developed by Professor Audrey Friedman, Professor Elizabeth Wallace, and Dr. Amy Ryan of Boston College.

I intended for the interview protocols' semi-structured approach to encourage the participants' answers to be expansive and the flow of the interview to be fairly conversational. Bogdan and Biklen (1992) explain that the degree of an interview guide's structure depends on the scope of the research topic: "Some interviews, although relatively open-ended, are focused around particular topics or may be guided by some general questions. Even when an interview guide is employed, qualitative interviews offer the interviewer considerable latitude to pursue a range of topics and offer the subject a chance to shape the content of the interview" (p. 58). I intended for the protocols' semi-structured approach to give mentors and mentees enough latitude to raise meaningful and interesting points and examples about their mentoring experiences while ensuring that several key topics were covered, such as their motivation for participation, views on curriculum, and perceptions of urban education. By identifying a few broad topics, I hoped to "uncover [each] participant's meaning or perspective but otherwise respect how the participant frames and structures responses" (Rossman & Rallis, 2003, p. 181). I intended for open-ended questions followed by several options of requests for elaboration to keep the balance of talk in favor of the participant and indicate that I was interested in more than superficial accounts in addressing this research question. By asking for specific examples after repeating contextual information given by participants, I sought to place participants' mentally in

their mentoring setting in hopes of facilitating their recollection of significant details of the experience (Spradley, 1979).

Although the interview protocol has several purposes, I took care to order the questions so as not to disrupt some of the more interesting, expansive topics (Bogdan & Biklen, 1992). For example, some questions are aimed at determining possible improvements in the program and program logistics. In an effort to prevent the more program-based questions from interrupting the flow of the responses focused on the heart of the interview—perceptions of students and school culture, curriculum, pedagogy, and the teaching profession—I ordered the questions to allow the more significant questions and hopefully expansive responses to progress uninterrupted. Again, provide several examples. I intended for the order of the questions to encourage rapport and trust between the participant and myself—key qualities in interpretive, qualitative research (LeCompte, 1995; Rossman & Rallis, 2003).

Data Analysis

To analyze the data, I used techniques from interpretive qualitative research to create models that describe the value of content mentoring arts and sciences faculty members and teacher candidates. Specifically, analysis drew upon methods and assumptions common to many forms of interpretive qualitative research, including elements of open coding, grounded theory, and ethnographic study. These approaches were adopted for this study along with credibility procedures of triangulation.

After I conducted the eight interviews, a transcriptionist or I transcribed the interviews. Those interviews transcribed by the transcriptionist were “cleaned,” in that I went over the transcripts and the digital recording to ensure the transcripts’ accuracy. Once transcripts were completed and cleaned, I began the process of coding.

Open Coding

Strauss (1987) stresses that coding is much more than simply giving categories to data. Coding is about conceptualizing the data, raising questions, providing provisional answers about the relationships within and among the data, and discovering data. As Seidel and Kelle (1995) explain, the role of coding is to undertake three kinds of operations: (a) noticing relevant phenomena, (b) collecting examples of those phenomena, and (c) analyzing those phenomena in order to find commonalities, differences, patterns, and structures. This multilayered process of coding includes several steps starting with an initial round of open coding. Open coding is done by “searching the data corpus,” carefully reviewing the data to note emerging patterns, themes, and even discrepant cases (Erickson, 1986).

During open coding, I sought to reveal emerging conceptual categories or abstractions from the data that capture participants’ responses (Glaser & Strauss, 1967). I looked for key issues and “categories of focus” (Glaser & Strauss, 1967) and “larger units of cultural knowledge” (Spradley, 1979, p. 94). I labeled each of these large units a “domain,” which Spradley defines as a “symbolic category that includes other categories” (Spradley, 1979, p. 100). In establishing domains from the data, I was mindful of the understanding that a domain is a collection of categories that share a certain kind of relationship. A domain must have a cover term, have subcategories of included terms, and have a single unifying semantic relationship between its included terms and its cover terms (Spradley, 1979). For example, “computer” could be the cover term of a domain, Dells and Macs could be included terms in this domain, and the semantic relationship between the included terms and the cover term are that included terms are all *kinds* of the cover term (Spradley, 1979).

Domain Analysis: Categories and Subcategories

As coding continued, I sought to examine the domains further. Spradley stresses that it is important to consider the boundaries of each domain. I was mindful that some interview data may belong inside one domain and another set of data may belong outside that particular domain. As I continued domain analysis, I realized that some domains were larger than others and included subsets. For example, as I analyzed the transcripts of One-on-One mentors' interviews, I realized that the domain "Motivations to Serve as a Content Mentor" included several subset categories. As I examined, re-examined, compared, and contrasted mentors' explanations of their motivations to participate in the program, I became aware of different types of mentors' motivations, including personal motivation rooted in having children in K-12 public schools as well as a desire to continue involvement with Boston College's Teachers for a New Era initiative.

I also realized during domain analysis that some domains were actually subsets of later realized domains (Spradley, 1979). For example, in three of the mentors' interview transcripts, I noticed an articulation of the importance of supporting teacher preparation. Strands within this theme include a view that it is inherently important to support new public school teachers as well as an awareness that university faculty may have current K-12 students as students one day and so supporting K-12 education is inextricably linked with university teaching. I realized this domain of mentors' perceptions of the importance of contributing to teacher preparation, while having its own strands, was also a sub-domain of "Motivations to Serve as a Content Mentor." (See Appendix H for coding keys and analysis of mentor data.)

Axial Coding: The Relationships between Domains

In addition to organizing a framework of domains and subsets domains, I engaged in axial coding. In axial coding, domains and subsets of domains are tested and further analyzed to reveal how categories are related (Glaser & Strauss, 1967). This analytic approach “involves trying to discover what sort of relationship—if any—exists between two (or more)” concepts (Miles & Huberman, 1994, p. 258). The importance in qualitative analytic work lies in establishing and thinking about such linkages, not just the mundane processes of coding (Coffey & Atkinson, 1996). Charmaz (2006) views axial coding as highly structured and significant because it helps to clarify and to extend the power of the researcher’s emerging ideas. During axial coding, I sought to establish types of relationships between domains and subsets of domains including phenomena, causal conditions, context conditions, intervening condition, action strategies, and consequences (Strauss & Corbin, 1998). For example, in the sub-domain “Logistical Benefits for Mentees,” I noted a couple strands, including one mentee’s articulation of the benefits of receiving individualized support from a content mentor and another mentee’s articulation that the program was logistically easy for him since his mentor came to the practicum site. I noted axial codes for each of these strands, connecting them to the domain “Motivations to Participate as a Mentee.” Each of these two mentees perceived a logistical benefit, or a program consequence, that was the fruition of a motivation to participate in the program: one-on-attention or logistical convenience. (See Appendix I for coding keys and analysis of mentee data.) Again provide a few examples.

Constant Comparison: Not a Linear Process

Although I use distinct terminology such as open coding, domain analysis, and axial coding in this study, it is important to stress that my data analysis was not a linear process.

Throughout data analysis, I engaged in constant comparisons among and between participants, among and between emerging domains and subdomains, and among and between axial codes. I also examined conceptual categories from the participants' demographic questionnaires as another layer in the domain analysis. I often reconceptualized domains, subdomains, and axial codes. As I expected, interpretive qualitative analysis was not a neat or sequential process.

My analytic comparisons constantly resulted in refined concepts and distinguished elements of categories (Glaser & Strauss, 1967; Goetz & LeCompte, 1984; Spradley, 1979). For example, during my analysis of program benefits to mentees, I originally grouped together all mentee interview transcript segments that related to positive affective consequences, such as mentees' encouragement by content mentors and mentees' enhanced sense of confidence in their teaching ability. As I continued my analysis of these affective benefits, I re-grouped and further organized interview segments with more detail. I realized that interview data suggesting mentees' confidence was strengthened by mentors could be its own sub-domain and the other affective positive consequences could be grouped together as a sub-domain titled "Professional Growth." Once I established these two sub-domains of the larger domain "Additional Benefits for Mentee," I delved further into each sub-domain and articulated several strands for each, including strains of "Professional Ability" and "Teaching Manner" under the "Furthered Confidence of Mentee" sub-domain and strains of "Sense that Collaboration is Important" and "Discussions about Graduate School" under the "Professional Growth" sub-domain. (See Appendix I for coding keys and analysis of mentee data.)

Memoing

I utilized the strategy of memoing to assist my coding and domain analysis. Glaser (1978) defines memoing as the theorizing write-up of ideas about substantive codes and

their theoretically coded relationships as they emerge during coding, collecting and analyzing data, and during memoing. Memoing is especially helpful as an ingredient of the constant comparison process because it helps focus conceptual categories into more concrete codes. During memoing, the researcher conceptualizes and reconceptualizes the data. Memos are important tools both to refine and keep track of ideas that develop when the researcher compares incidents to incidents and then concepts to concepts in the evolving framework of findings (Glaser, 1978). As Miles and Huberman (1994) explain, memoing is an important analytic tool used by qualitative researchers at all stages of the research process. It can capture how the researcher is thinking, even unconsciously, about what is happening, and as a result pushes the analysis further.

Memoing was especially helpful to me when making axial code connections between domains and sub-domains. For example, I jotted down many notations about school resources in mentors' interview transcripts, including details on classroom materials, school buildings, and even atmospheric perceptions based on school building resources. Memoing aided me in realizing that comments by mentors about resources arose in several different domains and sub-domains, and consequently, I noted a number of axial codes relating to resources. For example, two of the mentors expressed their realization that urban schools often have less classroom resources than suburban schools, and for one of these mentors, this conversation dovetailed with an earlier point in his interview that he was motivated to contribute to teacher preparation because he himself has children in K-12 urban public schools. The axial code connecting professors' developed understanding of resources in K-12 public schools, which I frame as a sub-domain of "Understanding of Teaching for Social Justice," stresses that mentors' personal

and principle-based motivations to participate in the program may become developed as their understanding of school resources and justice issues develops.

Memoing also helped me realize similar themes noted by mentors and the frequency of certain topics in my memoing encouraged me to examine participants' demographic profiles to see if there were any relevant similarities. For example, I was able to note that the three mentors who expressed a deeper understanding of "teaching for social justice" by their furthered awareness of resources in public classrooms had no prior K-12 teaching experience. This background similarity suggests a value of on-site mentoring for university faculty because of their potentially increased awareness of K-12 school realities. (See Appendix H for coding keys and analysis of mentor data.)

Maintaining the Integrity of the Study

"Rigor" in Qualitative Research

Because quantitative and qualitative research differ greatly in their framework of research integrity, it is important to clarify the understanding of research credibility in qualitative research. In quantitative research, a criterion, readers use to judge whether it has been rigorously conducted, is whether the results are replicable. This standard presumes that the results are even possibly replicable because the instrumentation used for gathering is reliable and replicable itself. In other words, the primary question is, "If the study is repeated, will the results be the same?" (Rossman & Rallis, 2003, p. 67). While the credibility in quantitative research depends on instrument construction, in qualitative research, "the researcher is the instrument" (Patton, 2001, p. 14). The credibility of a qualitative research study depends on the ability and effort of the researcher. So, a major difference in qualitative research is that its purpose is not to immaculately replicate what has gone before, and furthermore, such replication is impossible

given the dynamic nature of the social world and the fact that the researcher is not an instrument in the experimental sense (Rossman & Rallis, 2003). Furthermore, qualitative research assumes that realities, such as those in a classroom, are constantly changing and contextually based. So, the standard of generalizability is not part of the qualitative research vocabulary. Instead, the question of credibility centers more on the question of whether what is learned in one study can be useful for other settings (Rossman & Rallis, 2003).

Appropriate Qualitative Terminology Regarding Integrity

When judging qualitative work, Strauss and Corbin (1998) suggest that the “usual canons of ‘good science’ ... require redefinition in order to fit the realities of qualitative research” (p. 250). For qualitative studies, this historic concern in rigor “shifts to a consideration of how thoughtfully and dependably the researcher conducted the study... Was the study well conceived and conducted? Are decisions clear?” (Rossman & Rallis, 2003, p. 67). Qualitative research uses terminology such as replication, trustworthiness, transferability, and credibility instead of terminology such as rigor and validity (Anfara, Brown, & Mangione, 2002; Lincoln & Guba, 1985). Replication is assessed by whether or not the study was conducted thoughtfully using dependable methodologies of data collection and analysis (Rossman & Rallis, 2003). A useful standard of replication is consideration of whether another researcher would “concur with the results of the study, given the data collected” (Rossman & Rallis, 2003, p. 67). The term “trustworthiness” in qualitative research means the study is “defensible” (Johnson, 1997, p. 282) and that there is a general sense of confidence in the research (Lincoln & Guba, 1985). Seale (1999) explains: “Trustworthiness of a research report lies at the heart of issues conventionally discussed as validity and reliability” (p. 266). Transferability is defined as “the degree to which a study is ‘transferable’ to [readers’] own context of interest” (Seale, 1999, p. 266) Finally,

credibility is defined as the “extent to which the data, data analysis, and conclusions are believable and trustworthy” (Lather, 2001, p. 244).

Throughout the data collection and analysis processes, I was mindful of these appropriate standards in an effort to maintain a high degree of credibility for this study. For example, during my interviews with mentees, while we were conversing about benefits to them of gained knowledge, particularly content knowledge, I realized that a couple of the mentees sometimes described content knowledge they gained from their content mentor while they were students in their mentors’ classes and sometimes described content knowledge they gained from their mentors as a result of the content mentoring program. Both mentees initially did not distinguish clearly the sources of their gained content knowledge, and I probed further and encouraged them to articulate examples of content knowledge they gained from their mentor and when they originally gained the knowledge. My original intent in this further probing was to make it clear in the interview data that some of the mentees’ gained content knowledge from mentors was from outside the One-on-one Content Mentoring program. This attempt to be trustworthy on my part also raised the valuable point that content mentoring can alert teacher candidates to their own content knowledge previously gained from classes and how they can integrate it into their student teaching. For example, one mentee explained how he used statistics examples his mentor used in her university class and broke the problems down into simpler steps that could then be accessible to his high school students. (See Appendix I for coding keys and analysis of mentee data.)

Reflexivity

In addition to maintaining mindfulness of credibility guidelines in qualitative research, I aimed to maintain a reflexive stance throughout the study in order to strengthen the integrity of

the study. Reflexivity involves recognizing and making clear the assumptions and biases the researcher has and how they may impact a study and its findings. Using a reflexive approach, I continually examined my own preconceptions and biases in the iterative process between data analysis and presentation of findings. I am a former high school teacher who left classroom teaching to pursue further education. Additionally, I have helped facilitate the One-on-One Content Mentoring Program in previous seminars as a graduate assistant at Boston College. These experiences could have influenced how I interpreted the data.

I was especially mindful of not assuming that I understood participants' points of view because they were similar to my own or because I was familiar with the program's logistics and previous participants' experiences (Charmaz, 2006). For example, during my interviews of the teacher candidates, I asked if they had any questions or concerns going into the mentoring experience. All of them expressed that they were uncertain about the logistics of the program, such as how it would officially start, who would contact them, how it would run throughout the semester, and what was expected of them once the three mentoring sessions were completed. Although I did not serve as the One-on-One Content Mentoring program facilitator for the Fall 2008 semester, I have in previous semesters and have helped draft invitation letters to participants and maintained e-mail correspondence with previous program participants throughout their semester-long experience. During the interviews, I did not express surprise or discomfort at some of the apparent logistical slips in the facilitation of the program during the Fall 2008 semester. I encouraged each mentee to share further their perceptions of how the program ran and any recommendations they have for revising the program.

However, my professional and academic background was also an asset during the interviews. During the interview and administration of the questionnaire, I introduced myself to

participants. Consequently, they knew I have a background in education, teaching, and this particular mentoring program. My background was especially helpful when I interviewed the mentors. Rossman and Rallis (2003) explain that “elites” or experts often want “an active interplay with the interviewer” and they respond well to “open-ended questions that allow them the freedom to use their knowledge and imagination” (p. 192). As the interviewer, I was able to “establish competence by displaying a thorough knowledge of the topic or, lacking such knowledge, by projecting an accurate conceptualization of the problem through shrewd questioning” (Rossman & Rallis, 2003, p. 192)

Triangulation

One strategy to help ensure that one’s qualitative study is credibly conducted is to rely on multiple methods for gathering data, thereby enhancing the complexity of what one learns in the field (Rossman & Rallis, 2003). Taking this strategy into account, I also utilized the technique of triangulation to strengthen the integrity of this study, particularly the credibility and trustworthiness of my findings. In triangulation, multiple sources of data, multiple points in time, or a variety of methods are used to build the picture that the researcher is investigating (Rossman & Rallis, 2003). Similarly, Patton (2001) advocates the use of triangulation by stating “triangulation strengthens a study by combining methods” (p. 247). Triangulation helps ensure that [the researcher has] not studied only a fraction of the complexity that [she seeks] to understand” (Rossman & Rallis, 2003, p. 69). As Mathison explains, “Triangulation has arisen as an important methodological issue in naturalistic and qualitative approaches [in order to] control bias and establish valid propositions because traditional scientific techniques are incompatible with this alternative epistemology” (Mathison, 1998, p. 13). I examined teacher candidates’ Pre-service Performance Assessments (PPAs) as I analyzed both teacher candidates’

and arts and sciences faculty mentors' interview transcripts so that I would have a check on my own analytical findings. The instrumentals of the PPAs were developed by individuals other than myself and administered by individuals other than myself, so their findings served as an unbiased counterpart to my own analytical findings.

After I completed open coding and domain analysis of participants' transcripts and established major domains and sub-domains, I assigned relevant items from the PPA to certain sub-domain levels if the topic of the PPA item and the domain category were similar. For example, under the mentee sub-domain "Professional Growth," I noted several strands. For the "Sense that Collaboration is Important" strand, I assigned the PPA item #E4: Teacher candidate collaborates with colleagues to improve instruction, assessment, and student achievement. For the "Important to be Inspired by Discipline" strand, I assigned the PPA item #E2: Teacher candidate conveys knowledge of and enthusiasm for his/her academic discipline to students. For the "Discussions about Graduate School" strand, I assigned the PPA item #E3: Teacher candidate maintains interest in current theory, research, and developments in the academic discipline. In my analysis of mentor and mentee data, I noted if the practicum supervisors' numerical ratings of teacher candidates' performance indicators were in general agreement with or differed from my analysis of what the mentees or their content mentors indicated during their interviews. I noted that scores of two, representing proficient performance of an indicator, and three, representing exceptional performance of an indicator, may demonstrate a degree of general agreement between my analysis of participants' interview transcripts and a third party's assessment of similar performance indicators. However, since teacher candidates generally receive scores of at least two, I determine that a score of two does not necessarily indicate a strong level of credibility. Since scores of three are much rarer and are intended to indicate

exceptional performance of an indicator, I determine that a score of three is a notable indicator of trustworthiness with regard to my coded analysis. (See Appendices H and I for coding keys and analysis of mentor and mentee data.)

Conclusion

In summary, through this study I sought to explore the value of content mentoring for pairs of arts and sciences faculty members and teacher candidates in the same discipline by conducting interviews with and administering demographic questionnaires to four pairs of teacher candidates and their arts and sciences faculty mentors who have participated in Boston College's One-on-One Content Mentoring program during the Fall 2008 semester. I used interpretive qualitative analysis techniques to analyze the data and generated descriptive models explaining how content mentoring affects both mentors and mentees through a process of simultaneous data collection and analysis.

Chapter IV

Results and Analyses

In this chapter, I describe and discuss the results from the open coding, domain analysis, constant comparison analysis, axial coding, and triangulation I conducted. (See Appendices H and I for analyses of mentor and mentee data.) I delineate the major domains found in the interview transcripts of the mentors and mentees, and I outline the sub-domains within each major domain. Within applicable sub-domains’ descriptions, I include triangulation information if there was an appropriate PPA item that corresponded to a sub-domain level. Within applicable sub-domains’ descriptions, I also note relevant similar demographic characteristics of mentors or mentees if three or four participants are present in a sub-domain. I chose a cut-off of three participants because there are four pairs of mentors and mentees so three participants would note a majority, suggesting possible relevancy. Finally, throughout the analyses, I note axial codes connecting domains and/or sub-domains based on the content of the interview transcripts.

Figure 1 includes a summary of open coding, domain analysis, and triangulation of content mentor and mentee data for the domain. (See Appendix H for complete coding keys and analysis of content mentor and mentee data.)

Figure 1

Summary of Content Mentor and Mentee Data Analysis

Legend:

- Mentor/Mentee 1: Spanish mentor/mentee
- Mentor/Mentee 2: English mentor/mentee
- Mentor/Mentee 3: English mentor/mentee
- Mentor/Mentee 4: Mathematics mentor/mentee
- PPA score of 2 = Proficient performance in indicated area
- PPA score of 3 = Exceptional performance in indicated area

Domain “Motivations to Serve as a Content Mentor”

Sub-domain	Applicable Mentors	PPA Triangulation Item	PPA Scores
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Personal Motivation	1 2	n/a	n/a
View that Contributing to Teacher Preparation is Important	2 3 4	n/a	n/a
Past Involvement with Teachers for a New Era Programs	2 3	n/a	n/a

Domain “Mentors’ Exposure to K-12 School Realities”

Sub-domain	Applicable Mentors	PPA Triangulation Item	PPA Scores
Student Realities	1 3 4	n/a	n/a
Curriculum Awareness	1	n/a	n/a
Resources	1 3 4	n/a	n/a
Teacher Realities	2 3	n/a	n/a
Role of Standards	1 3	n/a	n/a

Domain “Mentors’ Understanding of ‘Teaching for Social Justice’”

Sub-domain	Applicable Mentors	PPA Triangulation Item	PPA Scores
Curriculum	1	n/a	n/a
Resources	2 3 4	n/a	n/a

Domain “Mentors’ Views of Teacher Preparation”

Sub-domain	Applicable Mentors	PPA Triangulation Item	PPA Scores
Importance of Content Knowledge	1 3 4	n/a	n/a
Role of Practicum	1 4	n/a	n/a
Education Class Requirements	1	n/a	n/a
Qualities to be Cultivated	1 2	n/a	n/a

Domain “Mentors’ Perceptions of Benefits to Mentees”

Sub-domain	PPA Triangulation Item	Applicable Mentors	PPA Scores
Content Knowledge	PPA #A6: Teacher candidate draws on resources from colleagues, families, and the community to enhance learning	1 2 3 4	2 2 2 2
Pedagogy	PPA #A5: Teacher candidate plans lessons with clear objectives and relevant measurable outcomes	1 3	2 2

Future Education and Career Opportunities	PPA #E3: Teacher candidate maintains interest in current theory, research, and developments in the academic disciplines	1	3
Professional Growth	PPA #E4: Teacher candidate collaborates with colleagues to improve instruction, assessment, and student achievement (applicable only to Mentor 1)	1	3
Pedagogical Content Knowledge	PPA #F4: Teacher candidate identifies the needs, talents, and abilities of pupils and links these to subsequent lesson planning (applicable only to Mentors 1 and 4)	1 4	3 2
	PPA #F2: Teacher candidate provides formative and summative opportunities for pupils to connect their learning to experiences or situations significant in their lives (applicable only to Mentors 1, 3, and 4)	1 3 4	2 2 3
	PPA #G2: Teacher candidate demonstrates careful and thoughtful integration of knowledge of subject matter and pedagogy, beliefs about and understanding of learning as drawn from conceptual, empirical, and major ideas from theory (applicable only to Mentor 2)	2	2
Praise, Esteem, and Admiration for Teaching Profession	n/a	2 3	n/a

Domain “Mentors’ Pedagogy Benefits”

Sub-domain	Applicable Mentors	PPA Triangulation Item	PPA Scores
Reminders of Good Pedagogy	3 4	n/a	n/a
Mindfulness of Making Classes Relevant for Future Teachers	2 4	n/a	n/a
New Confidence and Assurance in K-12 Teachers Being Produced	4	n/a	n/a

Domain “Mentors’ Views of Program Logistics”

Sub-domain	Applicable Mentors	PPA Triangulation Item	PPA Scores
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Initial Concern about Scheduling	1 2	n/a	n/a
Ideas on how to Engage Other Arts and Sciences Professors as Content Mentors	1 2 3 4	n/a	n/a
Recommendations for Program	1 2 3	n/a	n/a

Domain “Motivations to Participate as a Mentee”

Sub-domain	Applicable Mentors	PPA Triangulation Item	PPA Scores
Convenience	4	n/a	n/a
Pedagogical Content Knowledge	1 4	n/a	n/a
One-on-One Attention	2 4	n/a	n/a
Ability to State Mentor Preference	1 2 3	n/a	n/a

Domain “Mentees’ Acquired Knowledge”

Sub-domain	PPA Triangulation Item	Applicable Mentors	PPA Scores
Knowledge from Mentors’ Classes Prior to Program	PPA #G1: Teacher candidate draws on prior academic and personal knowledge, coursework, and experience to make instructional choices	1 4	3 2
Content Knowledge	PPA #A6: Teacher candidate draws on resources from colleagues, families, and community to enhance learning	2 3 4	2 2 2
Pedagogical Content Knowledge	PPA #G2: Teacher candidate demonstrates careful and thoughtful integration of knowledge of subject matter and pedagogy, beliefs about and understanding of learning as drawn from conceptual, empirical literature, and major ideas from theory (applicable to all four mentees) PPA #F2: Teacher candidate provides formative and summative opportunities for pupils to connect their learning to experiences or situations significant in their lives (applicable to Mentees 3 and 4) PPA #F4: Teacher candidate	1 2 3 4 2 3 4 1	3 2 2 2 2 2 2 2

	identifies the needs, talents, and abilities of pupils and links these to subsequent lesson planning (applicable to Mentees 1 and 2)	2	2
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Domain “Mentees’ Additional Benefits”

Sub-domain	PPA Triangulation Item	Applicable Mentors	PPA Scores
Mentor Enhanced Confidence of Mentee	PPA #E6: Teacher candidate reflects critically upon his or her teaching experience and identifies areas for professional development as part of a professional development plan and is receptive to suggestions for growth	2 4	2 3
Professional Growth	PPA #E4: Teacher candidate collaborates with colleagues to improve instruction, assessment, and student achievement (applicable to Mentees 2 and 4) PPA #E2: Teacher candidate conveys knowledge and enthusiasm for his/her academic discipline to students (applicable to Mentee 3) PPA #E3: Teacher candidate maintains interest in current theory, research, and developments in the academic discipline (applicable to Mentee 1)	2 4 3 1	2 3 2 2
Logistical Benefits		2 4	

Domain “Mentees’ Perceptions of Benefits to Mentors”

Sub-domain	Applicable Mentors	PPA Triangulation Item	PPA Scores
Personal Connection to K-12 Schools	1	n/a	n/a
Personal Satisfaction from Supporting Teacher Preparation	1	n/a	n/a
Interesting Exposure to K-12 School Realities	1 2	n/a	n/a

Domain “Mentees’ Understanding of ‘Teaching for Social Justice’”

Sub-domain	PPA Triangulation Item	Applicable Mentees	PPA Scores
Demanding Excellence from All Students	PPA #B2: Teacher candidate communicates high standards	1 2	2 2

	and expectations when carrying out the lesson	4	2
Increased Awareness of School Resources	PPA #D2: Teacher candidate works to promote achievement by all students without exception	4	2
Place for Social Justice in the Curriculum	PPA #D9: Teacher candidate identifies policies and programs that contribute to, or maintain the existence of, equity, or inequity through written reflections and actions	3 1	2 2

Domain “Mentees’ Views of Program Logistics”

Sub-domain	Applicable Mentors	PPA Triangulation Item	PPA Scores
Unclear Logistics	1 2 3 4	n/a	n/a
Scheduling Concerns	3	n/a	n/a
Role and Relationship of Other Supervisors	1 2 4	n/a	n/a
Recommendations for Program Logistics	2 3 4	n/a	n/a

Findings Regarding Arts and Sciences Content Mentors

My analysis of interview data from content mentors is the basis for my delineation of domains and sub-domains regarding the involvement of arts and sciences faculty in content mentoring and its value for them. My analysis of mentor data resulted in seven major domains: (1) Motivations to Serve as a Content Mentor, (2) Exposure to K-12 School Realities, (3) Understanding of “Teaching for Social Justice”, (4) Views of Teacher Preparation, (5) Perceptions of Benefits to Mentees, and (6) Pedagogy Benefits to Mentors, and (7) Programmatic: Program Planning and Logistics.

Mentors’ Motivations to Serve as a Content Mentor

The majority of data in this domain comes from interview questions focused on mentors’ reasons for participating in the One-on-One Content Mentoring program. I asked mentors

questions such as: Why did you decide to participate in the One-on-One Content Mentoring Program?; What did you hope to gain?; What did you hope to gain professionally?; and What did you hope to gain personally? During analysis of mentors’ interview segments focused on reasons for participation in the program, I categorized mentors’ motivations to serve as a content mentor into three sub-domains: (1) Personal Motivation, (2) View that Contributing to Teacher Preparation is Important, and (3) Past Involvement with Teachers for a New Era programs.

Table 2 includes a summary of open coding, domain analysis, and triangulation of mentor data for the domain “Motivations to Serve as a Content Mentor.” (See Appendix H for complete coding keys and analysis of mentor data.)

Table 2

Summary of Analysis: Domain “Motivations to Serve as a Content Mentor”

Sub-domain	Applicable Mentors	PPA Triangulation Item	PPA Scores
Personal Motivation	1 2	n/a	n/a
View that Contributing to Teacher Preparation is Important	2 3 4	n/a	n/a
Past Involvement with Teachers for a New Era Programs	2 3	n/a	n/a

Legend

- Mentor/Mentee 1: Spanish mentor/mentee
- Mentor/Mentee 2: English mentor/mentee
- Mentor/Mentee 3: English mentor/mentee
- Mentor/Mentee 4: Mathematics mentor/mentee

PPA score of 2 = Proficient performance in indicated area
 PPA score of 3 = Exceptional performance in indicated area

Personal Motivation

Two of the four mentors, one Spanish and one mathematics professor, expressed some personal motivation to serve as a One-on-One Content Mentor. Mentor 1 was driven by a personal connection to her mentee; the mentor had the mentee in class in a previous semester for

a Spanish methods course and noted that, “She was good. I liked her. I would not have said yes for anybody else.” Mentor 1 described her as a “good student” and “good at what she does.” The semester after completing the class, the mentee went to Spain to study for a semester. Mentor 1 described how she and Mentee 1 stayed in contact after the completion of the class and Mentor 1 even gave Mentee 1 names of personal friends in Spain that Mentee 1 stayed with during her travels that semester. It seems the pair had a decent personal connection that extended beyond the semester and outside the classroom prior to the content mentoring experience. When asked if she was also looking to gain experience professionally through serving as a content mentor, Mentor 1 replied “Not necessarily. I observed many times out in the [K-12] schools and have taught in the schools for years. I taught teachers, so I wasn’t looking for that per se. I’m not saying that I know everything, but I think I’m more connected to public schools than most people perhaps in [the Romance Languages] department.”

The second mentor, Mentor 2, who expressed personal motivation referenced having a child in Boston public schools and that reality spurring him to contribute to teacher preparation: “I’m also a believer in public school education, and my child is a third grader in the Boston public schools and he has been taught by two BC graduates—two elementary ed. grads of the program—so I feel like I’m very directly involved in and invested in what the Lynch School is doing in terms of teacher training and I see [serving as a mentor] as a way to make a contribution to [teacher preparation] as well.”

Both mentors articulated a personal connection as a reason they decided to serve as a content mentor to a teacher candidate. Both mentors were motivated by a personal relationship, one with a former student of whom the professor is fond and maintained contact with beyond the classroom and one mentor with his own child. The mentors’ reasons suggest that more arts and

sciences professors might be successfully encouraged to mentor teacher candidates if the professors are able to root their contribution in a personal connection.

View that Contributing to Teacher Preparation is Important

Three of the four mentors, one mathematics and two English professors, expressed the view that it is important to contribute in some way to teacher preparation. All three mentors conveyed that supporting teacher preparation efforts is inherently important. Mentor 4, a mathematics professor, believes it is important for arts and sciences faculty to understand how students are being prepared in high school, including “what the expectations are [in high school]” and “what students are going to be doing in high school, and how they’re going to be thinking.” She reasoned that contributing to K-12 teacher preparation helps university-level teachers because “how they’re going to be [taught in high school] ultimately affects us and how we teach students because the high school students come here.” Her point stresses the continuum of students’ learning from K-12 schools through university classrooms and the logical point that university professors need to know how and what their students were taught in prior years in order to teach effectively. Mentor 2, an English professor, spoke passionately about validating the decision to become a K-12 teacher. He reasoned that by mentoring a teacher candidate, he is saying: “[Becoming] a teacher is just as valuable and valid as becoming a lawyer or becoming a doctor and that this is something that we value and support.” He stressed that he wants students considering K-12 teaching “to know that this is a good decision, this is a good way to use their lives.”

All three mentors in this sub-domain had no prior K-12 teaching experience, suggesting that a desire to support K-12 education and future K-12 teachers does not necessitate personal experience as a K-12 teacher. A sense that teacher preparation in public education is a

significant public good is potentially enough motivation to serve as a teacher mentor. Some arts and sciences faculty members are aware of the connectivity as well as the virtue in the teaching profession. They are mindful of the links between learning in grade school, high school, and college as well as the significant societal contribution teachers make by educating young people. Sharing this awareness might encourage more wide-spread support among university faculty to support teacher candidates, either through actual content mentoring or vocalized validation in class of the decision to become a teacher.

Past Involvement with Teachers for a New Era Programs

Two of the four mentors, both English professors, were also motivated to serve as content mentors because they wanted to build on prior TNE involvement. For example, Mentor 2 explained that his involvement with a TNE pedagogy lab, an addendum to his regular humanities class geared for prospective teachers, furthered his interest in teacher candidates as well as his desire to be involved with TNE. He felt that the pedagogy lab “was a good way for me to get to know my Lynch School students better.” Before teaching the lab, he said, “I really didn’t put much thought and attention into the needs of the Lynch School students, as opposed to the English majors I usually teach.” Participating in the pedagogy labs gave him “a kind of richer sense of the needs and interests of those students.” This mentor then wanted to build on his involvement with TNE and he was drawn to the One-on-One Content Mentoring program because he liked the idea of a one-on-one relationship with a teacher candidate. He was curious “about sort of seeing how young teachers teach and [felt] like [he] might be able to help them.” After becoming more aware of the presence of prospective teachers in his English class and their particular needs in a university English class, this mentor wanted to continue his understanding and contribution to teacher preparation in a more personal manner, through a one-on-one

relationship with a teacher candidate at his or her practicum site. This evidence suggests that when a university offers arts and sciences faculty multiple options to become involved in teacher education, their interest and involvement can grow organically and in a sustained manner.

Mentors’ Exposure to K-12 School Realities

The majority of data in this domain comes from interview questions focused on mentors’ perceptions of K-12 schools. I asked mentors questions such as: How has your perception of urban education changed—if at all—due to this experience?; How have your perceptions of K-12 students changed?; How have your perceptions of K-12 schools in general changed?; and What did you think about the school and its surrounding community? During analysis of mentors’ interview segments focused on their exposure to K-12 school realities, I delineated five sub-domains: (1) Student Realities, (2) Curriculum Awareness, (3) Resources, (4) Teacher Realities, and (5) Role of Standards.

Table 3 includes a summary of open coding, domain analysis, and triangulation of mentor data for the domain “Mentors’ Exposure to K-12 School Realities.” (See Appendix H for complete coding keys and analysis of mentor data.)

Table 3

Summary of Analysis: Domain “Mentors’ Exposure to K-12 School Realities”

Sub-domain	Applicable Mentors	PPA Triangulation Item	PPA Scores
Student Realities	1 3 4	n/a	n/a
Curriculum Awareness	1	n/a	n/a
Resources	1 3 4	n/a	n/a
Teacher Realities	2 3	n/a	n/a
Role of Standards	1 3	n/a	n/a

Legend

Mentor/Mentee 1: Spanish mentor/mentee

Mentor/Mentee 2: English mentor/mentee

Mentor/Mentee 3: English mentor/mentee

Mentor/Mentee 4: Mathematics mentor/mentee

PPA score of 2 = Proficient performance in indicated area

PPA score of 3 = Exceptional performance in indicated area

Student Realities

Three of the four mentors, mathematics, English, and Spanish professors, expressed gaining new understanding of the realities and circumstances of K-12 students. For example, Mentor 1, a Spanish professor, said she noticed in her mentees' school site there seemed to be more students with Individualized Education Plans (IEPs) than she remembers. This mentor has considerable experience with K-12 schools. She noted that she has done teacher training in summer workshops and she has taught high school Spanish for nine years, but she did acquiesce that the last time she worked in K-12 schools full-time was in 1990.

In another example, Mentor 4, a mathematics professor, expressed pleasant surprise that the students in her mentee's class were "100 percent all there" despite the class not being an honors class. The professor explained her surprise at the behavior and presence of the students because her daughter was in an all honors classes which the mentor described as "very intense, competitive, nobody does anything but sit there and do what they have to do." She was not expecting the same student behavior in non-honors class, stating, "That's really good. That's unusual." While this mentor was expressing a perspective she believed to be positive and indicative of enlightenment, her comments actually convey a deficit perspective, a view that presents some demographic qualities of students, such as being an ethnic minority, poor, or from an urban area—or in non-honors classes—as a deficit while giving scant attention to their strengths (Banks, 2004, p. 18). This mentor had never taught in K-12 schools before and made

many of her observations in comparison to her experience with her daughter's high school classes. This suggests that deficit views regarding K-12 education, even from those who seek to understand and contribute to teacher education at some level, still exist. Those facilitating content mentoring programs and recruiting arts and sciences faculty mentors need to make continual efforts to encourage content mentors to examine their own biases and the reasons and validity behind them.

Curriculum Awareness

Mentor 1, a Spanish professor, expressed an increased awareness of K-12 curriculum as a result of her content mentoring. She said she was pleasantly surprised that the school at which she mentored had the resources and the awareness to offer a Spanish class for native-speakers. She said the school had a heritage speaking course, a course for kids who are proficient in English but speak Spanish as a language at home. She explained that their English is fine but their Spanish is not very good: "I should say they speak Spanish but they never had [a] Spanish [class]." She equated it to "an American kid from Massachusetts, born in Massachusetts from a nice Irish family who didn't have any English classes in school until they were 14." She stressed, "[They] need English classes, just like these kids also need Spanish classes." She explained that this particular school recognizes the needs of these Spanish-speaking students and also views their bilingualism as an asset that should not only be respected but developed.

Mentor 1 also believes that by serving as a content mentor, arts and sciences faculty "may be surprised at where some of the students are at." This perspective is based on her experience as a high school teacher, not from her experience observing her mentee. She explained that although high school Spanish programs understandably vary depending on the school, the Spanish program, and how many levels of Spanish are offered, many university Spanish

professors would be surprised at the content covered in certain classes. For example, “Spanish 3 in high school is supposed to be the equivalent of first semester intermediate [Spanish in college] but it’s not close actually.” Mentor 1’s remarks speak to the value of content mentoring for arts and sciences faculty in terms of K-12 curriculum awareness, both to deepen their understanding of K-12 students’ various backgrounds and academic needs of students as well as to link their college curricula better with high school curricula.

Resources

Three of the four mentors, mathematics, English, and Spanish professors, stated that they gained an understanding of the resources available in K-12 schools. Mentor 4, a mathematics professor, was positively surprised at the quality and amount of some resources present in the suburban school at which she mentored. She said, “The resources were amazing. They were absolutely amazing. We [Boston College mathematics department] don’t have the resources here that they have.” The mentor was deeply impressed that all the math classrooms in this particular high school had smart boards: “The smart board is so advanced in terms of teaching math... It’s a better setup at [my mentee’s high school] than it is at Boston College. I have to admit, I was very impressed by that.”

Mentor 4 also articulated a view that while resources clearly matter in K-12 classrooms, teacher quality is still the most important aspect of K-12 education. This mentor said, “You know you could also have all the resources and still not have a strong program because you don’t have strong teachers.” The mentor explained that she was thinking of her daughter’s high school calculus teacher; her daughter went to a suburban public high school and had a calculus teacher that Mentor 4 described as “someone who has been teaching [calculus] for a number of years but

yet didn't know calculus." Because of her first hand perspective, Mentor 4 believes teacher preparation is primary in establishing the strength of a mathematics high school program.

Mentor 1, a Spanish professor, expressed surprise that the suburban class she observed had a "nice class size." Her mentee's classes had "between 16 and 20 students" and this mentor, with several years of high school Spanish teaching and teacher training experience, is used to high school Spanish classes of "31 to 35."

Mentor 3, an English professor whose mentee was student teaching in an urban high school, expressed surprise and disappointment at the atmosphere of her mentee's school. She described it as a "tough place" and "unattractive" and believed that the presence of metal detectors and security guards sent a foreboding and discouraging message to students. Her viewpoint relates to the domain of mentors' understanding of social justice in schools because it demonstrates how arts and sciences faculty members' exposure to the atmosphere and realities of an urban high school can heighten their opinions of social justice in education. This mentor said, "I just thought, you are so telling these kids something about what you expect of them, here and later... The message is 'this isn't a safe place. And why isn't it safe? Well it isn't safe because of you.'" The mentor continued, saying the message of the metal detectors and the security guards tells students, "You're the unsafe ones and therefore we guard ourselves against you and we guard you against each other." The mentor clearly has passionate views on the message students in the school were receiving from their school's atmosphere: "It's just such a terrible message."

Mentor 3 focused on the potential message of metal detectors and security guards and not on the reasons these things are present in some schools. She believes their presence is rooted in assumptions society makes about what "students of color" who come from urban areas carry with them "literally or metaphorically." She did express hope that "there will be a day where

[urban high schools] don't have [metal detectors] anymore and kids come and go freely and we trust students of color." Her remarks, while reflecting awareness of prejudice against urban and minority students, do not recognize safety issues in schools nor did they recognize that some suburban or rural schools also have such safety measures. Her hopes for the future of urban and minority students reflect a concern for equity but seem naïve in that they do not link to the reality of safety concerns and the universality of these issues in many types of schools. Additionally, her remarks about the negative messages to students inherent in the presence of metal detectors may also reflect a deficit model. She links the negativity of metal detectors with the students' poor, minority, and urban background. She assumes that these students' demographic background and consequent interaction with metal detectors result in another hardship they will have to overcome: a message of low expectations and societal regard. She does not consider that the metal detectors may be a necessity or even a positive apparatus that can help provide safety and security for students, helping them to focus on learning.

Teacher Realities

Two of the four mentors, both English professors observing mentees in urban schools, described new understandings of the realities of K-12 teachers. For example, Mentor 3 said, "I think I always had respect for people in urban teaching careers, but now I can't even put a cap on how much I admire what they do." She said it is one thing to read about the challenging state of public education in this country but she actually witnessed "a class size of 33 and one lone teacher trying to get all of those kids who couldn't care less to engage with a book written by a British author 75 years ago." She said she realized that a major difference between high school and college teaching is that "in college they're here [in class] because they want to be and in high school it's because they have to be." She described observing one of her mentee's classes and "it

was the last class period of the day and they were antsy and tired and they wanted to sleep and goof off.” She said when her mentee asked her why she never taught high school and that she thought the mentor “would be so great [at it],” she replied to her mentee, “I couldn’t do it. I just would not have the patience and stamina that it takes to do what you do.” Remarks such as these seem to reflect more on wide-spread perceptions that a major, perhaps naïve, difference between high school and college students is that one group has to be there whereas one group freely chooses to be there, resulting in differences between the groups’ motivation and interest levels.

However, these two mentors also expressed the notion that they think urban teachers, including their mentees, have to be “realists” and choose a certain “strata” of students to teach in order to get any of the many and diversified students to learn anything meaningful. Mentor 2 said he is aware of the high attrition rate among young teachers in urban schools and so he would advise new, young teachers to protect their time because “it’s a marathon.” He said, “For the students it’s a sprint... but if [new teachers] are going to stay in the system, it’s a marathon and [they] have to pace [themselves] so they don’t burn out.” He said, “I think sometimes [teachers] have to make a decision about whether [they’re] teaching to the top third of the class, the middle third of the class or the bottom third of the class.” When I asked him how his views on focusing on a certain strata of students relate to his thoughts on social justice in education, he said he did not think too much about social justice in the classroom and admits he views himself as a “pragmatist.” So while remarks such as these reflect heightened interest in urban schools, they also clearly reflect a deficit perspective of urban schools. A tenet of the Lynch School’s mission is advocating social justice for all students, which includes the opportunity to learn and high expectations for all students. Facilitators of content mentoring programs should stress to arts and sciences faculty mentors that as mentors, they should not further prejudicial views and low

expectations of urban or minority students. Content mentors should encourage their mentees to strive to teach well and hold high expectations for all students and not let the challenges of teaching lead to a decision that it is okay to focus their efforts on only certain students.

Role of Standards

Two of the four mentors, Spanish and English professors, conveyed developing understanding of the role of standards in K-12 teaching. For example, Mentor 1, a Spanish professor, asserted that while teaching standards might not be explicitly conveyed in a lesson, common sense guides a teacher to naturally adhere to standards in his or her teaching. The mentor explained, “[My mentee] did a number of things that met the framework components, but was she definitely thinking about that? I’m not sure. A good language teacher meets them anyway,” implying that considering standards is innate in a good teacher. The mentor observed that her mentee connected the Spanish content she was teaching to other areas including art and the economy. Although the mentor said she did not discuss standards with her mentee, the mentor’s view that “all the components of the framework are there in your mind if you’re a good teacher” comes from her own experience rewriting Spanish curriculum for the last high school in which she taught. The mentor was teaching in Wisconsin nine years ago and she rewrote the Spanish curriculum for her school, and she said she had to align the curricula with state standards. She said that good teachers overtly think of components of a mandated framework when writing curriculum, such as how teachers present culture and how teachers require student presentations, but on a day-to-day basis when a good teacher is lesson planning and teaching, the awareness of frameworks may not be overt “but they’re there in the back of [his or her] mind.”

Mentor 3, an English professor, described the unrealistic nature of some standards, particularly when the prerequisite for a standard topic was not taught to students in prior years.

This mentor argued that standardized tests then become “absurd” because they “don’t measure anything really, except someone’s test taking power.” This mentor bases this opinion on conversations she had with a previous One-on-One mentee, who spent weeks during her practicum preparing students for a standardized test through constant drilling of students with practice tests. Mentor 3’s view on the absurdity of standards was based on the preexisting condition that students were not taught the content on which they would be tested in previous years. In her eyes, standards themselves are not illogical but rather how they are sometimes used to measure something never taught is illogical. Both mentors’ comments suggest that they think standards have their value and their appropriate place—in curriculum planning. In their assessment, standards’ value becomes muted, or even warped, when used incorrectly.

Mentors’ Understanding of “Teaching for Social Justice”

The majority of data in this domain comes from interview questions focused on mentors’ perspectives on social justice in education. I asked mentors the primary question: How did this experience affect your understanding of teaching for social justice? I prompted them to give examples. Other segments of the mentors’ interviews contributed to findings in this domain, particularly conversations about their perceptions of urban education, K-12 school realities, and school resources. During analysis of mentors’ interview segments focused on social justice issues, I identified two sub-domains: (1) Curriculum and (2) Resources.

Table 4 includes a summary of open coding, domain analysis, and triangulation of mentor data for the domain “Mentors’ Understanding of ‘Teaching for Social Justice.’” (See Appendix H for complete coding keys and analysis of mentor data.)

Table 4

Summary of Analysis: Domain “Mentors’ Understanding of ‘Teaching for Social Justice’”

Sub-domain	Applicable Mentors	PPA Triangulation Item	PPA Scores
Curriculum	1	n/a	n/a
Resources	2 3 4	n/a	n/a

Legend

Mentor/Mentee 1: Spanish mentor/mentee

Mentor/Mentee 2: English mentor/mentee

Mentor/Mentee 3: English mentor/mentee

Mentor/Mentee 4: Mathematics mentor/mentee

PPA score of 2 = Proficient performance in indicated area

PPA score of 3 = Exceptional performance in indicated area

Curriculum

Mentor 1, a Spanish professor, stated that she gained an increased understanding of “teaching for social justice” through exposure to an aspect of K-12 curriculum. She believes that by offering a Spanish class for native Spanish speakers, the school at which her mentee taught recognizes and serves the diverse needs of its students. She explained, “[Offering the native-speakers Spanish class] is a kind of social justice that I have not seen in the Boston schools very frequently.” This mentor leads summer teacher training institutes for high school Spanish teachers and was a high school Spanish teacher herself for nine years so she seems to have a decent understanding of the usual offerings of Spanish classes at the high school level. She explained that a Spanish class for native Spanish speakers is the equivalent to an English class for students raised in English-speaking families, which is present in all schools. She points out that “by the time [native speakers] get to high school they will probably never have a Spanish class unless they were put in a 7th or 6th grade Spanish class [geared] for English speakers. So now we have the kid that speaks Spanish but has never had a class for it. It’s ridiculous, just ridiculous.” She believes her mentee’s school has a socially just outlook with regard to students of varied linguistic and cultural backgrounds because it recognizes the linguistic backgrounds of its students and strives to offer parallel language classes for native English speakers and native

Spanish speakers. Furthermore, within the native Spanish speakers' class, there are different linguistic guidelines used for different Spanish-speaking backgrounds: "Puerto Rican, Mexican, Dominican, etc." She stresses, "They all have different linguistics that they use." So not only does this school offer a class for native Spanish speakers, but it recognizes and validates different forms and dialects of Spanish. She stated, "So somebody is on the ball over there and that's social justice for those kids."

Resources

Three of the four mentors, Spanish and English professors, stated that they gained an increased understanding of "teaching for social justice" through some realization about the resources at their mentees' placements. Mentor 4, a mathematics professor whose mentee was placed in a suburban school, said she believes her mentee was at a well-resourced school as compared to most other public schools. Her perception is based primarily on the presence of smart boards in all the mathematics classrooms. She reasons that if her daughter's high school, also a Boston-area public suburban school, did not have any smart boards and more so if Boston College math classes do not all have smart boards, it is reasonable to perceive her mentee's school placement as "very privileged." She also added the observation that she would not think urban high schools would have such resources, although she has not spent any time in them.

Mentors 2 and 3, who are both English professors whose mentees were placed in urban high schools, described their realization that resources vary greatly among urban public schools. Mentor 2 stated, "I'll be honest with you, I think the disparities in terms of schools within the geographical area is nothing short of scandalous." He pointed out that at his mentee's school, "the students can't bring books home with them because if it doesn't come back to school the school can't afford to replace them." He continued, "So how do you teach if students can't take

books home to do homework? If all the reading has to happen in the classroom, what is a teacher supposed to do? Then [the teacher] has to spend class actually reading aloud because [the teacher] can't say, 'read Chapter 2 for the next class.'"

Mentor 3 voiced similar frustrations about the fiscal resources at urban schools. She said she advocates for "money equally distributed, every kid gets the same resources." However, she believes that reality will not happen because "the kids at [suburban schools in wealthier towns] have a higher tax base and get more resources." She stated, "It just doesn't seem fair to me. There is no equity there." As explained earlier, Mentor 3 also voiced strong opinions about the presence of metal detectors and security guards as a kind of social injustice because of the low expectations she believes it conveys to urban, minority students—a view that as I explained I believe is well-intentioned yet naïve. Interestingly, these two content mentors who voiced concerns about the lack of fiscal resources and equity for urban schools also voiced opinions that teachers at urban schools should decide on what "strata" of students they will focus their efforts. So while the experience of content mentoring and spending some time in K-12 schools helped develop mentors' opinions on justice and equity issues in K-12 schools, the findings are not all positive. Mentors 1 and 4, who were at suburban schools, seem to have had more positive observations regarding resources and opportunities for students at their mentees' schools. Mentors 2 and 3, who were at urban schools, voiced more concerns about the lack of resources and the tone certain resources conveyed to students. It seems Mentors 2 and 3 believe the tone set by resources in urban schools suggests teachers, administrators, and society do not care about giving urban students as good an education as suburban students and do not have high expectations of urban students.

Unfortunately, the frustrations of Mentors 2 and 3 regarding resources seem to contribute to their opinion that teachers have to decide to teach well only to some students out of some practicality that an urban school setting forces. So ironically, some elements of a social justice perspective seem to contribute to a deficit paradigm for some content mentors. Both Mentors 2 and 3 were assigned to teacher candidates teaching in urban high schools. Their leanings toward a deficit paradigm may be attributed to their urban placement, vastly different in setting from the campus of Boston College, an elite and well-resourced university. Their opinion that urban K-12 teachers justifiably may have to teach well only to some students may also be attributed to complacency developed in their university classes since they typically teach high achieving students from mostly suburban backgrounds. Because their college students' backgrounds are different from that of urban high school students and they generally have more high-achieving, competitive students than both suburban and urban K-12 teachers, they may be unfamiliar with and unprepared to advise teacher candidates on how to teach well to a wider spectrum of students. Content mentoring program facilitators should take great care during the preparation of content mentors to encourage them to recognize the complex reasons behind some schools' lack of resources and short-term and long-term ways to address these reasons while not short changing students based on their background and their schools' circumstances. Program facilitators should also stress to content mentors the Lynch School belief that truly good teachers teach to all strata by differentiating, not discriminating, in their instruction.

Mentors' Views of Teacher Preparation

The majority of data in this domain comes from interview questions focused on mentors' perspectives on teacher education. I asked mentors the primary question: How has your understanding of teacher preparation changed as a result of your experience? I prompted them to

give examples and asked them follow-up questions tailored to the direction of our ensuing conversation. During analysis of mentors' interview segments focused on teacher preparation issues, I identified four sub-domains: (1) Importance of Content Knowledge, (2) Role of Practicum, (3) Education Class Requirements, and (4) Qualities to be Cultivated.

Table 5 includes a summary of open coding, domain analysis, and triangulation of mentor data for the domain "Mentors' Views of Teacher Preparation." (See Appendix H for complete coding keys and analysis of mentor data.)

Table 5

Summary of Analysis: Domain "Mentors' Views of Teacher Preparation"

Sub-domain	Applicable Mentors	PPA Triangulation Item	PPA Scores
Importance of Content Knowledge	1 3 4	n/a	n/a
Role of Practicum	1 4	n/a	n/a
Education Class Requirements	1	n/a	n/a
Qualities to be Cultivated	1 2	n/a	n/a

Legend

Mentor/Mentee 1: Spanish mentor/mentee

Mentor/Mentee 2: English mentor/mentee

Mentor/Mentee 3: English mentor/mentee

Mentor/Mentee 4: Mathematics mentor/mentee

PPA score of 2 = Proficient performance in indicated area

PPA score of 3 = Exceptional performance in indicated area

Importance of Content Knowledge

Three of the four mentors, mathematics, English, and Spanish professors, described how their developed view of teacher preparation includes a strong sense of the importance of content knowledge. Mentor 1, a Spanish professor, explained that her conviction that a strong content knowledge basis is essential for a new teacher to be successful is based on her observation of her

content mentee—whom she described as having a very strong linguistics background—in comparison to other teachers and teacher candidates with whom she has worked. As this mentor said, “You can’t teach what you don’t know. If you don’t know calculus, if your level is algebra, you can’t teach calculus... [You] might make efforts and might not see the error and might not know how to help the student correct [a] mistake.” This mentor believes that the amount of time it takes for a language teacher to have a strong knowledge base varies for everyone. However, she does stress that “an entire year abroad is a great idea—it’s the number one way to do it.” She advocates for language teachers participating in their universities’ study abroad programs primarily because it increases “time on task learning the content” and “immersing themselves in language settings.” This mentor explained that student teachers in Spanish who have not had the opportunity to go overseas for at least a semester will be lacking in “fluency and complete knowledge” of the language. She explained that a strong content knowledge basis is very hard to get in linguistics because it takes “hours and hours and hours of instruction and/or immersion and usually the immersion is the final tip.” Her comments indicate a presumption that strong content knowledge in a language can be achieved only by immersion, which seems to decrease the value of classroom learning. While immersion may be beneficial in developing one’s linguistic content knowledge, it seems presumptuous to assume it is the only way to achieve a strong linguistic background. She believes a foreign language teacher without this basis “might not know their basics well and that doesn’t fly.” She equates this scenario to “an English teacher that can’t tell the difference between a gerund and a present participle.” Her comments clearly stress a view that linguistic knowledge is crucial for good teaching. However, linguistic knowledge certainly does not guarantee effective teaching. Her comments reflect a privileging

of content knowledge over pedagogical or pedagogical content knowledge as a necessity for teaching.

Similarly, Mentor 4, a mathematics professor, stressed that she believes developing strong content knowledge is one of the most important aspects in teacher preparation. Incidentally, her strong opinions on this matter are based on her frustration with her daughter's high school calculus teacher who she assesses "didn't know Calculus well enough" and consequently the course was "very weak." Mentor 4 focused on content knowledge as a significant aspect of teacher preparation, explaining that "the level of the teacher" and "how well they're prepared" depends on their content knowledge. However, a teacher may know his or her subject very well but not know how to teach the subject.

Mentor 3, an English professor, also viewed a strong content knowledge basis as essential in teacher preparation, and her opinion was based partly on her observation that her mentee's content knowledge was "great." This mentor said her mentee knew the novel she was teaching, *Animal Farm*, very well. Mentor 3 believes that knowing a text "inside and out"—including its plot, characters, themes, and applicability to today's society—is the "bottom line in being prepared" because a teacher can then create some good questions for students as well as be flexible when students ask unexpected questions about a text. This mentor pointed out that teachers cannot anticipate all the questions their students will have and so a thorough understanding of the text is key because it lends itself to flexibility and responsiveness on the part of the teacher.

All three content mentors' views reflect the common premise that teachers should know their subject well and furthermore, teachers with a strong content knowledge basis are better able to teach their discipline than those who do not have such a basis (Floden & Meniketti, 2005).

Contrary to the research examining teachers' content knowledge and student achievement, their comments suggest that content knowledge is the most important aspect of teacher preparation, with no consideration of the value of pedagogical content knowledge (Floden & Meniketti, 2005; Hawk et al., 1985; Monk, 1994; Rowan, Correnti, & Miller 2002). Interestingly, none of them mention pedagogical knowledge or pedagogical content knowledge as an important factor in teacher preparation even though they all describe pedagogical content knowledge they passed on to their content mentees. The content mentors' comments, especially given that they were stated after the site visits and content mentoring experience, suggest that while content mentors may be aware of the different forms of knowledge they share with mentees, they might not understand the appropriate worth of all the forms of knowledge, especially pedagogical content knowledge. Given that a goal of content mentoring is to have arts and sciences faculty understand K-12 teacher realities, including what knowledge forms help teachers and consequently students, it would be better for content mentors to understand better the value of and their role in disseminating pedagogical content knowledge.

Role of Practicum

Two of the four mentors, mathematics and Spanish professors, offered views on the role of a practicum in teacher preparation. Mentor 4, a mathematics professor, described how much she was impressed with the apparent effort and time her mentee put into his classes. She described an exercise he did in which he had each of his students fill out an index card, articulating their goals for the remainder of the course, how they felt they were doing, and how they hoped to achieve it. Her mentee responded to all of the cards, addressing each of the students' issues. She said, "He spent hours doing this" and he told students, "Please read it. Come to me and we will talk more about it." She stressed how apparent it was that he had

created a “wonderful connection” with his students and she thought it was evident to all of them that he “takes each one very seriously in terms of what they’re doing.” Her comments support the research on the value of culturally relevant pedagogy (Gay, 2002; Ladon-Billings, 1995). By getting to know students’ prior experiences, performance styles, and cultural knowledge, teachers who utilize culturally relevant pedagogy get to know each student as a whole person, develop relationships with students, and make learning more relevant to and effective for students. The goal of this culturally validating and affirming approach is to increase the academic achievement of culturally diverse students, making it especially appropriate for ethnically diverse schools (Gay, 2002).

Mentor 1, a Spanish professor, stressed that a teacher candidate not be placed in a practicum before he or she has reached a level of content knowledge proficiency, although she did not articulate how this would be determined. As explained above, she believes a strong grasp of a language takes time and immersion and so it is crucial that a teacher candidate not undertake student teaching before this strong base is established. Mentor 1 also suggested that the most significant factor in a teacher candidate’s practicum experience is the quality of the teacher in whose classroom the teacher candidate is placed. The mentor argued that the “worst thing” a teacher preparation program can do is “place a student teacher with a teacher without good skills” and who “doesn’t hold [all] kids up to any real standard.” As mentioned earlier, this mentor believes that good teachers are innately mindful of standards, suggesting her belief that holding students up to a real standard is an indication of a good teacher, although he or she does not have to consciously hone these skills of teaching with an orientation toward standards. This mentors’ comments also suggest a contradiction: student teachers should be placed with master teachers who have innately good teaching skills including a mindfulness of standards,

presumably so the student teacher can view and later model these skills, yet the mark of a good teacher is one who does not have to be conscious of standards.

The mentor's point about student teacher placements was not based on her observations of her mentee but rather her years as a high school Spanish teacher and someone who has been involved with teacher training. For example, she believes that most high school Spanish classes should be "conducted 100 percent in the target language." She said students should be doing pair work, talking to each other, and talking about real life situations using only Spanish, suggesting that strong Spanish teachers have a developed Spanish pedagogical content knowledge. However, she said most high school Spanish teachers do not know how to conduct their classes this way, in total language immersion; most high school Spanish teachers conduct their lessons primarily through translation. She said it would be much more ideal if teacher candidates were placed only with cooperating teachers who primarily utilize language "use" versus "translation," which she believes is a much more effective way to learn a language. Her comments indicate her belief that strong Spanish pedagogical content knowledge, particularly the knowledge of how to teach Spanish by having students use the language in organic scenarios as much as possible, is a necessary possession of an effective supervising teacher.

Education Class Requirements

Mentor 1 also expressed her understanding of her mentee's frustration with having to juggle student teaching alongside education class requirements, particularly reflection papers. The mentee explained, "While she is teaching, she wants to just teach... And that's not necessarily an invalid take as far as I'm concerned." Mentor 1 said her mentee was frustrated with her required inquiry project. The mentor explained, "[My mentee] wants to spend hours preparing for [her student teaching] versus writing a paper." While the mentor was not

dismissing requirements of education classes, she was acknowledging with, sympathizing with, and even mirroring her mentee's frustration over the juggling aspects and the limited time new teachers have, especially with respect to class preparation. But given that a goal of the One-on-One Content Mentoring program is to bridge the School of Education and the College of Arts and Sciences, it seems important that arts and sciences professors have an understanding of the purpose and value of education class requirements, especially inquiry projects, connected to practicum experiences.

These comments by Mentor 1 suggest that both Mentor 1 and Mentee 1 may not understand fully the purpose of inquiry in teacher candidates' practicum experiences. A mission of the Lynch School is teaching for social justice, social change, and social responsibility, and so it seeks to "help prepare teachers to challenge the inequities that are deeply embedded in systems of schooling and in society" by having teacher candidates "[collaborate] closely with both university- and school-based mentors to develop critique, challenge common practices, and engage in inquiry intended to alter the life chances of children" (Cochran-Smith, 2001, p. 3). Program facilitators should provide a synopsis of required education classes, including the significance and assignment of inquiry projects throughout the program of study, for content mentors so that the content mentors do not have a one-sided, teacher candidate's-based view of education class requirements. The training seminars for content mentors should also include readings and discussions centered around "inquiry as a stance in the overall enterprise of teaching, schooling, and teacher education," elements that would "substantially enrich" the "education of teacher educators" (Cochran-Smith, 2002, p. 5).

Qualities to be Cultivated

Two mentors, Spanish and English professors, mentioned qualities they believe are important to encourage in teacher candidates. Mentor 1, a Spanish professor, mentioned the importance of teacher candidates' maintaining an inquisitive and curious nature regarding their discipline rather than confidence that he or she knows enough of the subject matter to teach students. Her comments stressing the importance of an inquisitive orientation are ironic, given that she also downplayed the importance of inquiry project requirements for teacher candidates. This irony emphasizes the need for program facilitators to educate content mentors on the significance and current requirements of inquiry projects in the teacher education program.

Mentor 1 stressed that while she thinks a good knowledge basis is crucial for new teachers, an inquisitive disposition is also critical. For example, language teachers might not know all the lexical differences of a language among different countries. If a student uses the language differently from how the teacher is presenting it, it is important for the teacher to check if the different usage is based on a lexical difference and still correct. So, inquiring into the issue is critical. Furthermore, if a student senses that a teacher is open-minded and curious, the student may be more likely to explain the lexical difference directly to the teacher. For example, Mentor 1 gave a "classic example" of students with a Puerto Rican background calling a bus "the gua gua." Mentor 1 said "he would be right in the Caribbean but not right in other places." Mentor 1 explained that an inquisitive disposition on the part of the teacher, of which the student is aware, would hopefully help cultivate a discussion in which the student would explain that "gua gua" is the term for bus in Puerto Rico and the teacher would respectfully add that other Spanish-speaking countries have different vocabulary terms for the word bus.

Similarly, Mentor 2, an English professor, mentioned the importance of possessing "passion for the work, passion for teaching itself." The same mentor also mentioned his

perception, based on studies he has read, that “burn out” is the “big problem” facing new teachers as they enter the profession. His viewpoint is based primarily on what he has read since he does not have prior K-12 teaching experience. His understanding of teacher attrition relates to his perception that content mentors can contribute to teacher education by praising teacher candidates in their decision to become teachers and throughout their student teaching experiences, hopefully boosting their morale and countering feelings of “burn out.”

Both mentors also spoke of good teachers having a “natural affinity” for working with adolescents. Mentor 1 explained, “[My mentee] has the natural part of teaching. She has the part that you can’t teach... Kids like her... there is that naturalness that she has with kids. They trust her confidence. They trust her belief in them.” Likewise, Mentor 2 said his mentee conveyed strictness alongside a sense of humor. He said when students did not do what they were supposed to do, “she got mad at them but in a way that made it clear that she was on their side.”

Both mentors’ comments support research reporting that teachers demonstrate higher than average personality qualities of extraversion, openness, and agreeableness—all characteristics likely to benefit people entering a profession requiring flexibility, the ability to get along with others, and high levels of social interaction (Decker & Rimm-Kaufman, 2008). There are variables of personality that dispose one to reflection, and these factors are developed from birth and cannot be taught. However, the idea that “one cannot be taught” how to build and display these personal qualities is a subtle yet significant distinction from Cochran-Smith’s (2006) point that teachers’ personal qualities—especially empathy—are potentially useful intervening variables in assessing the relationship between teacher preparation and teacher effectiveness. Personal teacher qualities should be treated as fluid, even malleable, elements in

teacher education programs. Empathy can be nurtured and developed, particularly through programs that highlight inquiry and reflection as a stance in developing teachers.

Mentors’ Perceptions of Benefits to Mentees

The majority of data in this domain comes from interview questions focused on mentors’ perspectives on the program’s benefits for their mentees. I asked mentors questions such as: How do you think you affected your mentee’s professional growth?; How did you affect his or her sense of teaching as a profession?; How did you affect his or her teaching practices, curriculum choices, or pedagogical content knowledge?; and What benefits do you believe there were for your mentee through having a mentor from arts and sciences instead of or in addition to a mentor from the Lynch School? During analysis of mentors’ interview segments focused on their perceived program benefits for mentees, I identified six sub-domains: (1) Content Knowledge, (2) Pedagogy, (3) Future Education and Career Options, (4) Professional Growth, (5) Pedagogical Content Knowledge, and (6) Praise, Esteem, and Admiration for the Teaching Profession.

Table 6 includes a summary of open coding, domain analysis, and triangulation of mentor data for the domain “Mentors’ Perceptions of Benefits to Mentees.” (See Appendix H for complete coding keys and analysis of mentor data.)

Table 6

Summary of Analysis: Domain “Mentors’ Perceptions of Benefits to Mentees”

Sub-domain	PPA Triangulation Item	Applicable Mentors	PPA Scores
Content Knowledge	PPA #A6: Teacher candidate draws on resources from colleagues, families, and the community to enhance learning	1	2
		2	2
		3	2
		4	2
Pedagogy	PPA #A5: Teacher candidate plans lessons with clear	1	2
		3	2

	objectives and relevant measurable outcomes		
Future Education and Career Opportunities	PPA #E3: Teacher candidate maintains interest in current theory, research, and developments in the academic disciplines	1	3
Professional Growth	PPA #E4: Teacher candidate collaborates with colleagues to improve instruction, assessment, and student achievement (applicable only to Mentor 1)	1	3
Pedagogical Content Knowledge	PPA #F4: Teacher candidate identifies the needs, talents, and abilities of pupils and links these to subsequent lesson planning (applicable only to Mentors 1 and 4)	1 4	3 2
	PPA #F2: Teacher candidate provides formative and summative opportunities for pupils to connect their learning to experiences or situations significant in their lives (applicable only to Mentors 1, 3, and 4)	1 3 4	2 2 3
	PPA #G2: Teacher candidate demonstrates careful and thoughtful integration of knowledge of subject matter and pedagogy, beliefs about and understanding of learning as drawn from conceptual, empirical, and major ideas from theory (applicable only to Mentor 2)	2	2
Praise, Esteem, and Admiration for Teaching Profession	n/a	2 3	n/a

Legend

Mentor/Mentee 1: Spanish mentor/mentee

Mentor/Mentee 2: English mentor/mentee

Mentor/Mentee 3: English mentor/mentee

Mentor/Mentee 4: Mathematics mentor/mentee

PPA score of 2 = Proficient performance in indicated area

PPA score of 3 = Exceptional performance in indicated area

Content Knowledge

All four mentors asserted that through their mentoring they developed their mentees' content knowledge. For example, Mentor 1, a Spanish professor, updated her mentee on new linguistic rules according to the Royal Academy of the Spanish Language about demonstrative adjectives. Mentor 2, an English professor, pointed out to his mentee that the *Scarlet Letter* actually has a "very ironical, pompous" tone that most readers miss. He said his instruction was helpful for her and especially helpful for her students who he thinks might not have realized the tone on their own reading because "most were English as a second language speakers." He spoke a lot with his mentee about tone in literary text, especially how she can determine "What kind of tone is it? How does one teach tone? How does one convey tone?" He explained that he guided her through close readings of several passages, "modeling for her what she was then going to model for the students." Another example is Mentor 3, an English professor, who shared content knowledge and provided essays about George Orwell to her mentee. Her mentee's class was studying *Animal Farm*, and the mentor talked with her mentee about the political context of Orwell's life and how that influenced his views on the effects of colonialism and the corrupting influence of power. Mentor 3 explained that it was important for her mentee to understand Orwell's background because "[Orwell] was absolutely preoccupied with these [themes]" and "really *Animal* is in some ways a dialectical novel" about "what happens to those who have been enslaved when they get power."

For triangulation, I examined the mentees' PPA ratings of item #A6: Teacher candidate draws on resources from colleagues, families, and the community to enhance learning. All four mentees received a score of two, indicating that they are proficient in this area, suggesting that the mentors may have had impact in the content knowledge development of their mentees, although a two is not a significant in terms of credibility for my finding. All four mentors also

had each of their mentees as students, raising the possibility that the mentees' content knowledge was also strengthened by the discipline-specific knowledge they gained as students in their arts and sciences classes, a topic that is examined as a sub-domain in the mentees' data.

Additionally, all four mentees also indicated in their interviews that they believe the content mentoring developed their content knowledge, suggesting that the content mentees did all gain content knowledge from their content mentors.

Pedagogy

Two Mentors, Spanish and English professors, explained that through their mentoring they helped their mentees' pedagogy, albeit slightly. Mentor 1, a Spanish professor, pointed out to her mentee during one of their post-observation debriefings that she often "teaches to the left side of the room more than to the right." Mentor 3, an English professor, also said she talked with her mentee about basic pedagogy practices. She talked with her mentee about how to get students settled at the beginning of class and started on a writing assignment. Mentor 3 shared with her mentee her own utilization of an in-class, "free writing" session on the assignment topic, an exercise she believes is useful because "it gets [students'] minds engaged a little bit with whatever [the teacher is] focusing on." For triangulation, I examined the mentees' PPA ratings of item #A5: Teacher candidate plans lessons with clear objectives and relevant measurable outcomes. Both mentees received a score of two, indicating that they are proficient in this area, which does not strongly concur with nor detract from my findings.

Future Education and Career Options

Mentor 1, a Spanish professor, stated that she helped her mentee better understand her future educational and career choices. The mentor said she discussed at length different masters' programs, and their pros and cons, with her mentee as well as the different career paths each

option would open for her. The mentor explained that she and her mentee were discussing the mentee's future professional options because the mentee said she wants to teach, she wants to get a master's degree, and she is concerned about paying for a master's and paying off her college loans. Mentor 1 said she advised her mentee to get a master's degree in Spanish versus a master's in education because the mentee would "get a better base because all [her] classes will be in Spanish, which is really what [she] needs." The mentor said she spoke specifically about Boston College's Romance languages department because as a faculty member she is familiar with its Master's in Spanish program, including the stipend for graduate students and its focus on pedagogy.

Mentor 1 is also the coordinator of the pedagogy course in the Spanish master's program so she has experience supervising Spanish K-12 teachers. She said Boston College's Spanish department does focus a lot on Spanish pedagogy in its methods course, which she thinks would be more valuable to a Spanish teacher than a general education master's student because the student might take classes with other language teachers, but they might be "French, German, Italian language teachers" so the classes would not be as specifically tailored to her needs as a Spanish masters pedagogy class. For triangulation, I examined the mentee's PPA ratings of item #E3: Teacher candidate maintains interest in current theory, research, and developments in the academic discipline. The mentee received a score of three, indicating that she is exceptional in this area, suggesting that the mentor may have indeed had an impact on the mentee's interest in a future in the discipline. Also, the mentor clearly stressed that her conversations with her mentee regarding degree paths and ensuing teaching opportunities were a major part of their mentoring conversations, corroborating the mentee's indication that conversations with her content mentor about opportunities in the discipline were a significant benefit of her mentoring experience.

Professional Growth

Two mentors, English and Spanish professors, believe they helped their mentees grow professionally. Both mentors stressed the importance of maintaining a sense of energy in one's teaching. For example, Mentor 3, an English professor, explained that she told her mentee, "You have to be engaged. You have to bring a kind of energy to it... You have to be odd in a certain way. You are performing. You have to hold their attention." This mentor recommended to her mentee to move continuously when she is talking in an effort to maintain students' focus on her and what she is saying. The mentor said she stressed to her mentee that it is important to exude energy when she teaches so that students want to become engaged in the discussion of a text and the student teacher herself feels confident when waiting through "pregnant pauses" in a discussion for students to join in the discussion.

Mentor 1, a Spanish professor, stated that she stressed to her mentee the importance of collaborating with and learning from one's colleagues. The mentor encouraged her mentee to seek out "really good teachers... dynamic people" when she has questions about teaching. The mentor encouraged her mentee to email her with any questions when she is teaching, and told her mentee that she gets emails from former Spanish students who are now teaching with questions about grammar questions, ideas for how to teach certain topics, and even sharing some of their own students' projects online. The mentor stressed to her mentee that she is happy to respond to these types of questions to see what and how former students are doing in their teaching.

For triangulation, I examined the Spanish mentee's PPA ratings of item #E4: Teacher candidate collaborates with colleagues to improve instruction, assessment, and student achievement. The mentee received a score of three, indicating she was exceptional in this area. This suggests that the mentor may have had impact in her mentee's professional growth, and

specifically in her level of collaboration with colleagues by strongly encouraging her mentee to ask questions and share ideas and projects with colleagues. The mentee's high score seems to signify that the mentor's efforts to stress the importance of student teachers asking for help, sharing ideas, and building relationships with dynamic veteran teachers, formal or informal mentors, yielded positive results in the mentee's collaborative behavior.

Pedagogical Content Knowledge

All four mentors also explained that through their mentoring they think they developed their mentees' pedagogical content knowledge. Two mentors, mathematics and Spanish professors, believe they helped their mentees realize the importance of considering common perceptions and difficulties among students when teaching a topic, a key aspect of pedagogical content knowledge (Shulman, 1986). For example, Mentor 4, a mathematics professor, pointed out that as her mentee was teaching a mathematical concept by having students guide him through it, a constructivist approach which she liked, she realized the students "were taking a longer way to do the problem" which eventually gave them the right answer but was more difficult and confusing than the method she would have shown them. Mentor 4 thought it was important that his mentee realize this and address it as part of the lesson. While she approved of the student-centered approach, which probably helped students understand the process effectively by moving through the problem their own way, she told him after the class that he also should have shown students the simpler method after they led him through their longer method so that they recognize efficiency and elegance in mathematics. The mentee said he agreed and would show his students the more efficient method in the next class. For triangulation, I examined Mentees 1 and 4's PPA ratings on item #F4: Teacher candidate identifies the needs, talents, and abilities of pupils and links these to subsequent lesson planning.

Mentee 1 received a score of 3 and Mentee 4 received a score of 2, indicating they were exceptional or proficient in this area, suggesting that their mentors—especially Mentor 1—may have had impact on their pedagogical content knowledge, and specifically in considering student needs and talents in lesson planning.

Three of the mentors, English, Spanish, and mathematics professors, believe they helped their mentees by pointing out useful examples or representations in their lessons. For example, Mentor 3, an English professor, encouraged her mentee to use the current context of the recent presidential election to serve as an analogy to themes of power and change in *Animal Farm*. Mentor 3 also suggested to her mentee that she have students listen to segments of *Animal Farm* on tape during class, instead of having them read silently, followed by individual and group analysis of the work. The mentor suggested this auditory exercise because she and her mentee had observed and discussed students' difficulty with Orwell's prose when they read it on their own; students' were "not hearing the oral quality of it... they were just skimming over the words." The mentor said when students listen to a book on tape, "especially when they're listening to it read by a British author or some actor with the great accent and deep tone... they get more into the meaning." In another example, Mentor 1, a Spanish professor, suggested that during a lesson on Spanish architect Gaudi, her mentee emphasize Gaudi's modernistic tendencies by encouraging them to brainstorm of what some of his project details reminded them, such as the chimneys of Casa Mila looking like Darth Vader.

I examined the three mentees' PPA ratings of item #F2: Teacher candidate provides formative and summative opportunities for pupils to connect their learning to experiences or situations significant in their lives. Mentee 1 received a score 2, Mentee 3 received a score of 2, and Mentor 4 received a score of 3. These scores indicate they were proficient or exceptional in

this area, suggesting that their mentors may have indeed had impact on mentees' abilities to connect lessons to students' lives, interests, and awareness of current events—an aspect of pedagogical content knowledge (Shulman, 1986). Admittedly, however, the triangulation offered by a score of 2 is not very strong since supervisors generally give scores of 2. A score of 3, however, is significant and offers support for the potential connection between content mentoring and developed pedagogical content knowledge.

Mentor 2, an English professor, described helping his mentee develop her pedagogical content knowledge, especially in bridging content and instructional practice. He observed his mentee teaching *The Scarlett Letter*; the mentee was trying to have students move from an understanding of simply “what happens in this chapter” to “interpreting” the chapter. The mentor explained that his mentee was trying to teach her students analytical skills but the kinds of questions she was asking “tended to be eliciting reactions, responses, and opinions... some of them were analytical and some of there were not.” The mentor explained to her that she needed a clearer sense of how to get students to move from literary summary to analysis. The mentor told his mentee that “modeling is teaching and all teaching is modeling” and stressed the importance of modeling literary analyses explicitly for students. Based on their conversation, the mentor felt certain that “[his mentee] understood... she definitely gets it.” In another example, Mentor 2, an English professor, talked with his mentee about shifting how she introduced and framed literary texts. The mentee was teaching the novel *The House on Mango Street* and she initially asked “open-response questions” such as “What do you guys think of this piece?” The mentor explained that his mentee never told the students why she was teaching the piece and why she thought it was valuable and what she wanted them to be able to do with this piece. The mentor worked with the mentee on “framing, getting at purpose, and significance” when she

introduced literature to her class. The mentor talked with the mentee about making sure students understand why the mentee was bringing certain texts into the classroom, why the mentee thought the texts were valuable and admirable, and how a text relates to students' upcoming assignment. So the mentor worked with the mentee on framing *The House on Mango Street* as an example of an autobiographical piece that uses several literary strategies, which they would trace through the work and then use a model for their own autobiographical assignment.

For triangulation, I examined the mentee's PPA ratings of item #G2: Teacher candidate demonstrates careful and thoughtful integration of knowledge of subject matter and pedagogy, beliefs about and understanding of learning as drawn from conceptual, empirical literature, and major ideas from theory. The mentee received a score of two, indicating proficiency in this area, suggesting that her conversations with her mentor may have had impact on her bridging of content and pedagogy, specifically text summary and modeling of literary analysis. Although a score of 2 does not offer strong triangulation for this code, the multiple and thorough examples by Mentor 2 of how he deliberately coached his mentee into developing her pedagogical content knowledge are notable.

Praise, Esteem, and Admiration for the Teaching Profession

Two mentors, English professors, believe they helped their mentees through praise and sharing their admiration for their mentees' decision to enter teaching. Mentor 2 articulated that his praise of his mentee was the greatest benefit he offered as her mentor: "I told her that she was a wonderful teacher and had a wonderful class and that her students loved her and that her students would do anything for her and that was completely clear to me... I think praise and support is the most important thing." This mentor's opinion that praise for teachers is the most important way to support prospective teachers seems to be an opinion prior to content mentoring.

This mentor was motivated to serve as a content mentor partly because he thinks those considering teaching should feel that the profession is as respected as law or medicine and realize that it is viewed as a very virtuous decision. Mentor 3 also stressed how much she praised her mentee for choosing to become a teacher. She said she often told her mentee, “I think you’re amazing” for choosing to be a high school teacher, especially because of the daily stamina and patience she perceives it to require. The mentors’ intuitive valuing of praise reflects research that indicates the value of boosting teacher esteem, including the correlation of esteem with positive teaching behaviors, student outcomes, and student achievement (Ashton & Webb, 1986; Guskey, 1998; Ross, 1992; Tschannen-Moran; Stein & Wang, 1988).

Mentors’ Pedagogy Benefits

The majority of data in this domain comes from interview questions focused on how content mentoring may have impacted the mentors’ own approach to teaching. I asked mentors questions such as: How has your orientation toward teaching your discipline been impacted?; Have you made changes in your syllabus?; Has your grading style changed?; Have you made pedagogical changes as a result of your mentoring?; and Have you made assignment changes as a result of your mentoring? During analysis of mentors’ interview segments focused on their perceptions of benefits to themselves as a result of content mentoring, I identified three sub-domains: (1) Reminders of Good Pedagogy, (2) Mindfulness of Making Classes Relevant for Future Teachers, and (3) New Confidence and Assurance in K-12 Teachers Being Produced.

Table 7 includes a summary of open coding, domain analysis, and triangulation of mentor data for the domain “Mentors’ Pedagogy Benefits.” (See Appendix H for complete coding keys and analysis of mentor data.)

Table 7

Summary of Analysis: Domain “Mentors’ Pedagogy Benefits”

Sub-domain	Applicable Mentors	PPA Triangulation Item	PPA Scores
Reminders of Good Pedagogy	3 4	n/a	n/a
Mindfulness of Making Classes Relevant for Future Teachers	2 4	n/a	n/a
New Confidence and Assurance in K-12 Teachers Being Produced	4	n/a	n/a

Legend

Mentor/Mentee 1: Spanish mentor/mentee

Mentor/Mentee 2: English mentor/mentee

Mentor/Mentee 3: English mentor/mentee

Mentor/Mentee 4: Mathematics mentor/mentee

PPA score of 2 = Proficient performance in indicated area

PPA score of 3 = Exceptional performance in indicated area

Reminders of Good Pedagogy

Two mentors, English and Spanish professors, articulated how the mentoring experience reminded them to reconsider elements of thoughtful pedagogy. Mentor 3, an English professor, said that as a result of her mentoring, she now pays “more attention to where the students are and what kind of questions they bring to the examination of the text, rather than just giving them what I know and expecting them to absorb it like sponges.” Mentor 4, a mathematics professor, acknowledged that her mentoring reminded her of the benefits of constructive pedagogy, which she observed and liked her mentee using. However, she does not think it is as feasible for college professors to utilize: “I wish we had more time in a semester. If we had a longer semester, you could maybe do things a little differently. I would prefer students really being engaged in their learning... but you can’t cover as much material.”

While both mentors describe an increased awareness of good pedagogy, especially an element of student involvement and constructivist learning, it seems that a change in their teaching style would be minimal at best. Mentor 3 now says she is more likely to structure her

lessons with more of a two-way dialogue between students' interests and perspectives rather than a unilateral flow of knowledge from her to students, a small improvement but hardly drastic.

Mentor 4, although she is aware that she would like to teach in a different manner, has not actually made any changes due to time constraints.

Mindfulness of Making Classes Relevant for Future Teachers

Two mentors, English and mathematics professors, explained how their mentoring raised their consideration of prospective teachers being among their students and meeting their needs. Mentor 2 explained that prior to the mentoring, he was likely to teach Shakespeare mostly for the intellectual development and pleasure it offers students, but now he is aware some of his students will be teaching Shakespeare in the near future. Now he considers in the execution of his classes: "They need to be able to know 'What do I teach first?' 'How do I teach the difference between verse and prose?' 'How do I teach students what an iambic pentameter is?'" He explained, "I do think I am [now] more sensitive to the different needs of my different constituencies." The mentor offered the example of how he now modifies paper assignments: "If I'm giving a paper assignment now, instead of having a student do a paper all on *Othello*, [he or she] could do a paper on how [one] would *teach Othello*." The assignment would be framed as, "You've got 75 minutes to teach *Othello*, Where do you start?, What do you do?, Where do you look?, How do you frame it?" The mentor explained, "That's not something I would have done before this experience."

Mentor 4, a mathematics professor, also shared that she now thinks "more in terms of how I present material in the classroom as an influence to students like [my mentee] and other students going into teaching." She said she tries to make her lessons relevant for future teachers by emphasizing how they might present the same material later on to high school students. She

said she'll interject into lessons, "Now, if you're going to teach this to anyone, this is what you need to talk about..." For example, she said she stresses that future teachers should stress "certain distributions that are very important" when presenting probability theory. She also tells teacher candidates that they should anticipate students asking them "how do data appear?" and how they as teachers should respond to such a question. It is interesting that both mentors identify what their education students should talk about in their future classrooms rather than making their own instruction constructivist. This is especially interesting and ironic since Mentor 4 also voiced that she appreciated the student-centered approach her mentee used in his teaching. This irony may suggest that professors are deeply, even unknowingly, entrenched in lecture-style pedagogy and might benefit from an inquiry approach in assessing their own teaching habits.

New Confidence and Assurance in K-12 Teachers Being Produced

Mentor 4 also described her new confidence in the quality of K-12 teachers being produced. This view parallels the above-mentioned perspectives on qualities that should be cultivated in teacher preparation. This mentor was very impressed with her mentee's level of commitment and connection with her students. She thought his level of effort and engagement with students was "unusual" in its quality; she had neither seen it in her own daughter's K-12 teachers nor in university faculty. This mentor has no previous experience in K-12 schools other than her experiences with her daughter's teachers, tempering the significance of her perspective. However, her strong opinion may suggest that general views of teacher quality are based for many on anecdotal experience that may be shifted with even a slight increase in interactions with teacher candidates or teachers. This reorientation of teacher quality perceptions through observations of and conversations with teachers can be extended to professors and even parents

and policy makers, perhaps shifting widespread societal views of teachers and teacher education to a more positive and respectful tone.

Mentors’ Views of Programmatics (Program Planning and Logistics)

The majority of data in this domain comes from interview questions eliciting content mentors recommendations for the One-on-One Content Mentoring program. I asked mentors questions such as: Did you have concerns or questions going into the experience?; What were the challenges of mentoring on site?; What were the benefits of mentoring on site?; and What advice would you give to a colleague in your department who is considering mentoring a student teacher? During analysis of mentors’ interview segments focused on their recommendations for and opinions about the program, I identified three sub-domains: (1) Initial Concerns about Scheduling, (2) Ideas on How to Get Other Arts and Sciences Professors to Serve as Mentors, and (3) Recommendations for Program.

Table 8 includes a summary of open coding, domain analysis, and triangulation of mentor data for the domain “Mentors’ Views of Program Logistics.” (See Appendix H for complete coding keys and analysis of mentor data.)

Table 8

Summary of Analysis: Domain “Mentors’ Views of Program Logistics”

Sub-domain	Applicable Mentors	PPA Triangulation Item	PPA Scores
Initial Concern about Scheduling	1 2	n/a	n/a
Ideas on how to Engage Other Arts and Sciences Professors as Content Mentors	1 2 3 4	n/a	n/a
Recommendations for Program	1 2 3	n/a	n/a

Legend

Mentor/Mentee 1: Spanish mentor/mentee

Mentor/Mentee 2: English mentor/mentee

Mentor/Mentee 3: English mentor/mentee
Mentor/Mentee 4: Mathematics mentor/mentee

PPA score of 2 = Proficient performance in indicated area
PPA score of 3 = Exceptional performance in indicated area

Initial Concerns

Two mentors, Spanish and English professors, shared that they had initial concerns about how the program, particularly how they would manage to make three site visits in a busy semester. Both mentors described concerns about scheduling their visits to their mentees' schools because of their work commitments, especially teaching and writing, at Boston College. Mentor 1, a Spanish professor, said the time commitment was challenging for her because of her teaching and her need to carve out blocks of time for writing; she writes high school Spanish textbooks. Although she stressed that the scheduling was difficult, she said she was happy to do the content mentoring primarily because it was for her particular mentee, with whom she had developed a personal relationship beyond the mentee's time as her student.

Mentor 2, an English professor stated, "The challenge is time. That's the big challenge because [teacher candidates] teach along these very tight teaching schedules." He said it was difficult to schedule not only the observation periods but time to debrief afterwards. Similarly to Mentor 1, Mentor 2 explained that while scheduling was challenging, he and his mentee "had the advantage of having a previous relationship because she had been in my Shakespeare course, so I knew her" and this helped them develop "a good working relationship."

Both mentors' points emphasize that while the requirement of on-site observations is challenging for content mentors given their other professional responsibilities, they may be more willing to serve as a content mentor if they know the teacher candidate and had a positive relationship with him or her. Facilitators of content mentoring programs should emphasize the

personal relationship aspect of content mentoring as a way to appeal to arts and sciences faculty considering serving as mentors. This approach would reflect the research on the relationship aspect of mentoring, which indicates that mentees value particular personal attributes in their mentors, especially enthusiasm, approachableness, supportiveness, and a confidence-building manner (Ballou, 2002; Gray & Smith, 2000; Hudson, 2002).

Ideas on How to Engage Other Arts and Sciences Professors as Mentors

All four mentors had ideas on how to entice or motivate other arts and sciences professors to serve as content mentors in the program. Mentor 1, a Spanish professor, and Mentor 3, an English professor, suggested that professors should be encouraged to picture their son or daughter sitting in a public high school classroom to evoke a desire to support his or her future teacher. Mentor 4, a mathematics professor, and Mentor 2, an English professor, both said professors should be invited to serve as content mentors as a way of helping to raise the status of the K-12 teaching profession and letting teacher candidates know that their college professors admire their choice to become teachers. Mentor 4 also added that arts and sciences professors should be encouraged to do it so they can strengthen teacher candidates' content knowledge, an idea that furthers the perspective on the importance of content knowledge in teacher preparation. Mentor 3, an English professor said arts and sciences professors should do it so their "eyes will be opened to the reality of urban teaching" and also so they remember to think about pedagogy in their own teaching, "which [some] haven't had to do in a long time."

Interestingly, a few of the content mentors' ideas on how to engage more arts and sciences professors in content mentoring mirrored their own motivations for participation: a personal connection to K-12 schools and the inherent importance of supporting new teachers. Their motivations and initial hopes were fulfilled. The other ideas were based on new insights

gained during the mentoring experience: the unique contribution of content knowledge arts and sciences professors can provide to teacher candidates and a benefit to the professors themselves of a renewed interest in pedagogy. All of these reasons should be presented to prospective arts and sciences content mentors, and the reasons should be framed as originating from their fellow departmental colleagues to give them more validity.

Recommendations for Program

Three mentors, Spanish and English professors, had several recommendations for the One-on-One Content Mentoring Program. Mentor 1, a Spanish professor, suggested using arts and sciences graduate students, who would have the strong content knowledge like arts and sciences professors but may have more flexibility in their schedule to serve as on-site content mentors for teacher candidates. While this option may address scheduling challenges of content mentors, it would not involve as well the School of Arts and Sciences in the Lynch School of Education's teacher preparation efforts. A major goal of the One-on-One Content Mentoring Program is to make teacher education a university-wide concern, so while having arts and sciences graduate students serve as content mentors for student teachers would maintain some involvement of the school of arts and sciences in Lynch School efforts, it would not be the same level of involvement or earn as much notice as having arts and sciences professors serve as content mentors. Additionally, the opportunity to have arts and sciences faculty become more aware of the needs of teacher candidates in their classes would be lost, as would arts and sciences faculty's increased awareness of K-12 school realities and interest in pedagogy.

Mentor 2, an English professor had several suggestions: (1) have opportunities for content mentors to meet and share their experiences and what they have learned; (2) establish mentor and mentee pairs earlier so that the actual mentoring can begin right at the beginning of

the semester; (3) inform content mentors of what courses their mentees have taken so that content mentors understand their content and pedagogy background; and (4) suggest to teacher candidates that they not schedule their content mentor observations for the same time as other supervisors' observations so their observation feedback is more diversified. Mentor 2 explained that during one of his site visits to his mentee's classroom, she was also being observed by her Lynch School supervisor. While he did not think it was a problem for his mentee, he thought the situation of multiple observers is not ideal for a teacher candidate because it "might be overwhelming for the student [teacher]." He said if the teacher candidate is "having an off day" while being observed by multiple mentors, two sets of feedback "just [wouldn't] work well" because it can feel too "burdensome."

Both Mentors 2 and 3, English professors, suggested that the program coordinator consider personalities of mentors and mentees carefully when making pairs since effective mentoring is based on a "comfortable relationship" between a mentor and mentee. In previous semesters of the One-on-One Content Mentoring program, program facilitators did take care to consider personalities of mentors and mentees during the pairing process. During the Fall 2008 semester, however, this was not necessary since all four mentees were paired with arts and sciences professors that they requested and with whom they had had a class.

Findings Regarding Teacher Candidate Mentees

My analysis of interview data from teacher candidate mentees is the basis for my delineation of domains and sub-domains regarding the value and perceptions of content mentoring for teacher candidates. My analysis of mentee data resulted in seven major domains: (1) Motivations to Participate as a Mentee, (2) Gained Knowledge, (3) Additional Benefits for

Mentees, (4) Perceptions of Benefits for Mentors, (5) Understanding of “Teaching for Social Justice”, and (6) Programmatics: Program Planning and Logistics.

Figure 2 includes a summary of analysis of content mentor and mentee data that indicates corroborating findings for mentoring pairs. For example, since both Mentor and Mentee 1 indicated that they were motivated to participate in the program because of a desire to collaborate with a particular professor or student, I included the appropriate sub-domains—even with other participants’ notation—to indicate that findings regarding content mentors regarding this sub-domain supports and is supported by corresponding content mentee data. (See Appendix H for complete coding keys and analysis of content mentor and mentee data.) I further explain corroborating data in applicable sub-sections of content mentee findings.

Figure 2

Summary of Corroborating Content Mentor and Mentee Data Analysis

Legend:

- Mentor/Mentee 1: Spanish mentor/mentee
- Mentor/Mentee 2: English mentor/mentee
- Mentor/Mentee 3: English mentor/mentee
- Mentor/Mentee 4: Mathematics mentor/mentee
- PPA score of 2 = Proficient performance in indicated area
- PPA score of 3 = Exceptional performance in indicated area

Domain “Motivations to Serve as a Content Mentor”

Sub-domain	Applicable Mentors	PPA Triangulation Item	PPA Scores
Personal Motivation to help particular mentee	1	n/a	n/a

Domain “Motivations to Participate as a Mentee”

Sub-domain	Applicable Mentors	PPA Triangulation Item	PPA Scores
Ability to State Mentor Preference	1 2 3	n/a	n/a

Domain “Mentors’ Exposure to K-12 School Realities”

Sub-domain	Applicable Mentors	PPA Triangulation Item	PPA Scores
Curriculum/Resources Awareness	1 3	n/a	n/a

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Domain “Mentees’ Perceptions of Benefits to Mentors”

Sub-domain	Applicable Mentors	PPA Triangulation Item	PPA Scores
Interesting Exposure to K-12 School Realities	1 2	n/a	n/a

Domain “Mentors’ Understanding of ‘Teaching for Social Justice’”

Sub-domain	Applicable Mentors	PPA Triangulation Item	PPA Scores
Curriculum	1	n/a	n/a
Resources	2 3 4	n/a	n/a

Domain “Mentees’ Understanding of ‘Teaching for Social Justice’”

Sub-domain	PPA Triangulation Item	Applicable Mentees	PPA Scores
Increased Awareness of School Resources	PPA #D2: Teacher candidate works to promote achievement by all students without exception	4	2
Place for Social Justice in the Curriculum	PPA #D9: Teacher candidate identifies policies and programs that contribute to, or maintain the existence of, equity, or inequity through written reflections and actions	3 1	2 2

Domain “Mentors’ Perceptions of Benefits to Mentees”

Sub-domain	PPA Triangulation Item	Applicable Mentors	PPA Scores
Content Knowledge	PPA #A6: Teacher candidate draws on resources from colleagues, families, and the community to enhance learning	1 2 3 4	2 2 2 2

Domain “Mentees’ Acquired Knowledge”

Sub-domain	PPA Triangulation Item	Applicable Mentees	PPA Scores
Content Knowledge	PPA #A6: Teacher candidate draws on resources from colleagues, families, and community to enhance learning	2 3 4	2 2 2

Domain “Mentors’ Perceptions of Benefits to Mentees”

Sub-domain	PPA Triangulation Item	Applicable Mentors	PPA Scores
Future Education and Career Opportunities	PPA #E3: Teacher candidate maintains interest in current theory, research, and developments in the academic disciplines	1	3

Domain “Mentors’ Perceptions of Benefits to Mentees”

Sub-domain	PPA Triangulation Item	Applicable Mentees	PPA Scores
Future Education and Career Opportunities	PPA #E3: Teacher candidate maintains interest in current theory, research, and developments in the academic disciplines	1	3

Domain “Mentors’ Perceptions of Benefits to Mentees”

Sub-domain	PPA Triangulation Item	Applicable Mentors	PPA Scores
Pedagogical Content Knowledge	PPA #F4: Teacher candidate identifies the needs, talents, and abilities of pupils and links these to subsequent lesson planning (applicable only to Mentors 1 and 4)	1 4	3 2
	PPA #F2: Teacher candidate provides formative and summative opportunities for pupils to connect their learning to experiences or situations significant in their lives (applicable only to Mentors 1, 3, and 4)	1 3 4	2 2 3
	PPA #G2: Teacher candidate demonstrates careful and thoughtful integration of knowledge of subject matter and pedagogy, beliefs about and understanding of learning as drawn from conceptual, empirical, and major ideas from theory (applicable only to Mentor 2)	2	2

Domain “Mentees’ Acquired Knowledge”

Sub-domain	PPA Triangulation Item	Applicable Mentors	PPA Scores
Pedagogical Content Knowledge	PPA #G2: Teacher candidate demonstrates careful and thoughtful integration of knowledge of subject matter and pedagogy, beliefs about and understanding of learning as drawn from conceptual, empirical literature, and major ideas from theory (applicable to all four mentees)	1 2 3 4	3 2 2 2
	PPA #F2: Teacher candidate provides formative and	2 3	2 2

	summative opportunities for pupils to connect their learning to experiences or situations significant in their lives (applicable to Mentees 3 and 4)	4	2
	PPA #F4: Teacher candidate identifies the needs, talents, and abilities of pupils and links these to subsequent lesson planning (applicable to Mentees 1 and 2)	1 2	2 2

Domain “Mentors’ Perceptions of Benefits to Mentees”

Sub-domain	PPA Triangulation Item	Applicable Mentors	PPA Scores
Praise, Esteem, and Admiration for Teaching Profession	n/a	2 3	n/a

Domain “Mentees’ Additional Benefits”

Sub-domain	PPA Triangulation Item	Applicable Mentors	PPA Scores
Mentor Enhanced Confidence of Mentee	PPA #E6: Teacher candidate reflects critically upon his or her teaching experience and identifies areas for professional development as part of a professional development plan and is receptive to suggestions for growth	2 4	2 3

Mentees’ Motivations to Participate as a Mentee

The majority of data in this domain comes from interview questions focused on mentees’ reasons for participating in the One-on-One Content Mentoring program. I asked mentees questions such as: Why did you decide to participate in the One-on-One Content Mentoring Program?; What did you hope to gain?; What did you hope to gain professionally?; and What did you hope to gain personally? During analysis of mentees’ interview segments focused on reasons for participation in the program, I categorized mentees’ motivations into four sub-

domains: (1) Convenience, (2) Pedagogical Content Knowledge, (3) One-on-One Attention, and (4) Ability to State Mentor Preference.

Table 9 includes a summary of open coding, domain analysis, and triangulation of mentee data for the domain “Motivations to Participate as a Mentee.” (See Appendix I for complete coding keys and analysis of mentee data.)

Table 9

Summary of Analysis: Domain “Motivations to Participate as a Mentee”

Sub-domain	Applicable Mentors	PPA Triangulation Item	PPA Scores
Convenience	4	n/a	n/a
Pedagogical Content Knowledge	1 4	n/a	n/a
One-on-One Attention	2 4	n/a	n/a
Ability to State Mentor Preference	1 2 3	n/a	n/a

Legend

Mentor/Mentee 1: Spanish mentor/mentee

Mentor/Mentee 2: English mentor/mentee

Mentor/Mentee 3: English mentor/mentee

Mentor/Mentee 4: Mathematics mentor/mentee

PPA score of 2 = Proficient performance in indicated area

PPA score of 3 = Exceptional performance in indicated area

Convenience

One teacher candidate, a mathematics mentee, stated that he was motivated to participate in the program because of its logistical convenience. He explained that he “was spending 50 hours a week at the high school... before and after school every day” so it “might be nice if somebody could come to me.” The alternative to participating in the One-on-One Content Mentoring program was taking part in small group discussions that took place on the Boston College campus. Mentee 4 said when he was deciding between the two options, the appeal of having a mentor come to his school site, where he already was spending so much time, rather

than scheduling in trips to the Boston College campus was one reason he decided to participate in the One-on-One Content Mentoring program. Since teacher candidates are typically very busy during their teaching practicum, the convenience of having a content mentor come to them may be appealing to other prospective teacher candidate participants, and program facilitators should present this benefit of the program in the invitation letter.

Pedagogical Content Knowledge

Mentee 4, a mathematics mentee, and Mentee 1, a Spanish mentee, explained that they chose to participate in the program because they believed they could benefit from pedagogical content knowledge from an arts and sciences professor. Although they did not specifically use the term “pedagogical content knowledge” they expressed a desire to have support from someone with content expertise who could help them teach that specific discipline better. While these two mentees articulated that they wanted to build their pedagogical content knowledge, all four mentees ended up explaining that they gained some pedagogical content knowledge.

Mentee 4 said his supervisor from Boston College “didn’t know any math at all” and “[he] was excited to have a math professor come... and bounce ideas off of.” His clinical supervisor from the Lynch School was a former English teacher, and while Mentee 4 said she was helped him stay “organized” with his Boston College requirements, including his evidence binder, journals, and “getting started with [his] inquiry projects,” she could not help him in his content area. Similarly, Mentee 1 explained that her supervisor from Boston College was “helpful in terms of general teaching strategies like classroom management” but she wanted a professor that could “pick out errors that [she] was making in the [Spanish] language” and “see a better way to teach that area of the content.” Both mentees recognized the benefits of their Lynch school supervisors, but the mentees viewed their contributions as limited to organization

and management issues; both mentees recognized their need for content-specific teaching support. They clearly expressed that they sought support from someone with both a strong content knowledge background, including the ability to recognize and point out mentees' incorrect content knowledge, and ability to show mentees subject-specific teaching strategies.

One-on-One Attention

Mentee 2, an English mentee, and Mentee 1, a Spanish mentee were motivated by the one-on-one attention afforded by the program. Mentee 2 explained, "I guess I thought it would be more beneficial to have someone who knew exactly what I was doing, only had to deal with me at least at that particular time, and who I could talk to more personally." She thought the individualized advice a One-on-One Content mentor would give her, especially one who would see her in the classroom context and actually teaching, would be more valuable than the other mentoring option: the small group discussions with several other English teacher candidates led by a Small Group Content Mentor. Mentee 1 also stated that she was interested in the One-on-One Content Mentoring program because she thought she "would probably get better feedback working directly with someone... who [knew] my teaching style and my goals." She added that "the thought of actually sitting down with someone rather than being in a group just sounded more appealing to me." These mentees' comments suggest that the motivation of individualized attention was based on their contrasting of the small group and the one-on-one content mentoring options they were offered. Their assessment of valuable content support was connected to the mentor having at least some knowledge of their teaching context and actually seeing them teach. Their comments suggest that the elements of site visits and classroom observations are critical aspects of content mentoring. Teacher candidates desire content support, but more specifically

they desire content support in connection with their specific teaching situation and teaching needs, suggesting the value of pedagogical content knowledge in addition to content knowledge.

Ability to Identify Mentor Preference

Three teacher candidates, English and Spanish mentees, wanted to participate in the program partly because they could state a preference for their mentor. All three teacher candidates explained that they sought to develop their content knowledge through mentoring by a particular professor. For example, Mentee 3, an English mentee, explained that while her mentor's specialty did not overlap with her high school classes' curricula, the mentee expected the mentor to be "knowledgeable" in other areas of the discipline and therefore her content expertise would still be valuable. Mentee 1, a Spanish mentee, explained that she "specifically wanted this professor" because she "could pick out errors that I was making in the language."

All three mentors also chose professors based on his or her personality. As Mentee 2, an English mentee, explained, "I really liked this class and his teaching style and the way he ran his class." She said her mentor as a professor in his own class "had a presence" and seemed "very fitting as a Shakespeare professor." Mentee 3, an English mentee, also spoke very highly of her mentor, saying she admired her as a professor for her passion for her discipline, explaining, "She loved what she did and you could tell just by the way she talked about things... she was a poet herself and she would read [her poetry] in the city and stuff like that... so she kind of lived what she taught." Mentee 3 said she was excited when she read the list of faculty members available for the One-on-One Content Mentoring program and saw this professor on the list, saying she really wanted to be mentored by this particular professor because "she is really smart and really honest" and "she [is] a great person." Mentee 1, a Spanish mentee, stated, "We had very similar

personality styles.” Mentee 1 referred to her mentor by her first name and described their relationship as “real... not formal by any means.” For example, she shared that she and her mentor would debrief after her mentor observed her “and then a couple hours later I would come home and realize she had written me like a page long e-mail on more things and the next day she would call and say, ‘Oh I forget to mention this... or this would be really helpful.’” Mentee 1 said her mentor “is very real and very personable.” It was evident during the interviews with both Mentee 1 and Mentor 1 that they were both quite personally fond of the other; Mentor 1 articulated that she was motivated to serve as a content mentor because she wanted to work with this particular teacher candidate, whom she especially enjoyed as a student and liked personally. All three teacher candidates who were motivated by stating their mentor preference had their mentors in class prior to the program, suggesting that familiarity with a mentor is significant in initiating mentoring relationships.

The mentees’ indications that they chose their content mentors partly based on their mentors’ personalities supports the research that mentees value a display of particular personal attributes in their mentors, especially enthusiasm, being comfortable in talking, encouraging reflection on teaching practices, instilling confidence, and being supportive, approachable, and patient (Gray & Smith, 2000; Hudson, 2002). Research indicates that mentors and mentees should be paired with similar personalities in order to encourage the benefits of the mentorship, especially the exchange of ideas and the building of mentees’ confidence (Anglin, Sanchez, & Ballou, 2002; Hudson, 2002; Turner, 1993). The mentees’ comments suggest that the potential for a mentoring relationship to yield positive results in terms of professional inspiration and model-worthy behavior and demeanor for mentees works best when mentees can see similarities between themselves and their mentors. Mentors may serve better as inspiring models when

mentees can see themselves in their mentors; the qualities in their mentors which mentees admire may seem more attainable for mentees who realize they are already similar in other qualities.

Mentees' Acquired Knowledge

The majority of data in this domain comes from interview questions focused on what mentees' learned through participating in the One-on-One Content Mentoring program. I asked mentees questions such as: What did you learn from your mentor?; What in this experience did you find most helpful?; How did your mentor impact your teaching practices?; Do you believe there was value to having an arts and sciences mentor in addition to or instead of a mentor from the School of Education?; Has this experience enhanced your pedagogical content knowledge?; and How did your mentor's advice enhance your content knowledge? I also prompted mentees to give examples. During analysis of mentees' interview segments focused on what they learned, I delineated three sub-domains: (1) Knowledge from Mentors' Classes Prior to Program, (2) Content Knowledge, and (3) Pedagogical Content Knowledge.

Table 10 includes a summary of open coding, domain analysis, and triangulation of mentor data for the domain "Mentees' Gained Knowledge." (See Appendix I for complete coding keys and analysis of mentee data.)

Table 10

Summary of Analysis: Domain "Mentees' Acquired Knowledge"

Sub-domain	PPA Triangulation Item	Applicable Mentors	PPA Scores
Knowledge from Mentors' Classes Prior to Program	PPA #G1: Teacher candidate draws on prior academic and personal knowledge, coursework, and experience to make instructional choices	1	3
		4	2
Content Knowledge	PPA #A6: Teacher candidate draws on resources from	2	2
		3	2

	colleagues, families, and community to enhance learning	4	2
Pedagogical Content Knowledge	PPA #G2: Teacher candidate demonstrates careful and thoughtful integration of knowledge of subject matter and pedagogy, beliefs about and understanding of learning as drawn from conceptual, empirical literature, and major ideas from theory (applicable to all four mentees)	1	3
		2	2
		3	2
		4	2
	PPA #F2: Teacher candidate provides formative and summative opportunities for pupils to connect their learning to experiences or situations significant in their lives (applicable to Mentees 3 and 4)	2	2
		3	2
		4	2
	PPA #F4: Teacher candidate identifies the needs, talents, and abilities of pupils and links these to subsequent lesson planning (applicable to Mentees 1 and 2)	1	2
		2	2

Legend

- Mentor/Mentee 1: Spanish mentor/mentee
- Mentor/Mentee 2: English mentor/mentee
- Mentor/Mentee 3: English mentor/mentee
- Mentor/Mentee 4: Mathematics mentor/mentee

PPA score of 2 = Proficient performance in indicated area
 PPA score of 3 = Exceptional performance in indicated area

Knowledge from Mentors' Classes Prior to Program

Two teacher candidates explained how they realized they could use knowledge they gained as students in their mentors' classes, especially the examples their professors had used. Mentee 1, a Spanish mentee, explained that her mentor "had a profound impact when I was her student." She said her mentor, as a professor, imparted well the strategy of teaching Spanish through sharing her own experiences and travels. Mentee 1 described sharing with her students, her own experiences while studying in Spain to teach about Spanish culture, including her visit

to an art museum in Madrid and a dance originating in Barcelona. Mentee 4, a mathematics mentee, described how he used the same examples of statistics in his student teaching that his mentor used in her college class. This realization by the mentees that they could incorporate content knowledge from their content mentors—that they gained while students of their mentors—connects to these mentees' motivation to participate in the program rooted in their ability to pick a particular professor. Both mentees wanted to gain more knowledge from former professors and as an added benefit, realized that the knowledge they gained in class was applicable to their student teaching.

For triangulation, I examined both mentees' PPA ratings of item #G1: Teacher candidate draws on one's prior academic and personal knowledge, coursework, and experience to make instructional choices. Mentee 1 received a score of 3 and Mentee 4 received a score of 2, indicating that they were proficient or exceptional in this area. These results suggest that content mentoring may not only further teacher candidates' content knowledge but also alert them to content knowledge and resources they already possess. Mentor 1's significant score of 3 strongly suggests the influence her mentor had on her Spanish knowledge while she was her mentor's student was notable. The applicability of knowledge Mentor 1 gained in her mentors class may be partially due to her mentor's high level of involvement with K-12 teacher preparation efforts, including teacher training and development of text books. Mentor 1 clearly believes language is taught best by usage, not translation, and incorporation of real-life examples and experiences, an approach her mentee undoubtedly observed as a student and then utilized as a student teacher. Mentee 1's observable, exceptional incorporation of knowledge gained from her previous classes into her student teaching suggest the value of arts and sciences professors' possessing a mindfulness toward meaningful pedagogy in their own teaching.

Content Knowledge

Three teacher candidates described how their content mentors developed their content knowledge. For example, Mentee 2, an English mentee, explained that her mentor taught her about “the theme of evil and the social commentary” in *The Scarlett Letter*. She explained that her mentor showed her how “evil” and “ominous ideas” are “always present in the text.” Her mentor pointed out to her that it is significant that the narrator is a “sort of a separate character” who through telling the story “makes comments about Puritan life and the hypocrisy of the Puritan culture.” She acknowledged, “That is something that could be really easily be missed if you’re just reading quickly or if you’re only looking for certain things... You can miss [this awareness of the text] because they’re like undertones.” She said her mentor would go through passages with her and point out specific passages and point out how themes of evil and hypocrisy are present. Her mentor stated in his interview that through their conversations and because he “guided” her through the text and showed her examples, she “was able to find more [social] commentary in the book” and she “was able to then share that with [her] class.”

Mentee 3, also an English mentee, gave the example of her mentor teaching her about Orwell’s personal background. The mentee explained that her mentor talked with her about how she could show students Orwell’s biography, talk about his life, and “show how [his life] influenced his writing.” The mentee stated that she was not familiar with Orwell’s background so she found that discussion with her mentor helpful. Although the mentee said she was not able to spend as much time teaching about Orwell’s background because of time constraints and her cooperating teacher’s desire to finish the book before the mentee finished her practicum, the mentee said in the future, she would plan on spending a week “talking about Orwell.... his

socialism, and how that might parallel to *Animal Farm*... and what Orwell was trying to say in his book.”

Mentee 4, a mathematics mentee, explained how his mentee talked with him about how he could teach statistics without including concepts from calculus. The mentee explained that in his college classes on statistics, including one taught by his content mentor, “A lot of stuff we did was very calculus based.” He said “he needed to figure out how to [teach statistics] without calculus” since his high school students did not have a background in calculus, and he said his mentor was “very helpful” with that. His comments mirror Rowan et al.’s (2002) research conclusions that advanced mathematical knowledge among K-12 teachers should also be coupled with an understanding of how they can simplify and clarify for their advanced mathematics knowledge for K-12 students. Mentee 4’s comments suggest the potential for content mentors to help teacher candidates utilize their high-level mathematical knowledge by making sure they also have the tools to make it accessible to high school students. Content mentors can help teacher candidates better realize and access the fluidity in the broad spectrum of content knowledge they have attained in their college classes. Teacher candidates who have recently taken their most challenging content courses at the university level, may need reminders of how to access and relate earlier-learned content knowledge.

For triangulation, I examined the mentees’ PPA ratings of item #A6: Teacher candidate draws on resources from colleagues, families, and the community to enhance learning. The three mentees received scores of two, indicating that they are proficient in this area, suggesting that content mentoring, particularly the arts and sciences professors’ sharing of their expertise, may have had a visible impact on their mentees’ ability to incorporate knowledge gained from their mentors in their teaching. Although all three mentees’ scores of two do not provide a strong

factor for triangulation, it is notable that all three of their content mentors articulated that they thought they developed their mentees' content knowledge and gave similar examples as their mentees, offering a degree of corroboration for the finding. Interestingly, the mentors of all three mentees' in this sub-domain had no K-12 teaching experience. This point highlights the potential value of content mentors for prospective teachers, even if the content mentors do not have any K-12 experience themselves. This finding suggests that even though arts and sciences professors may not have experience teaching high school, their knowledge and expertise may still be applicable and valuable to the curricula of high school teachers.

Pedagogical Content Knowledge

All four teacher candidates described how participation in the program increased their pedagogical content knowledge. When asked directly what if any pedagogical knowledge they gained from their content mentor, two mentees, a mathematics and an English teacher candidate, stated that they did not think they gained any. However, when prompted to give examples of what they learned from their content mentors, all the mentees shared examples of how they did gain pedagogical content knowledge. This juxtaposition suggests that some contributions of content mentors are not overtly obvious, even to their mentees. It might take prompting and jogging of memories for participants to reflect back on their experience and what they might have gained. Those evaluating the worth of mentoring programs should take care that their assessment is not only based on brief or close-ended questions which may not give participants ample time to think about their experiences.

All four mentees described gaining a better understanding of bridging content and practice, an element of pedagogical content knowledge. For example, Mentee 2, an English mentee, described using her mentor's suggestion to begin literary analysis with her English

classes by giving them a quote and having them talk in small groups first and then facilitating a whole class discussion focused on analysis of the text. Mentee 3, also an English mentee, described using her mentor's suggestion to trace characters throughout a plot while discussing how their development affected other characters and situations as a method of teaching about characterization. Mentee 4, a mathematics mentee, described utilizing his mentor's suggestion to introduce a new definition by first putting the word on the board, asking students about their preconceived notions about it, presenting a formal definition, asking a student to read it, asking another to explain the definition, and another to provide an example.

For triangulation, I examined the mentees' PPA ratings of item #G2: Teacher candidate demonstrates careful and thoughtful integration of knowledge of subject matter and pedagogy, beliefs about and understanding of learning as drawn from conceptual and empirical literature, and major ideas from theory. Mentee 1 received a score of 3 and Mentees 2, 3, and 4 received a score of 2. Their scores indicate that they are proficient or exceptional in this area. Mentee 1's score lends notable credibility to the finding that content mentoring may strengthen teacher candidates' awareness and implementation of subject matter and pedagogy integration.

Three teacher candidates described using helpful examples, representation, or analogies, another aspect of pedagogical content knowledge. Mentee 2, an English mentee described taking her mentor's suggestion to encourage students to make comparisons between the society in *Animal Farm* and their high school, particularly in aspects of equity and power. Mentee 1, a Spanish mentee, shared how she took her content mentor's suggestion to make lessons connect as much as possible to students' lives. She explained how her students were intrigued by her, their young student teacher, and wanted to know all about her. She said she used a timeline of her of her own life to teach a lesson on different tenses; she said the students were "so engaged"

during this lesson. Mentee 4, a mathematics mentee described how he took his content mentor's suggestion to "use Pascal's triangle to show [his students] all the different number sequences all at once and kind of introduce [the unit on number sequences] that way." Their examples suggest the potential of content mentoring to develop teacher candidates' pedagogical content knowledge, especially their knowledge of how to incorporate useful comparisons, illustrations, and demonstrations in their teaching to make subjects more comprehensible to students (Shulman, 1986, p. 6).

For triangulation, I examined the mentees' PPA ratings of item #F2: Teacher candidate provides formative and summative opportunities for pupils to connect their learning to experiences or situations significant in their lives. The mentees each received a score of two, indicating that they are proficient, suggesting that their mentoring experience may have increased their utilization of interesting and personally relevant examples and analogies as part of their teaching.

Two teacher candidates, a Spanish and an English mentee, also described their increased awareness of common perceptions and difficulties, another element of pedagogical content knowledge. For example, Mentee 1, a Spanish mentee, explained how her mentor encouraged her to be more aware of some students' difficulties with learning and pronouncing certain Spanish vocabulary because of their own Spanish-speaking background, and one especially rooted in a non-European culture. This mentee's increased awareness regarding the connection between students' backgrounds and their pronunciation tendencies parallels her increased understanding of "teaching for social justice," particularly with regard to students who are native Spanish speakers. This mentee recognizes, for example, that many of her students whose families are from Puerto Rico are unfamiliar with the "vosotros" form of verb conjugations. Her mentor

encouraged her to recognize this difficulty, and their tendency to use other verb forms instead, as rooted in their background. The mentee focused on this area of need, but also did so in a way that stressed that she realized it was because this particular verb form is not used often outside of Spain. For triangulation, I examined both mentees' PPA ratings of item #F4: Teacher candidate identifies the needs, talents, and abilities of pupils and links these to subsequent lesson planning. The mentees each received a score of 2, indicating that they are proficient in this area, suggesting that their mentoring experience may have increased their awareness of students' backgrounds and needs in their lesson planning and implementation. While the majority of PPA scores regarding pedagogical content knowledge were twos, the articulation of all four content mentees and their mentors of gained pedagogical content knowledge on the part of the content mentees, including examples, supports the finding pedagogical content knowledge is a significant benefit of content mentoring.

Mentees' Additional Benefits

The majority of data in this domain comes from interview questions focused on what mentees' gained—beyond knowledge—through participating in the One-on-One Content Mentoring program. I asked mentors questions such as: What in the experience did you find helpful?; What were the benefits of being mentored on site?; Has this experience impacted your professional development?; and If so, how? During analysis of mentees' interview segments focused on the program's benefits for them, I delineated three sub-domains: (1) Mentor Furthered Confidence of Mentee, (2) Professional Growth, and (3) Logistical Benefits.

Table 11 includes a summary of open coding, domain analysis, and triangulation of mentor data for the domain "Mentees' Additional Benefits." (See Appendix I for complete coding keys and analysis of mentee data.)

Table 11

Summary of Analysis: Domain “Mentees’ Additional Benefits”

Sub-domain	PPA Triangulation Item	Applicable Mentors	PPA Scores
Mentor Enhanced Confidence of Mentee	PPA #E6: Teacher candidate reflects critically upon his or her teaching experience and identifies areas for professional development as part of a professional development plan and is receptive to suggestions for growth	2	2
		4	3
Professional Growth	PPA #E4: Teacher candidate collaborates with colleagues to improve instruction, assessment, and student achievement (applicable to Mentees 2 and 4)	2	2
		4	3
	PPA #E2: Teacher candidate conveys knowledge and enthusiasm for his/her academic discipline to students (applicable to Mentee 3)	3	2
	PPA #E3: Teacher candidate maintains interest in current theory, research, and developments in the academic discipline (applicable to Mentee 1)	1	2
Logistical Benefits		2	
		4	

Legend

Mentor/Mentee 1: Spanish mentor/mentee

Mentor/Mentee 2: English mentor/mentee

Mentor/Mentee 3: English mentor/mentee

Mentor/Mentee 4: Mathematics mentor/mentee

PPA score of 2 = Proficient performance in indicated area

PPA score of 3 = Exceptional performance in indicated area

Mentor Enhanced Confidence of Mentee

Two teacher candidates, mathematics and English mentees, described how their mentors increased their feelings of confidence. Mentee 4, a mathematics mentee, stated that his mentor

boosted his confidence as a young, prospective teacher by often telling him, “I wish my daughter had a teacher like you.” He said, “[Her comment] was really nice... It made me feel good about what I was doing and gave me some hope that I can do this, be a teacher.” Mentee 2, an English mentee, described how her mentor complimented her on her teaching style and rapport and relationship with her students. The mentee explained, “He was really impressed by how they liked me and would do things for me. Part of teaching high school is getting students to want to learn what you’re teaching them and I guess a good way of doing that is to get them to like you. So I think he thought that I had done that well.”

For triangulation, I examined both mentees’ PPA ratings of item #E6: Teacher candidate reflects critically upon his or her teaching experience and identifies areas for professional development as part of a professional development plan and is receptive to suggestions for growth. Mentee 4 received a score of 3 and Mentee 2 received a score of 2. Their scores indicate that they are proficient or exceptional in this area. Mentee 4’s score especially corroborates the finding that content mentors may have impact on their mentees’ sense of confidence. While Mentee’s score of 2 does not seem initially impressive, her content mentor’s comments regarding his high praise for her teaching efforts, demeanor, and choice to enter the teaching profession support the finding that praise and esteem for teacher candidates are a benefit of content mentoring. These examples emphasize the potential benefit of content mentoring for building teacher candidates’ confidence, which contributes to candidates’ overall efficacy. By increasing their mentees’ confidence, the content mentors build their efficacy, their belief that they have the capacity to affect their students’ learning (Berman et al., 1997). Bandura (1997) and Bencze et al. (2006) stress that teachers high in confidence, and consequently efficacy, are

more likely to experiment with their teaching to meet students' needs and utilize knowledge-building pedagogy.

Professional Growth

Three teacher candidates, mathematics and English mentees, explained how the mentoring program furthered their professional growth. Two mentees described how their mentors encouraged them to realize how important collaboration is in teaching. Mentee 4, a mathematics mentee, explained that his conversations with his content mentor helped him realize “that new teachers and all teachers need to be willing to collaborate and willing to talk to other professionals.” He liked that the One-on-One Content Mentoring program “gave [him] the opportunity to do that... discuss teaching in general and math teaching in general.” Mentee 2, an English mentee, said that as a result of her content mentoring, she now feels like she has another resource for advice and collaboration. She explained that she now would feel comfortable e-mailing her content mentor, writing, “So this is what I’m doing. Do you have any suggestions?” She said she senses that “he wouldn’t mind getting e-mails from me like that.” For triangulation, I examined the mentees’ PPA ratings of item #E4: Teacher candidate collaborates with colleagues to improve instruction, assessment, and student achievement. Mentee 4 received a score of 3 and Mentee 2 received a score of 2. Their scores indicate that they are proficient or exceptional in this area; Mentee 4’s score suggests that his mentor may have indeed had impact on his mentee’s sense of professional growth, specifically, an openness to collaboration. Both content mentees clearly indicated an awareness of the importance of collaboration and the sense that new teachers should reach out for help and veteran teachers are generally happy to help those starting out in the profession.

Mentee 3, an English mentee, explained how her mentor stressed the importance of being inspired continuously by one's discipline. The mentee said her mentor spoke passionately about "how she likes to teach English because it helps teach us more about ourselves... It shows us all these different facets of humanity and there are so many different ways to look at it." Her mentor emphasized that "[English is] such a beautiful subject" and by teaching it, one can "share that kind of beauty with [one's] students and other people and help them to see that." Additionally, her mentor emphasized that "she loves exploring things with students because they always have something new to offer that she has never noticed before." This mentee spoke very admiringly of her mentor, particularly her passion for English and how she "lives" her passion. For triangulation, I examined the mentee's PPA ratings of item #E2: Teacher candidate conveys knowledge and enthusiasm for his/her academic discipline to students. The mentee received a score of two, indicating that she is proficient in this area. Given the mentee's comments, I am surprised her score was not higher. This mentee said she sought this professor because of her personal manner and her passion for her discipline; she may have been influenced by her content mentor's enthusiasm for English since she chose her mentor primarily because she knew her mentor had that quality.

Mentee 1, a Spanish mentee, said her mentor gave her a lot of advice on different options for graduate school and career paths. Mentee 1 stated her mentor "really just opened up [her] eyes to different things and different opportunities to make sure I consider them at least." Her mentor explained aspects and benefits of getting a Master's in Spanish linguistics or Spanish literature. Similarly, Mentor 1 expressed in her interview that spoke with her mentee a lot about the options and opportunities that a masters in the school of arts and sciences would afford her. For triangulation, I examined the mentee's PPA ratings of item #E3: Teacher candidate

maintains interest in current theory, research, and developments in the academic discipline. The mentee received a score of two, indicating that she is proficient in this area, suggesting that her mentor may have impacted her interest in current theories and developments in her discipline.

All three mentees in this sub-domain had had their mentors as professors in class. This background similarity suggests the potential benefits for mentees of having a mentor with whom they already had some degree of a prior relationship. If teacher candidates have had their content mentors as professors, the content mentoring experience can be an opportunity for them to build their relationship, especially its collegiality and the mentees' comfort with asking for advice. Also, a decent comfort level between mentors and mentees may make it more likely that they will venture into topics beyond teaching and content knowledge, such as graduate school programs and details including stipends, loans, educational debt, and health insurance. Mentor 1 said she talked about those aspects with her mentee, indicating that a comfortable mentoring relationship opens up many more topics for discussion and advice giving.

Logistical Benefits

Two teacher candidates described the logical benefits of the program. Mentee 2, an English mentee, explained that she enjoyed the one-on-one attention, saying, "It was nice to have [my content mentor] like my own personal guide." Mentee 4, a mathematics mentee, said he appreciated the program's logistical ease because the mentor came to him at his practicum site. He emphasized that he was very busy during his practicum. He said he spent many hours at his school site and then right after school he had to go to another job, so he appreciated the program's convenience for him. Both of these observations relate, as the successful fruition, to the mentees' motivations for participating in the program. Mentee 2 explained in her interview that she was looking for individualized support in a content mentor and Mentee 4 explained that

he chose to participate in the program partly because the content mentor would come to his site. Since convenience and individualized attention were incentives and a benefit to some mentees, the program facilitator should present these aspects of the program in the invitation letter as incentives for future prospective content mentees.

Mentees' Perceptions of Benefits to Mentors

The majority of data in this domain comes from interview questions focused on mentees' views on what their mentors might have gained from participating in the One-on-One Content Mentoring program. I asked mentees questions such as: What did you teach your mentor? and What do you think your mentor gained from this experience? During analysis of mentees' interview segments focused on how they thought mentors might have benefitted, I delineated three sub-domains: (1) Personal Connection to K-12 Schools, (2) Personal Satisfaction from Supporting Teacher Preparation, (3) Interesting Exposure to K-12 Realities.

Table 12 includes a summary of open coding, domain analysis, and triangulation of mentee data for the domain "Mentees' Perceptions of Benefits to Mentors." (See Appendix I for complete coding keys and analysis of mentee data.)

Table 12

Summary of Analysis: Domain "Mentees' Perceptions of Benefits to Mentors"

Sub-domain	Applicable Mentees	PPA Triangulation Item	PPA Scores
Personal Connection to K-12 Schools	1	n/a	n/a
Personal Satisfaction from Supporting Teacher Preparation	1	n/a	n/a
Interesting Exposure to K-12 School Realities	1 2	n/a	n/a

Legend

Mentor/Mentee 1: Spanish mentor/mentee

Mentor/Mentee 2: English mentor/mentee

Mentor/Mentee 3: English mentor/mentee

Mentor/Mentee 4: Mathematics mentor/mentee

PPA score of 2 = Proficient performance in indicated area

PPA score of 3 = Exceptional performance in indicated area

Personal Connection to K-12 Schools

Mentee 4, a mathematics mentee, explained that his mentor was happy to see him joining the teaching profession because of her personal appreciation for strong K-12 teachers. He explained, “Over and over again she would say we need good teachers. She has the experience of being a mother with a daughter who just got out of high school and understands [her daughter] had some bad teachers and she had some good teachers... and she was just happy to see that I was pursuing the profession.” Mentee 4 also added this mentor said she enjoyed seeing that someone like him was going to become a high school mathematics teacher because she, as a professor, is often frustrated with students who come to Boston College and take her class “without basic understanding” of concepts she expects students to have as a precursor to taking her college-level class. Mentee 4 said his mentor was also impressed by his successful implementation of a constructivist approach, a point she stressed in her interview; she even shared that she wished she had the time in her college class to teach in more of a constructivist manner. This mentee’s comments indicate that content mentoring may further arts and science faculty member’s interest and investment in K-12 teacher education since the quality of their teaching directly impacts the quality of students college teachers receive. Additionally his comments indicate that content mentoring may remind content mentors of aspects of effective

pedagogy, although a reminder is admittedly no guarantee that faculty will then modify their teaching.

Mentee 4 thought his mentor would be a content mentor again (This was his mentor's first time.) primarily because "she enjoyed sitting in on the classes and talking about new teachers and the profession." It seems that exposure to strong high school mathematics teachers, gaining and sharing perspectives on the state of K-12 teacher quality, and viewing student-centered pedagogy was interesting and enjoyable for this mentor. Although this was only one mentoring pair's experience, it suggests the potential value for other arts and sciences professors of spending some time in K-12 schools to gain a broadened and more positive perspective of K-12 teachers. This element of personal connection to K-12 schools parallels mentors' instilling of confidence in their mentees. Mentor 4, similarly to Mentee 2, expressed that a major benefit of the content mentoring was having his confidence boosted by his mentors. Their comments regarding increased mentee confidence as a result of content mentoring suggests potential value for content mentoring as a factor in building self-efficacy. Since Bandura (1997) proposes that efficacy beliefs are self-referential and predictors of behavior, content mentoring may be a notable tool in bettering teacher quality and performance.

Personal Satisfaction from Supporting Teacher Preparation

Mentee 1, a Spanish mentee, expressed the opinion that the mentoring experience gave his mentor personal satisfaction in supporting new teachers. Mentee 1 thinks her mentor "got some sort of satisfaction out of it for her own teaching of teachers." Mentee 1 had her mentor as a professor in a Spanish pedagogy class and is aware that her mentor writes textbooks for high school Spanish teachers. Mentee 1 said she thinks her mentor must have gotten some satisfaction knowing that Mentee 1 uses what Mentor 1 taught her as a student. Mentee 1 says she gets

“really excited” when she “[hears her students] doing well in Spanish” and assumes that her mentor must also get excited and feel satisfied when she sees Mentee 1 using what she learned in her Boston College class. For example, Mentee 1 explained that she “makes Spanish real” for students by having them talk about themselves. She says she does not “have them do a role play where one is Raphael and one is Jose and they are pretending to have this or that.” She says students “talk about themselves, make connections, use vocabulary that reflects who they are.” Mentee 1’s example mirrors Mentor 1’s emphasis that she believes making personal connections and immersion in the language are the most effective ways of learning a language. Mentee 1’s comments indicate that her mentor felt satisfaction in content mentoring because her attempts to build her mentee’s Spanish pedagogical content knowledge were effective.

Interesting Exposure to K-12 Realities.

Two teacher candidates, Spanish and English mentees, believe that their mentors gained new exposure and understanding of K-12 schools. Mentee 1, a Spanish mentee, said her mentor often spoke of how impressed she was that the mentee’s school offered a native-speakers Spanish class: “She actually was very intrigued by the high school because she said it’s not so often [one] sees a native speakers program” which her mentor said “is a terrific thing to have.” The mentee’s observations mirror her mentor’s interview during which she shared her surprise and pleasure at learning there was a native-speakers Spanish class, highlighting it as an example of social justice for students.

Mentee 2, an English mentee said she actually exposed her mentor to new content knowledge when she recommended to her mentor that he pick up a copy of the text her class was reading, *The House on Mango Street*. Her mentor told her, “I did pick up the book and I read it all last night and it was so good. Thank you.” The teacher candidate explained that she “felt

really good about that”—being able to share something new with her mentor. This positive anecdote supports the research that one benefit of content mentoring is that it is an opportunity for mutually-beneficial conversations between mentor and mentee (Friedman & Wallace, 2006). This example suggests that content mentoring works well when both participants benefit and when their benefits are connected: Mentee 2 gained exposure to a new literary text and Mentor 2 gained a boost in esteem by realizing she could share something with her mentor.

This example reflects content mentoring’s unique qualities in its method and manner of mentoring (Hudson, 2004). Because content mentoring lacks an evaluative element and the traditional expert-novice hierarchy usually present in student teaching mentoring program, it may encourage mentors and mentees to engage more easily in dialogue and a mutually-beneficial exchange of ideas (Friedman & Wallace, 2006; Hudson, 2004). There is potential for content mentors to gain knowledge, including an understanding of high school classroom teaching and even content knowledge, as in this case.

Mentees’ Understanding of “Teaching for Social Justice”

The majority of data in this domain comes from interview questions focused on mentees’ perspectives on the meaning of and examples of “teaching for social justice.” I asked mentees questions such as: Did this experience affect your understanding of teaching for social justice?; How so?; and Did it shape your view of what that means? During analysis of mentees’ interview segments focused on social justice in education and in their teaching, I delineated three sub-domains: (1) Demanding Excellence from All Students; (2) Increased Awareness of Resources; and (3) Place for Social Justice in the Curriculum.

Table 13 includes a summary of open coding, domain analysis, and triangulation of mentor data for the domain “Mentees’ Understanding of ‘Teaching for Social Justice.’” (See Appendix I for complete coding keys and analysis of mentee data.)

Table 13

Summary of Analysis: Domain “Mentees’ Understanding of ‘Teaching for Social Justice’”

Sub-domain	PPA Triangulation Item	Applicable Mentees	PPA Scores
Demanding Excellence from All Students	PPA #B2: Teacher candidate communicates high standards and expectations when carrying out the lesson	1	2
		2	2
		4	2
Increased Awareness of School Resources	PPA #D2: Teacher candidate works to promote achievement by all students without exception	4	2
Place for Social Justice in the Curriculum	PPA #D9: Teacher candidate identifies policies and programs that contribute to, or maintain the existence of, equity, or inequity through written reflections and actions	3	2
		1	2

Legend

- Mentor/Mentee 1: Spanish mentor/mentee
- Mentor/Mentee 2: English mentor/mentee
- Mentor/Mentee 3: English mentor/mentee
- Mentor/Mentee 4: Mathematics mentor/mentee

PPA score of 2 = Proficient performance in indicated area
 PPA score of 3 = Exceptional performance in indicated area

Demanding Excellence from All Students

Three teacher candidates expressed an increased understanding of social justice through a developed sense to demand excellence from all students. Mentee 4, a mathematics mentee explained that his practicum and his conversations with his mentor encouraged him to practice “[giving] equal experiences and the opportunity to succeed in the classroom” to all students, including “lower achieving students.” He said he “tried to demand excellence and perfection always.” He explained that he did this by “[not accepting] that somebody could just sit there

during class” and also by “demanding” that all students “use proper vocabulary and actively participate.” Mentee 4 said he thinks teaching for social justice means “everyone should be given equal experiences and have the opportunity to succeed in the classroom” and that was why he set high standards for all students.

Mentee 1, a Spanish mentee said her understanding of “teaching for social justice” was developed through conversations she had with her content mentor about the native Spanish speakers’ program at her school. Similarly, her mentor voiced that her awareness and views on the native Spanish speakers’ program furthered her own understanding of social justice in education. Mentee 1 realized that the class was important in terms of social justice for native Spanish speakers because “otherwise they would be bored out of their minds in [a regular high school] Spanish class for non-native speakers.” She explained that since they have a much more developed vocabulary and stronger speaking skills than non-native speakers, an appropriate Spanish language class for them would be one that focuses on grammar, similar to English classes. Additionally, the native speakers’ class conveys to students that they should maintain “the drive to preserve their language and identity.” Mentee 4’s comments suggest that she views the class as an example of social justice for native Spanish speakers because of its appropriate language curriculum, which values their background and pushes them to improve their linguistic skills.

Mentee 2, an English mentee said she thinks “teaching for social justice is important and it means having equity in the classroom.” For example, she explained that “everyone should have an equal opportunity to ask questions, respond to questions, to give answers to my questions... an equal chance to learn.” Mentee 2 discussed this idea of providing equal opportunities for students to learn and demonstrate their learning with her mentee by discussing

the role of “talking chips” during her class discussion. She said her mentor liked her idea, and even helped her improve it, of providing all students with poker chips and requiring and that “everyone has the same number of chips” and “everyone has to spend their chips.”

For triangulation, I examined the three mentees’ PPA ratings of item #B2: Teacher candidate communicates high standards and expectations when carrying out the lesson. All three mentees received a score of two, indicating that they are proficient in this area, suggesting—although not significantly—that the program may have had an impact on the teacher candidates’ expectations of students.

The mentees comments regarding social justice differ significantly from those of the content mentors. Mentors 2 and 3 also indicated gaining more understanding of social justice in teaching, but their comments also reflect a deficit perspective, one that was clearly absent in the mentees’ interviews. This difference between the mentees’ and mentors’ comments may suggest the success of the Lynch School in engraining a decent understanding of and commitment to teaching for social justice in its students as well as the difficulty in addressing deeply held, possibly unconscious, deficit perceptions in faculty outside of the Lynch School in a semester-long program. Program facilitators should take more care to include themes of social justice in education—including definitions, research, sharing of experiences, and self-examination of beliefs—in the program’s training seminars.

Increased Awareness of Resources

Mentee 4, a mathematics mentee, articulated that his sense of social justice, particularly his awareness of resources in schools, also developed throughout the program. In conversations with his mentor, he talked about the differences in resources between his practicum placement in the previous year and his practicum placement this year. He realized first-hand that the resources

available at the two schools were “strikingly different”: his placement during the One-on-One Content Mentoring program had smart boards he could use while teaching math while his placement the previous year “barely had a white board.” His mentor expressed to him how impressed she was with the availability of smart boards in a high school math class. He said they talked about how much easier preparation for and actual execution of math lessons are with such current technology. He said having the smart board “makes things a lot easier for me because [I] can be ultra prepared in having everything ready to go.” Regarding the actual teaching, he said the smart board “also makes things very neat. Like if we’re graphing something, the graphs can be perfect.” He said the precision in presentation was “really nice” for his lessons.

Despite his awareness of the disparity in resources between schools, Mentee 4 displayed a striking “can-do” attitude. When describing how in his former placement students were not allowed to bring books home, “if they even [had] books,” he said he ended up creating his own worksheets and making photo copies for students’ homework assignments in his calculus class. He said: “It wasn’t too bad.” He easily offered several examples of how he made accommodations. He said he still had text books in the classroom so he “could pick a variety of problems” and there was “enough paper to make photo copies for the students.” He even pointed out that he could download graph paper from on line. His comments reflect his positive attitude, resourcefulness, awareness, and even gratitude regarding whatever resources he has—whether they be scant or impressive. He finished his description of his former placement saying he could still have students do “whatever I wanted them to do” and “it wasn’t too bad.” For triangulation, I examined the mentee’s PPA ratings of item #D2: Teacher candidate works to promote achievement by all students without exception. He received a score of two, indicating that he is proficient in this area, suggesting that the program may have had an impact on the teacher

candidate's commitment to social justice through encouraging achievement of all students. It does seem that this mentee already had high expectations of all students prior to the content mentoring, as suggested by his description of his earlier practicum site and the means he took to create assignments for students. Conversations with his content mentor regarding the benefits of teaching at a well-resourced school may have increased his awareness of social justice issues in teaching, particularly in schools' resources, especially since his mentor also indicated that her awareness of social justice with regard to classroom resources was developed through her mentoring experience. Their mutual awareness of resources as a social justice issue may have strengthened the impact of their conversations on each other's understanding.

Place for Social Justice in the Curriculum.

Two teacher candidates, English and Spanish mentees, shared how their experience increased their sense of teaching for social justice through the role of curriculum. Mentee 3, an English mentee, described how she used her content mentor's suggestions to use the text *Animal Farm* to guide students' discussions to examine and "question the status quo of society today" and "[make] them critically think about society." This example is similar to examples of mentees' connecting students' learning to their current situation as an element of pedagogical content knowledge. Mentee 3 described how she thinks her students did demonstrate some growth in their social consciousness. She had students in their final assignment on *Animal Farm* write an analysis linking one book character to a real-life person and also a human condition. She said a lot of students analyzed the character Napoleon, emphasizing his dictatorial qualities and comparing him to Hitler. These students also wrote that Napoleon demonstrated the human potential to be "selfish and controlling." Mentee 3 said she was pleased with their progress: "In the beginning they were like, 'Why are we reading about pigs? I don't understand.'" Through

their class discussions and the assignment, she said, “I think they did kind of grasp [the connection] more.”

Mentee 1, a Spanish mentee, explained how conversations with her mentor encouraged her to frame versions of Spanish, i.e., Puerto Rican Spanish and European Spanish, as different versions of the same language, rather than stating that a version may be incorrect. Mentee 1 said she had conversations with her content mentor about the “dominance” of “European Spanish” in the vocabulary of Spanish textbooks. She and her content mentor talked about “incorporating everything,” especially since she had students “whose families were from Guatemala, Puerto Rico.” She said a lot of her students’ families use “Spanglish,” and her students would sometimes use it in her class. The mentee said she encouraged students to know “another way” to speak or write Spanish rather than tell them simply that the version they learned from their friends and family is wrong. This mentee also realized how the inclusion of a native-speakers Spanish class in her school’s curriculum recognizes and serves the needs of an often-forgotten segment of the student population. Her comments strongly indicate that her conversations with her content mentor broadened her awareness of the role curricula can play in helping all children have the knowledge they already possess validated as worthwhile and have opportunities to build on their knowledge.

For triangulation, I examined the mentees’ PPA ratings of item #D9: Teacher candidate identifies policies and programs that contribute to, or maintain the existence of, equity or inequity in education through written reflections and actions. Both mentees received a score of two, indicating that they are proficient in this area, suggesting that the program may have had an impact on their awareness of the role of class discussions, class assignments, and curriculum in social justice for students. Again however, a score of 2 is not a strong corroboration index.

Mentees' Views of Programmatics (Program Planning and Logistics)

The majority of data in this domain comes from interview questions eliciting content mentees' recommendations for the One-on-One Content Mentoring program. I asked mentees questions such as: Did you have concerns or questions going into the experience?; What in the experience did you find most helpful?; What in the experience did you find least helpful?; What were the challenges of being mentored on site?; What were the benefits of being mentored on site?; and Would you recommend participation in this program to a teacher candidate and why? During analysis of mentees' interview segments focused on their assessment of the program, I identified four sub-domains: (1) Unclear Logistics, (2) Scheduling Concerns, (3) Role and Relationship of Other Supervisors, and (4) Recommendations for Program Logistics.

Table 14 includes a summary of open coding, domain analysis, and triangulation of mentee data for the domain "Mentees' Views of Program Logistics." (See Appendix I for complete coding keys and analysis of mentee data.)

Table 14

Summary of Analysis: Domain "Mentees' Views of Program Logistics"

Sub-domain	Applicable Mentors	PPA Triangulation Item	PPA Scores
Unclear Logistics	1 2 3 4	n/a	n/a
Scheduling Concerns	3	n/a	n/a
Role and Relationship of Other Supervisors	1 2 4	n/a	n/a
Recommendations for Program Logistics	2 3 4	n/a	n/a

Legend

Mentor/Mentee 1: Spanish mentor/mentee

Mentor/Mentee 2: English mentor/mentee

Mentor/Mentee 3: English mentor/mentee

Mentor/Mentee 4: Mathematics mentor/mentee

PPA score of 2 = Proficient performance in indicated area
PPA score of 3 = Exceptional performance in indicated area

Unclear Logistics

All four, teacher candidates expressed that they or their mentor were not clear on particular aspects of how the program would run. I include analysis of all their comments in the Chapter Five's section on program recommendations. Mentee 1 explained that he and his mentor were confused toward the end of the semester because they did not know if there was a formal component marking the completion of the program. For example, they wondered if they were being monitored to make sure they completed their content mentoring or if there was some kind of report they had to give to someone. Mentee 4, a mathematics mentee, explained that after he signed up for the program, he did not find out who his mentor was for several weeks. He said he "kept e-mailing [the graduate assistant who helps facilitate the program] and [she] still hadn't gotten one for me." Mentee 2, an English mentee, explained that her mentor did not understand that she, the teacher candidate, was at her high school placement every day for several hours, and initially expected that she could make the professor's normally scheduled office hours at Boston College. Mentee 3, an English mentee, described that her mentor did not contact her for several weeks once they were paired because her mentor thought it was a "whole year mentoring program" and she had "the whole spring semester to meet." Mentee 3 said when she e-mailed her content mentor and clarified that the program was only over one semester "[her content mentor] was really freaked out" and then they quickly set up visits and "she started coming to observe." Their comments indicate that although the program literature and invitation letters describe the content mentoring program to a certain degree, program facilitators should make revisions to recruitment materials, the participant recruitment process, and the

frequency of communication between the program facilitator and program participants. I analyze these areas further in Chapter 5.

Scheduling Concerns

Two teacher candidates, English and Spanish mentees, said that they had concerns during the semester about fitting in their One-on-One Content Mentoring observations among their other required observations. Their scheduling concerns connect with their perspectives about the role and relationship of other supervisors, explained in the next sub-domain. Mentee 3, an English mentee emphasized that the time requirements of the program gave her some concern: “I was just worried about having those formal visits and having another person in the room and then having to talk about it after. It just takes a lot of time... we already have to meet like four to five times with our supervisor, and she has to observe and after the class we have to talk about what went well and what didn’t go well and stuff like that.” Mentee 3 was concerned about the additional time it would take to schedule observations with a content mentor and especially the “post-lesson discussion.” She stated, “I think it’s always challenging to have observations just because there is so much to do.” Mentor 3’s comments corroborate her mentor’s recommendation that mentoring pairs coordinate visits so there are not too many observers in the classroom at once, which might overwhelm the student teacher.

Mentee 2, also expressed concern with “scheduling issues”—particularly with requirements to also schedule observations with her Lynch School supervisor. She noted the challenges of scheduling observations with her supervisor and her One-on-One Content mentor: “There was one day when my supervisor and my content area mentor watched the same class. I had to debrief with them both and my mentor was really awesome and waited for half an hour while I talked to the supervisor.” Interestingly, her mentor also mentioned this episode. He was

not concerned with the scheduling difficulty as a nuisance. Rather, he was concerned that a double observation for a mentee might be too overwhelming in case she had an “off day” and then had to listen to a plethora of negative—albeit hopefully constructive—feedback. Mentee 2 and Mentor 2’s comments about this incident stress that content mentoring pairs should take care not to schedule site visits when the mentee is expecting other observers. This consideration speaks to the need for content mentoring pairs to be matched as early as possible in the semester so that they have ample time to schedule visits. If mentoring pairs begin scheduling site visits early in the semester, with time to rearrange visits, it seems the stress for mentees of being observed by two mentors and the inconvenience for both content mentors and content mentees of having rushed or inconvenient debriefing sessions will more likely be avoided.

Role and Relationship of Other Supervisors

All four teacher candidates contrasted the role of their One-on-One Content Mentor with their other practicum supervisors. Three teacher candidates described the role of their One-on-One Content mentor as unique from the role of their clinical supervisor. For example, Mentee 4, a mathematics mentee, explained that his clinical supervisor lacked content knowledge of mathematics because she was a former English teacher. He said she was more of a good resource for classroom organization. He looked to his content mentor for help with content knowledge. For example, he was hoping to “bounce some ideas” off his content mentor, including how he should teach a unit on number sequences. His mentor ended up helping him with this topic by talking about how he could use Pascal’s Triangle as a way to introduce the concept of number sequences. Similarly, Mentee 1, an English mentee, explained that her clinical supervisor was helpful with classroom management, but this mentee also looked to her

content mentor for help with content knowledge, especially pointing out the mentee's linguistic mistakes.

Mentee 2, an English mentee also described the role of her One-on-One Content mentor alongside the role of their cooperating teacher. She explained that her cooperating teacher was very strong in her content knowledge and consequently the mentee did not feel very inclined to ask her One-on-One Content mentor for content knowledge support since she had a content knowledge resource available to her every day. The mentee explained, "Our cooperating teachers are sort of like content area mentors because they are supposed to have taught our subjects for over three years." She pointed out that her "main cooperating teacher had been teaching for like 40 years... so she knows a lot about [English]." Since the mentee viewed her cooperating teacher's content knowledge as "very strong" and she felt like "[she] could have asked her anything," she never felt a need to "e-mail [her One-on-One] content mentor" about how she might "do a lesson" since she had a personal content knowledge resource conveniently available to her right where she taught every day.

While this mentee also indicated that she gained content knowledge and pedagogical content knowledge from her content mentor, her point that she never reached out to her content mentor for help beyond the three site visits speaks to the challenge of cultivating a substantial and genuine mentoring relationship over one semester and three site visits. This challenge seems especially present if mentees have an alternative, convenient option for content support. Since goals of content mentoring include increasing involvement of arts and sciences faculty in teacher preparation and building bridges between colleges of arts and sciences and schools of education, the program facilitator should consider program modifications to increase face-to-face interaction between content mentors and mentees. Possibilities might include an orientation

“meet-and-greet” for all content mentoring pairs, increasing the required number of site visits, and an end-of-semester social or seminar. These additions might strengthen the relationship between content mentors and mentees, making it more likely for mentees to capitalize on the potential of the program.

Recommendations for Program Logistics

Three teacher candidates, mathematics and English mentees, gave suggestions for program revisions based on their experiences. Mentee 4, a mathematics mentee suggested that prospective mentees choose a mentor with whom they have had a relationship, such as having had the mentor as a professor. He said that since he had taken two classes with his content mentor, he already “had a relationship with [her], and it made it very pleasant and we had some great conversations.” His comments corroborate with his mentor’s comments that she was willing to be a content mentor for a former student whom she viewed as “an absolutely wonderful student.” Their statements support the research that indicates that mentoring pairs work best when participants have past shared experiences upon which to build their relationship or similar personality traits (Anglin, Sanchez, & Ballou, 2002; Turner, 1993).

Mentee 4 along with Mentees 2 and 3, English mentees, stressed that the actual mentoring visits should start early in the semester to give the mentoring pairs more time to capitalize on the program’s potential benefits to mentees. As Mentee 3 explained, if mentoring pairs meet right at the beginning of the semester, the mentee will be able to “bounce ideas off [his or her] mentor” for all the units the mentee anticipates teaching.

Based on all four mentees’ comments regarding their uncertainty of program logistics and scheduling concerns, I delineated several more recommendations. First, the program facilitators should make clearer in the program invitation letter to potential content mentors, many of whom

are unfamiliar with teacher candidates' programs of study, that teacher candidates spend much of their time at their school site placements and do not have typical undergraduate schedules. This clarification would hopefully stress that teacher candidates often cannot make professors' traditional office hours. Secondly, a program facilitator should correspond with participants at several points throughout the semester to make sure the site visits are happening and answer any questions. The program facilitator should make it clear to participants how the mentoring program will end and any program requirements, namely a closing interview with a program facilitator or research assistant. Thirdly, from past experience as the graduate assistant who used to help with the recruitment of content mentors, the pairing of mentors and mentees, and initiating the introduction of the mentors and mentees, I recognize that during some semesters, some arts and sciences departments do not have many, or even any, professors that accept the invitation to be mentors in the One-on-One Content Mentoring Program. It is important to have recruitment on a semester-basis since professors' teaching, research, and departmental commitments may change each semester and consequently their ability to serve as a content mentor. If a teacher candidate from a particular discipline wants to participate in the program and there is no content mentor available from his or her discipline, it can take a few weeks to recruit an arts and sciences professor. Remarks by Mentee 4 about the lack of communication by the program facilitator regarding a content mentor match for him indicate that stronger recruitment efforts should be made among arts and sciences faculty prior to the semester. If there are truly no content mentors available in a certain discipline, this should be made clear in the invitation letter to teacher candidates. Teacher candidates from a discipline should not be invited until the program facilitator is sure that there are indeed mentors available. If teacher candidates from a discipline with no available content mentors indicate that they want to

participate in the program, the program facilitator should inform the teacher candidates promptly that they will have to participate in the Small Group Content Mentoring option.

Chapter V

Summary and Conclusion

This study examines the value of content mentoring for pairs of arts and sciences faculty members and teacher candidates in the same discipline who participated in the One-on-One Content Mentoring program during the Fall 2008 semester at Boston College. Positive results indicate that content mentors gain increased exposure to and understanding of K-12 school realities, a better understanding of the Lynch School's mission "to teach for social justice," perspectives on K-12 teacher preparation, and a renewed awareness of modeling good pedagogy in their own classes. Results also indicate that teacher candidates gain content knowledge, pedagogical content knowledge, awareness of useful content knowledge they already possess, knowledge of how to utilize already-possessioned content knowledge, knowledge regarding educational and career options, professional development, confidence in their teaching abilities, and a deeper understanding of social justice in teaching.

Figure 3 includes a summary of major findings regarding the value of content mentoring for arts and sciences faculty mentors and their teacher candidate mentees. I determine major findings to be those that are corroborated by corresponding partner data (mentee data corroborating mentor data and vice versa), those that are accompanied by PPA scores of three—indicating exceptional performance in the related indicator, or those articulated by at least three mentors or mentees.

Figure 3

Summary of Value of Content Mentoring for Mentors and Mentees

Legend:

Mentor/Mentee 1: Spanish mentor/mentee

Mentor/Mentee 2: English mentor/mentee

Mentor/Mentee 3: English mentor/mentee

Mentor/Mentee 4: Mathematics mentor/mentee

Value for Content Mentors	Applicable Mentors	Corroborated by Content Mentee Data	PPA Score of 3 (Exceptional Performance)
Gained Awareness of K-12 School Curriculum and Resources	1, 2, 3, 4	Yes (Mentees 1, 2)	
Improved Understanding of “Teaching for Social Justice” (Deficit model also present)	1, 2, 3, 4	Yes (All mentees also expressed increased understanding)	
Affirmed Importance of Content Knowledge in Teacher Preparation	1, 3, 4		
Pedagogy Benefits for Their Own Teaching	2, 3, 4		

Value for Content Mentees	Applicable Mentees	Corroborated by Content Mentor Data	PPA Score of 3 (Exceptional Performance)
Improved Content Knowledge	2, 3, 4	Yes (Mentors 1, 2, 3, 4)	
Pedagogical Content Knowledge	1, 2, 3, 4	Yes (Mentors 1, 2, 3, 4)	Yes (Mentees 1, 4)
Utilization of Knowledge from Mentors’ Classes Prior to Program	1, 4		Yes (Mentee 1)
Better Aware of Future Education and Career Opportunities	1	Yes (Mentor 1)	Yes
Professional Growth/ Collaboration	2, 4	Not direct pair (Mentor 1)	Yes (Mentee 4)
Enhanced Confidence	2, 4	Yes (Mentors 2, 3)	Yes (Mentee 4)
Improved Understanding of “Teaching for Social Justice”	1, 2, 3, 4	Yes (All mentors also expressed increased understanding, though some within a deficit model)	

Summary of Value of Content Mentoring for Mentors

In summary, this study identifies four significant areas of value that content mentoring affords arts and sciences professors. First, content mentors gain increased exposure to K-12 school realities, as indicated by the interviews with all four arts and sciences professors. This finding is in keeping with Friedman and Wallace’s (2006) qualitative study of an English content mentoring collaborative program which also found that English professors benefitted by gaining

exposure to K-12 schools; this study expands this benefit to content mentors from two other disciplines as well: Spanish and mathematics. The content mentors in this study gained awareness of the diverse academic needs and demographic backgrounds of K-12 students. Through the mentoring process, the mentors realized the many challenges and demands of K-12 teaching, including classroom management, patience, and stamina. The mentoring experience also gave arts and sciences professors an opportunity to realize some unexpectedly positive aspects of K-12 teaching, including strong curricula and technological resources in some schools, as well as unexpectedly lacking resources, including advanced curricula and an adequate number of textbooks in other schools.

Secondly, content mentors developed a better understanding of the phrase “teaching for social justice.” All four mentors developed in some area of this domain, whether it was through observations of available curricula or recognition of the gap between resources in privileged and poor schools and the injustice of this inequity. However, it was also clear that developments in social justice perspectives were sometimes rooted in a deficit perspective, particularly for non-honors and urban students. These mixed results stress the difficulty of recognizing one’s own biases and prejudiced assumptions, especially if one thinks he or she is demonstrating social consciousness.

Thirdly, three of the content mentors gained new perspectives on teacher preparation. The mentors realized the importance of teacher candidates’ possessing and developing their content knowledge, an area to which arts and sciences professors can certainly contribute. The mentors also expressed their understanding of the importance of cultivating passion for teaching and one’s discipline in teacher candidates, another area to which arts and sciences professors can contribute. By realizing the importance of content knowledge in teacher preparation, the content

mentors seemed intent on encouraging discipline-specific “habits of mind” in their mentees. Developing this understanding requires teacher candidates to confront fundamental issues including the nature of a subject’s study, the nature of knowing in that subject, and the teaching of that subject (McDiarmid, 1995). Since encouraging “habits of mind” is about teacher candidates developing deep understanding of the fundamental issues and the nature of knowing that subject, the attention of content mentors on subject matter and consequently the sharing of their expertise was helpful for developing mentees’ “habits” (McPeck, 1994).

Finally, a couple of the mentors benefitted by gaining reminders to utilize good pedagogy in their own classes as well as make their own classes relevant for future K-12 teachers. This finding bolsters earlier research on content mentoring which concludes that content mentoring benefits mentors by encouraging them to reconsider elements of good pedagogy in their own teaching (Friedman & Wallace, 2006; Hudson, 2004; McKeon & Vause, 2001). Admittedly, one mentor said that while she would like to utilize better pedagogy in her college classes, time constraints do not allow her. But while mentors’ comments regarding awareness of their own pedagogy suggest that actual change will be minimal if anything, content mentoring on-site can be framed by facilitators as an initial step to improving arts and sciences professors’ pedagogy. The potential for content mentors to improve their own pedagogy reflects content mentoring programs’ unique quality of serving as a mutually-beneficial exchange of ideas (Friedman & Wallace, 2006; Hudson, 2004). While mentees benefit from their content mentors’ discipline-specific expertise, mentors may benefit from observing and considering for themselves their mentees’ attention to effective pedagogy.

*Implications of Content Mentor Data**A Deficit Model of Education*

Some results also indicate that one semester of content mentoring and several visits to a school site do not adequately address several troubling perceptions held by some arts and sciences professors. Two of the mentors' comments about the justified necessity of teaching only a chosen stratum of students hint at deficit models of education, particularly for non-honors students and urban students. Comments such as these indicate that one-semester content mentoring programs cannot achieve all their intended goals by the semester's end. Their comments reflect a cultural deprivation paradigm, in which the disproportionate academic problems of low socio-economic and minority students are viewed as rooted in deficits of the students' socio-cultural background, such as poor motivation or lack of stimulating cultural experiences (Ladson-Billings, 1999).

Banks (2004) warns that focusing on the deficits of low-income, minority students often prevents cultural deprivation theorists from seeing students' strengths. Furthermore, "the emphasis on student deficits also does not allow the deprivationists to seriously consider structural changes that are needed in schools and in society" (p. 18), ironically countering the program's goal of furthering a socially just perspective. Facilitators should address concerns about a deficit model of education better in the content mentor training seminars. Post-program debriefing sessions might also benefit content mentors whose views regarding expectations of all students and social justice issues in K-12 schools might include otherwise unexamined paradoxes. Debriefing sessions might also benefit content mentors who think that good pedagogical practices are inaccessible to them. A combination of readings, discussion, and

sharing of examples might increase the likelihood of positive benefits for arts and sciences professors, especially regarding perceptions of K-12 schools and their own pedagogy.

Persistent Privileging of Content Knowledge

Additionally, content mentors' comments regarding the importance of content knowledge in teacher preparation suggest a privileging of content knowledge over pedagogical content and pedagogical knowledge that counters research on teachers' content knowledge and student achievement (Floden & Meniketti, 2005; Hawk et al., 1985; Monk, 1994; Rowan, Correnti, & Miller 2002). Because content mentoring is intended to broaden arts and sciences faculty members' awareness of the importance and role of different types of knowledge in teacher preparation and classroom teaching, program facilitators should make more efforts to educate content mentors on the research on content knowledge and pedagogical content knowledge with regard to student achievement.

Understanding an Inquiry Stance in Teacher Education

Comments by the Spanish content mentor indicate that content mentors may not fully understand or appreciate education class requirements—including inquiry projects—placed on teacher candidates. An inquiry stance, which requires individuals to examine, critique, and challenge societal and educational inequities, is pivotal to the mission of the Lynch School which seeks to embed a desire to teach for social justice in its graduates (Cochran-Smith, 2002). An understanding of the mission and enactment of a university's school of education by members of the school of arts and sciences is a major goal of a content mentoring program's "border-crossing" element (Broad, 1999). Consequently, program facilitators should educate content mentors as to the purpose of inquiry projects in a teacher candidate's program of study by providing them with syllabi, select course readings, and examples of inquiry projects.

Summary and Implications of Value of Content Mentoring for Mentees

This study raises seven significant areas of value that content mentoring affords teacher candidate mentees. First, content mentoring strengthens the content knowledge of teacher candidates, as indicated by three of the four mentees. Also, all three of these teacher candidates had mentors with no prior K-12 teaching experience, suggesting that despite a lack of first-hand experience teaching the same population as their mentees, content mentors' expertise of content knowledge is still valuable in content mentoring. This finding builds on McKeon and Vause's (2001) study on content science mentoring that found that science teacher candidates gained content knowledge from their science content mentors. This finding suggests that content mentoring may possibly benefit teacher candidates in other disciplines, such as English or mathematics as in the case of this study, stressing that there is a definite need and place for arts and sciences professors in teacher preparation because of their content expertise.

Secondly, teacher candidates gain pedagogical content knowledge through content mentoring. All four mentees in this study described how their content mentoring experience developed their pedagogical content knowledge, particularly in their ability to bridge content and practice of teaching, their incorporation of useful examples and representations in their lessons, and their awareness of common difficulties and misconceptions among students. This finding parallels prior research on content mentoring that suggests that an increase in pedagogical content knowledge is a major benefit for teacher candidates (Friedman & Wallace, 2006; Koch & Appleton, 2007; McKeon & Vause, 2001). Program facilitators should stress this benefit of content mentoring to prospective arts and sciences mentors, emphasizing that because pedagogical content knowledge is discipline-specific, arts and sciences faculty with their specialty-knowledge can be valuable resources for teacher candidates. Moreover, even though

three of the four content mentors had not taught high school before, their experience as college-level teachers in combination with their content knowledge enabled them to help mentees develop their knowledge regarding “the intersection between pedagogy and content” (Koppelman, 2008, p. 125).

Thirdly, content mentoring helps teacher candidates realize that content knowledge they gained in their arts and sciences classes is applicable to their high school teaching, as evidenced by two of the four mentoring pairs. By helping teacher candidates tap into knowledge they gained from arts and sciences professors, content mentoring helps address the calls for a university-wide approach to teacher preparation and increased involvement of schools of arts and sciences (Broa, 1999; Friedman, 2002; Imig, 1999). Content mentoring program facilitators should highlight this finding as evidence that the roots of cross-school collaboration in teacher preparation efforts are already present. Arts and sciences faculty should be aware of this finding as evidence that their efforts in their classes and their content expertise may already be applicable to teacher preparation; they can build on this foundation through more concerted efforts to support teacher candidates, including content mentoring.

Fourthly, teacher candidates may become more aware of future education and career opportunities in their discipline as a result of content mentoring. As evident in the case of the Spanish content mentoring pair, content mentors may help their mentees better understand options for graduate school programs, different career paths, and even pros and cons of specific programs. This finding speaks to the potential long-range professional benefits of content mentoring, in addition to the knowledge gained that is more directly applicable to their school teaching. By broadening teacher candidates’ circle of mentors outside of their practicum sites

and schools of education, content mentoring broadens the types and scope of advice teacher candidates receive at this early point in their professional lives.

Fifthly, content mentoring provides teacher candidates with a greater awareness of the importance of and comfort in seeking collaboration with other teachers, whether they are other K-12 teachers or university-level teachers. This finding suggests that the goal of content mentoring to improve cross-school university collaborative efforts in teacher preparation is met in turn by the benefit of mentees' realization that collaboration is important and that they too should seek to participate in collaborative efforts. Collaboration efforts beget collaboration efforts. This finding speaks to the potentially long-lasting and multiplying benefits of content mentoring.

Sixthly, content mentoring improves teacher candidates' sense of confidence in their teaching abilities and choice of profession. This finding, based on two mentees' experience, speaks to content mentoring programs' potential in building self-efficacy, a notable point since research suggests that efficacy beliefs are predictors of teacher behavior and may serve as tools in improving teacher quality and performance (Bandura, 1997). This finding in addition to the finding on improved collaboration efforts by content mentees highlights the affective benefits of content mentoring (Friedman & Wallace, 2006) and the importance of creating mentoring pairs carefully. Program facilitators should take care to pair similar personalities together when creating mentoring pairs in order to capitalize on the potential affective benefits that result from a comfort level and genuine affinity between participants, including mentees' enthusiasm for their discipline, boosted confidence levels, and willingness to seek help from other teachers, with a mindfulness to pairing similar personalities together (Gray & Hudson, 2000; Hudson, 2002).

Finally, teacher candidates benefit from content mentoring through an improved understanding of what it means to teach for social justice. All four teacher candidates explained that through their conversations with their content mentors, they have a better understanding of how to demand excellence of all students and be mindful of justice and equity issues in their curricula and pedagogical choices than they had prior to the program. Program facilitators should highlight this benefit as it responds to schools of education's mission to produce teachers seeking to recognize and shift inequities facing school children. This finding also suggests the effectiveness of a school-wide mission which is integrated into many aspects of a program of study, including course work, inquiry projects, and mentoring opportunities. Even though a few of the content mentors' comments regarding their own views on social justice in education reflected troubling deficit education models, their conversations with their mentees still yielded positive areas of growth for all the content mentees in their understanding of social justice. This suggests that if teacher preparation efforts are truly oriented at becoming university-wide, the missions of schools of education should also be taken up by schools of arts and sciences. Program facilitators should help arts and sciences professors understand the complexities of social justice in education and examine their own biases and possibly conflicting views on what it means to teach for social justice. Training seminars should include more readings and discussion on these themes so that the success of mentees' in positively enhancing their understanding of social justice might be better shared with their content mentees.

Limitations of this Study and Recommendations for Future Research

Limitations of this study include three primary factors: small participant sample, degree of triangulation, and length of time for the study. It would have been helpful to have a larger sample size to determine if the domains, sub-domains, and codes found in this study's data are

still present in a larger group of mentors and mentees, especially in other disciplines. An increase in sample size and triangulation items would have increased the credibility of the study.

The majority of PPA items I examined had scores of two and none of the four mentees received a score of one on any item, suggesting that PPA items do not yield a rich source of data very helpful for triangulation of coded interview transcript findings. Although scores of two indicate proficient performance of a standard and did not directly counter my findings, they also were not too corroborative of interview data findings. It is possible that the prevalence of twos was based on the PPA-grading supervisors' tendency to utilize the instrument as a measure of basic proficiency in the various indicators. Since the supervisor may not know what a teacher candidate has learned from his or her mentor, the supervisor may not be able to make explicit connections between content mentoring benefits to a mentee's teaching performance and the PPA instrument items. Moreover, the PPA instrument was not designed for the intent of evaluating the benefits of a student teaching mentoring program. Future research should examine examples of teacher candidate lesson and unit plans, assignments, and student work for a richer source of data for triangulation.

It also would be interesting to examine the long-term value of content mentoring since one of its intended goals, developed pedagogical content knowledge for mentees, serves as a link between subject matter knowledge and student outcomes (Floden & Meniketti, 2005; Phelps & Schilling, 2004). A long-term study would contribute to research on the relationship between pedagogical content knowledge and student achievement. Future research on the value of content mentoring should include interviews of mentor and mentee participants in a content mentoring initiative at the conclusion of the initiative and then one semester, two semesters, or even a couple years after they complete the program to see if the benefits endure and even affect

their college or K-12 students' learning. It would also be interesting to follow participants after the conclusion of an initiative to see if the arts and sciences faculty stay involved in teacher preparation efforts. Likewise, it would be interesting to see if mentees as new teachers in their own classrooms stay in contact with their former content mentors or any other former arts and sciences professors for support or advice, and what kind of advice they seek from former arts and sciences professors.

Gaps in the Research: Those Addressed and Those Lingering

This study helps address several notable gaps in the research. First, this study responds in part to the dearth of research in content mentoring in teacher education (Friedman & Wallace, 2006; Goodnaugh, 2004; Hudson, 2004; Koch & Appleton, 2007; McKeon & Vause, 2001). Additionally this study responds to the more specific calls for research on content mentoring of teacher candidates, not just beginner teachers (Friedman & Wallace, 2006; Hudson, 2004; McKeon and Vause, 2001). Furthermore, this study responds to the call for more research on mentoring initiatives involving university faculty (Friedman & Wallace; Koch & Appleton, 2007), specifically arts and sciences faculty (Friedman & Wallace, 2006). Finally, while the limited research on content mentoring initiatives in teacher education have focused on secondary English (Friedman & Wallace, 2006) and elementary science (Goodnaugh, 2004; Koch and Appleton, 2007; McKeon & Vause, 2001), this study contributes to the scope of disciplines examined by focusing on two secondary English teacher candidates, a secondary mathematics candidate, and a secondary Spanish candidate. While this study has made some contributions to the dearth of research on content mentoring, there is clearly still a need for further research, particularly among the many other disciplines, including history, all the sciences, and other languages.

Implications for Content Mentoring Programs

Effective Program Elements

This study highlights a number of motivations that encouraged participation in the program. Regarding mentors, motivations include a desire to contribute to K-12 education- particularly if a mentor has school-aged children- share their content knowledge expertise with future teachers, gain reminders of elements of good pedagogy, and a better understanding of K-12 teaching and urban schools. Regarding mentees, motivations include the desire to have the convenience of having a mentor come right to one's practicum site, gain content knowledge, gain pedagogical content knowledge, and possibly have a mentor they had and liked as a professor. Another important finding is the value of relationship within the mentor-mentee pair. Findings indicate that affective measures of teacher education efforts, including confidence, esteem, and a commitment to teacher education are strengthened when mentoring pairs are grounded in a personal relationship based on respect and genuine affection between individuals. These findings are in keeping with research indicating that mentors and mentees should be paired with similar personality traits, especially enthusiasm and supportiveness on the part of content mentors, in order to encourage the affective benefits of mentorship (Anglin, Sanchez, & Ballou, 2002; Hudson, 2002; Turner, 1993). Program facilitators should highlight these relational aspects in their recruitment efforts in order to capitalize on both the personal motivations to and benefits of participation in content mentoring.

Program Recommendations

This study also highlights a number of logistical recommendations by participants. First, the purpose and unique aspects of this mentoring program should be stated more clearly in the invitation letter. Secondly, the program facilitator should try to establish mentoring pairs earlier

in, or even prior to the start of, the semester and check in with pairs to make sure the site visits and mentoring discussions start at the beginning of the semester. Thirdly, the program facilitator should check in periodically with mentoring pairs to make sure the content mentoring is progressing and running smoothly. Fourthly, once the program facilitator establishes mentoring pairs, he or she should inform each content mentor of the coursework his or her mentee has completed so that the mentor has a clear picture of the mentee's content knowledge background and in what areas he or she may be lacking. Finally, the program facilitator should schedule opportunities for the content mentors to meet and socialize with each other so that they may share their experiences and insights, as well as maintain and encourage the momentum of arts and sciences faculty interest in teacher education.

In summary, this study speaks to the many valuable aspects of content mentoring in teacher education. Clearly, there are numerous straightforward knowledge as well as affective benefits for teacher candidates and their mentees. It is significant that both mentees and mentors benefit from such initiatives; participation is a worthwhile endeavor for *both* participants. This study also speaks to the value of university arts and sciences faculty involvement in teacher education, an endeavor traditionally left to schools of education. Since K-12 schools and the state of public education are generally seen as universal concerns, it does make sense that teacher education efforts should be university-wide, and this study suggests that involvement of arts and sciences faculty is valuable. Certainly, more research has to be done on university content mentoring efforts and even the logistics within this study's specific program can be improved, but the findings speak strongly to the value of content mentoring and the love of learning, passion for specific disciplines, and dedication to teaching that it espouses.

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Appendix A

Invitation Letter to Mentors



[DATE]

Dear [FACULTY MEMBER],

Thank you for your continued interest in and support of TNE's One-on-One Mentoring Program. We are grateful for the time and support you have been willing to give to our teacher candidates.

At this time, we are hoping to update our list of available Arts & Sciences mentors for next semester's teacher candidates. Starting this year, participation in One-on-One Mentoring fulfills teacher candidates' program requirement of participation in a mentoring program. So we expect to have a fairly high number of teacher candidates participating in One-on-One Mentoring this spring, and we hope to keep you on the list of potential Arts & Sciences mentors.

If you agree to stay on the potential mentor list for next year, we will let you know whether you have been paired with a teacher candidate for the fall semester at the start of the semester.

Please let us know if we may keep you on the mentor list by this [date]. You may contact [graduate assistant], by e-mail at [e-mail] or by phone at [phone number].

Thank you again.

Sincerely,

[Program Director]

Appendix B

Invitation Letter to Teacher Candidates



[DATE]

Dear [TEACHER CANDIDATE],

Congratulations on reaching the full-practicum experience of your teacher training! This year, as part of that training, we are pleased to offer two mentoring options available for almost all disciplines.

- 1) ***One-on-One Content Mentoring:*** You will be paired with an Arts & Sciences faculty member in your discipline. The mentor will come to your school, at your convenience, to observe you three times over the course of the semester. He or she will offer you advice and encouragement. The observations are non-evaluative and are meant to serve only as an opportunity for you to gain content-specific support and the chance to develop a relationship with an A&S professor. Also included is a list of available A&S faculty mentors. If you decide to participate in One-on-One Content Mentoring, you may request a particular professor, and we will do our best to match you with him or her.
- 2) ***Small Group Mentoring seminars:*** This option consists of two workshops over the course of one semester in which teacher candidates, clinical faculty mentors from the Lynch School of Education, and Arts & Sciences faculty mentors meet in discipline-specific groups to discuss curriculum and pedagogical concerns. The workshops are both content specific and topical; the topics of discussion are determined before each workshop by the concerns and questions raised by the teacher candidates so that the discipline-focused, small group conversations are relevant and applicable to your practicum experiences.

Please note that you will need to participate in either *One-on-One Content Mentoring* or *Small Group Mentoring* to fulfill your full-practicum requirements. There are a limited number of spots for One-on-One Mentoring, and your selection will be based on professors' availability and your previous supervisor's evaluation.

Please let us know if you would like to participate in One-on-One Content Mentoring or Small Group Mentoring this upcoming spring semester by [date]. Also, if you would like to participate in One-on-One Content Mentoring, you may indicate a mentor preference from the provided list. Although we will try hard, your preferences are not guaranteed. You may contact [graduate assistant] by e-mail at [e-mail] or by phone at [phone number].

Sincerely,

[Program Director]

Appendix C

Interview Protocol for Mentors

1. Why did you decide to participate in the TNE One-on-One Mentoring Program?
 - What did you hope to gain?
 - Professionally?
 - Personally?
2. Did you have any concerns or questions going into the experience?
 - How were questions and concerns resolved as the program went on?
3. How has your own orientation toward teaching your discipline been impacted?
 - Have changes included syllabus modification?
 - Grading changes?
 - Curriculum changes?
 - Pedagogical changes?
 - Assignment changes?
4. How has your understanding of teacher preparation changed as a result of your experience?
5. How has your perception of urban education changed—if at all—due to your experience?
 - How have your perceptions of students changed?
 - School?
 - Community?
6. How did this experience affect your understanding of licensure and curriculum frameworks?
 - How has it affected your perceptions of the MTEL (Massachusetts Test for Educator Licensure)?
 - MCAS (Massachusetts Comprehensive Assessment System)?
7. How did this experience affect your understanding of teaching for social justice?
 - How do you think it affected your mentee's understanding?
 - Feel free to give examples.
8. How do you think you affected your mentee's professional growth?
 - How did you affect his/her sense of teaching as a profession?
 - His/her teaching practices, curriculum choices, pedagogical content knowledge?
9. What benefits do you believe there were for your mentee through having a mentor from A&S instead of or in addition to a mentor from LSOE?
10. What were the challenges and/or benefits of mentoring onsite?

11. Have you discussed initiatives of the LSOE and the relationship between A&S faculty and the LSOE?
 - Why?
 - Why not?
 - Did you discussions include your mentoring experience?
12. What advice would you give to a colleague in your department who is considering mentoring a student teacher?

Appendix D

Interview Protocol for Mentees

1. Why did you decide to participate in the TNE One-on-One Mentoring Program?
 - What did you hope to gain?
 - Professionally?
 - Personally?
2. Did you have any concerns or questions going into the experience?
 - How were questions and concerns resolved as the program went on?
3. What did you learn from your mentor?
4. What in this experience did you find most helpful and least helpful?
 - Please explain further or give examples.
5. How did your mentor impact your teaching practices or orientation toward teaching?
 - Feel free to give some examples.
6. Do you believe there was a value added to having an A&S mentor in addition to or instead of a mentor from the School of Education?
 - If yes, what were those added benefits?
 - If no, why not?
7. What did you teach your mentor?
 - Feel free to give some examples.
8. How did this experience affect your understanding of teaching for social justice?
 - How do you think it affected your mentor's understanding?
 - Feel free to give examples.
9. What were the challenges and/or benefits of being mentored onsite?
10. Would you recommend participation in this program to a pre-service teacher and why?
11. Has this experience enhanced your pedagogical content knowledge?
 - Feel free to give some examples.
12. How did your mentor's advice enhance your content knowledge?
 - Feel free to give some examples.
13. Has this experience impacted your professional development?
 - What are some examples?

- How about your view of teaching as a profession?
14. How collegial was your mentoring relationship?
- Feel free to give examples.
15. Was there any sharing of resources between you and your mentor?
- Feel free to give some examples.

Appendix E

Demographic Information for One-on-One Mentors

1. How long have you been teaching at Boston College?
2. What discipline do you teach?
3. Have you ever been a One-on-One Mentor before?
4. If so, how many previous semesters have you served as a One-on-One Mentor?
5. Have you ever been a Small Group Mentor?
6. If so, how many semesters have you served as a Small Group Mentor?
7. Have you ever been a K-12 teacher?

If you answered yes to question 7, please answer questions 8 through 11. If you answered no, please proceed to question 12.

8. For how many years did you teach?
9. What grade level(s) did you teach?
10. What subject(s) did you teach?
11. In what type(s) of K-12 school(s) did you teach? (Circle all that apply)
 - a. Urban Public
 - b. Urban Private
 - c. Suburban Public
 - d. Suburban Private
 - e. Suburban Public Multicultural

- f. Suburban Private Multicultural
- g. Urban Catholic
- h. Suburban Catholic
- i. Suburban Catholic Multicultural
- j. Rural
- k. Other (please specify) _____

12. At which institution and in what discipline did you earn your bachelor degree?

13. At which institution and in what discipline did you earn your masters degree?

14. At which institution and in what discipline did you earn your doctoral degree?

15. What is your gender?

- a. Male
- b. Female

16. What is your professional status at Boston College?

- a. Full Professor
- b. Associate Professor
- c. Assistant Professor
- d. Adjunct Faculty Member
- e. Instructor
- f. Other (please specify) _____

17. What is your race/ethnicity (Circle all that apply)

- a. African American
- b. Asian
- c. Black, Caribbean, or West Indies
- d. Latino, Hispanic, or Puerto Rican
- e. Native American
- f. White (Caucasian)
- g. Other (please specify) _____

Appendix F

Demographic Information for One-on-One Mentees

1. What year are you at Boston College?
2. What are your major(s) and minor(s)?
3. If you are a graduate student, at what institution and in what discipline did you receive your undergraduate degree?
4. What subject(s) did you teach during your full-practicum experience?
5. At what type of school was your full-practicum experience?
 - a. Urban Public
 - b. Urban Private
 - c. Suburban Public
 - d. Suburban Private
 - e. Suburban Public Multicultural
 - f. Suburban Private Multicultural
 - g. Urban Catholic
 - h. Suburban Catholic
 - i. Suburban Catholic Multicultural
 - j. Rural
 - k. Other (please specify) _____
6. Did you pick or were you assigned your One-on-One Mentor?
7. Had you taken a class with your One-on-One Mentor?
8. What type(s) of K-12 school(s) did you attend growing up? (Circle all that apply)
 - a. Urban Public
 - b. Urban Private
 - c. Suburban Public
 - d. Suburban Private
 - e. Suburban Public Multicultural

- f. Suburban Private Multicultural
- g. Urban Catholic
- h. Suburban Catholic
- i. Suburban Catholic Multicultural
- j. Rural
- k. Other (please specify) _____

9. In what content area(s) do you hope to teach upon graduation? (Circle all that apply)

- a. Early Childhood/Elementary – All subjects
- b. English as a Second Language/English Language Learners
- c. English/Language Arts
- d. Fine Arts
- e. Foreign Language
- f. Mathematics
- g. Physical Education
- h. Science/Technology
- i. Social Studies/History
- j. Special Education
- k. Other (please specify) _____

10. In what type(s) of K-12 school(s) do you hope to teach upon graduation? (Circle all that apply)

- a. Urban Public
- b. Urban Private
- c. Suburban Public
- d. Suburban Private
- e. Suburban Public Multicultural
- f. Suburban Private Multicultural
- g. Urban Catholic
- h. Suburban Catholic
- i. Suburban Catholic Multicultural
- j. Rural
- k. Other (please specify) _____

11. What grade level do you hope to teach upon graduation?

- a. Early Childhood
- b. Elementary
- c. Middle
- d. Secondary
- e. Other (please specify) _____

12. What is your gender?

- a. Male
- b. Female

13. What is your age?

- a. 20-25
- b. 26-30
- c. 31-35
- d. 36-40
- e. Over 41

14. What is your race/ethnicity (Circle all that apply)

- a. African American
- b. Asian
- c. Black, Caribbean, or West Indies
- d. Latino, Hispanic, or Puerto Rican
- e. Native American
- f. White (Caucasian)
- g. Other (please specify) _____

Appendix G

Pre-Service Performance Assessment from Practicum Office of Lynch School of Education

[SAMPLE COPY]

Appendix H

Coding Key for Mentor Data

First level domains

I noted these first-level categories level in purple.

Second level Sub-domains

I noted these sub-category levels in blue.

Third level sub- domains

I noted this category in red.

Fourth level sub-domains

I noted this category in yellow.

PPA Triangulation based on Mentee's Results

I noted the related PPA item I used for triangulation the mentees' scores in brown.

2 = proficient performance

3 = exceptional performance

Additional Demographic Information

I noted similar and relevant demographic information for "clusters of three" in second-level sub-domains (blue level) in dark blue.

Axial Codes

I noted "connections" between domains/sub-domains in green.

Analysis of Mentor Data

MOTIVATIONS TO SERVE AS CONTENT MENTOR

Personal motivation

→Mentor knew mentee

(Mentor 1, p. 1)

→Personal – have kids in public K-12 school

(Mentor 2, p. 1)

Important to contribute to teacher preparation

*** All three mentors had their mentees in class; all three mentors had no prior K-12 teaching experience.*

→Because inherently it's important to help new public school teachers

(Mentor 4, p. 1, 9)

(Mentor 2, p. 1)

(Mentor 3, p. 1)

→Because we will get these students one day

(Mentor 4, p. 1)

→ Instill pride in profession

(Mentor 2, p. 2)

Past involvement with TNE/Ped Labs

(Mentor 2, p. 1)

(Mentor 3, p. 1)

EXPOSURE TO K-12 SCHOOL REALITIES

Student realities

→ More IEPs

(Mentor 1, p. 2)

→ K-12 Students – professor impressed with behavior and presence

(Mentor 4, p. 3)

→ Difference in level of discourse possible with high school students vs. college

(Mentor 3, p. 1-2)

Curriculum awareness

→ Not quite linked up with appropriate college curriculum, it's behind

(Mentor 4, p. 3)

→ Heritage class

(Mentor 4, p. 4)

Resources

→ Surprised at good resources

(Mentor 4, p. 3, 4)

→ But Teacher Quality still most important thing

(Mentor 4, p. 5)

→ Awareness of class size

(Mentor 1, p. 2)

→ Atmosphere/setting of school building

(Relate to Social Justice- atmosphere)

(Mentor 3, p. 10-11)

Teacher realities

→ K-12 teachers have to contend with other realities, tiredness, classroom mgt.

(Mentor 3, p. 4)

→ Teaching profession is very impressive – patience, stamina

(Mentor 3, p. 4)

→ “Reality” that sometimes you have to pick one strata to teach, few students

(Mentor 2, p. 6)

(Mentor 3, p. 7)

Role of standards

→ May not be explicit

(Mentor 1, p. 3-4)

→ They're unrealistic, should have been done before

(Connect to social justice/resources)

(Mentor 3, p. 5-6)

UNDERSTANDING OF “TEACHING FOR SOCIAL JUSTICE”

Curriculum

→Heritage Class

(Mentor 1, p. 14)

Resources

** All three mentors had no prior K-12 teaching experience.

(Connect to K-12 school realities)

→Some privileged (Smart boards), other schools might not have

(Mentor 4, p. 5)

→Some urban schools have lot less – scandalous

(Connect to personal motivation)

(Connect to teach some by necessity)

(Mentor 2, p. 5)

(Mentor 3, p. 5-6)

→Atmosphere of security guards and metal detectors – what that says to students

(Mentor 3, p. 10-11)

VIEWS OF TEACHER PREPARATION

Importance of content knowledge

** All three mentors had had their mentees in class.

(Mentor 1, p. 3, 6)

(Mentor 4, p. 6)

(Mentor 3, p. 4)

Role of practicum

→Impressive how much preparation goes into teaching

(Mentor 4, p. 3, 4)

→Practicum important – but not too early, after content more mastered

(Connect to C.K.)

(Mentor 1, p. 3)

→Teacher quality should be number one consideration of practicum

(Mentor 1, p. 13)

Education class requirements – frustration

(Mentor 1, p. 9)

Qualities to be cultivated

→Curiosity over simple confidence

(Mentor 1, p. 15)

→Passion for teaching

(Mentor 2, p. 3)

→Avoid Burnout, this is a big problem

(Connect to only teach “some” students)

(Connect to importance of praise)

(Mentor 2, p. 6)

→Good teachers have a “natural affinity” for teaching

(Mentor 1, p. 5)

(Mentor 2, p. 3, 10)

PERCEPTIONS OF BENEFITS TO MENTEES

Content knowledge

* *Triangulate with PPA #A6: Draws on resources from colleagues, families, and the community to enhance learning*

** *All four mentors had had their mentees in class.*

(Mentor 1, p. 7, 11) (2)

(Mentor 4, p. 8) (2)

(Mentor 2, p. 9) (2)

(Mentor 3, p. 7) (2)

Pedagogy

* *Triangulate with PPA #A5: Teacher candidate plans lessons with clear objectives and relevant measurable outcomes.*

** *Mentors had had their mentees in class.*

(Mentor 1, p. 7) (2)

(Mentor 3, p. 5) (2)

Future education/career options

* *Triangulate with PPA #E3: Maintains interest in current theory, research, and developments in the academic discipline*

(Mentor 1, p. 7-8) (3)

Professional growth

→ **Passion, spirit important**

(Mentor 1, p. 10)

(Mentor 3, p. 9)

→ **Collaboration is important**

* *Triangulate with PPA #E4: Collaborates with colleagues to improve instruction, assessment, and student achievement*

(Mentor 1, p. 10) (3)

Pedagogical content knowledge

→ **Awareness of common perceptions and difficulties**

* *Triangulate with PPA #F4: Identifies the needs, talents, and abilities of pupils and links these to subsequent lesson planning*

(Mentor 1, p. 11) (3)

(Mentor 4, p. 7) (2)

→ **Useful examples, representations, analogies: Esp. current situation**

* *Triangulate with PPA #F2: Provides formative and summative opportunities for pupils to connect their learning to experiences or situations significant in their lives*

(Mentor 1, p. 11) (2)

(Mentor 3, p. 3, 7, 8) (2)

(Mentor 4, p. 2) (3)

→ **Bridging content and practice of teaching**

* *Triangulate with PPA #G2: Demonstrates careful and thoughtful integration of knowledge of subject matter and pedagogy, beliefs about and understanding of learning as drawn from conceptual, empirical literature, and major ideas from*

theory

(Mentor 2, p. 5, 8) (2)

(Mentor 2, p. 9) (2)

Praise/Esteem/Admiration for the teaching profession

(Mentor 2, p. 7-8)

(Mentor 3, p. 7)

PEDAGOGY BENEFITS TO MENTOR

Reminders of good pedagogy

→Positive steps taken in own pedagogy

(Mentor 3, p. 3)

→But not feasible for college professors because of time

(Mentor 4, p. 8)

Mindfulness to make classes relevant for future teachers

(Mentor 4, p. 2)

(Mentor 2, p. 2)

New confidence/assurance in K-12 teachers being produced

(Connect to view of teacher preparation)

(Mentor 4, p. 4)

PROGRAMMATICS: PROGRAM PLANNING & LOGISTICS

Initial concerns about scheduling

(Mentor 1, p. 12)

(Mentor 2, p. 10)

Ideas on How to Engage Other Arts and Sciences Professors as Content Mentors

→Make personnel – think about their kids

(Mentor 1, p. 13)

(Mentor 3, p. 9, 10)

→Important to further respect for choosing K-12 teaching path

(Mentor 4, p. 10)

(Mentor 2, p. 12)

→Help with content

(Connect with Content Knowledge being important)

(Mentor 4, p. 10)

→Learn about realities of urban teaching

(Mentor 3, p. 9)

→Remind professors of good pedagogy

(Mentor 3, p. 10)

Recommendations for program in future

→Use A&S grad students

(Mentor 1, p. 16)

→Pair personalities carefully

(Mentor 2, p. 11)

(Mentor 3, p. 8)

→Have opportunities for mentors to meet and share what learned

(Mentor 2, p. 12)

→ Pair and start earlier

(Mentor 2, p. 12)

→ Avoid observing same day as other mentors/supervisors

(Mentor 2, p. 13)

→ Inform A&S mentors what courses mentees have taken

(Mentor 2, p. 4)

Appendix I

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Axial Codes

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Analysis of Mentee Data

MOTIVATIONS TO PARTICIPATE AS A MENTEE

Convenience

(Mentee 4, p. 1)

Pedagogical content knowledge

(Connect to PCK actually gained)

(Mentee 1, p. 1)

(Mentee 4, p. 1, 3)

One-on-One attention

(Mentee 2, p. 1)

(Mentee 4, p. 1)

Ability to state mentor preference

** All three mentees picked their mentors and had them in class prior to the mentoring.

→ Sought content knowledge from particular professor

(Mentee 2, p. 1)

(Mentee 3, p. 1)

(Mentee 1, p. 1)

→ Liked personality of particular professor

(Mentee 2, p. 1)

(Mentee 3, p. 1)

(Mentee 1, p. 1)

GAINED KNOWLEDGE

Knowledge from mentors' classes prior to program, especially use of examples

* *Triangulate with PPA #G1: Draws on one's prior academic and personal knowledge, coursework, and experience to make instructional choices*

(Connect to motivation – could pick particular professor)

(Mentee 1, p. 2, p. 5, p. 10) (3)

(Mentee 4, p. 5, 11) (2)

Content knowledge

* *Triangulate with PPA #A6: Draws on resources from colleagues, families, and the community to enhance learning*

** *All three had mentors with no past K-12 teaching experience.*

(Mentee 2, p. 8, p. 12) (2)

(Mentee 3, p. 6) (2)

(Mentee 4, p. 2, 10) (2)

Pedagogical Content Knowledge

** *All four mentees had their mentors in class prior to the program.*

→ Interesting articulation of “not much learned”

(Connect to the PCK they actually did gain)

(Mentee 4, p. 9)

(Mentee 2, p. 3)

→ Bridging content and practice of teaching

* *Triangulate with PPA #G2: Demonstrates careful and thoughtful integration of knowledge of subject matter and pedagogy, beliefs about and understanding of learning as drawn from conceptual, empirical literature, and major ideas from theory*

(Mentee 1, p. 2-3) (3)

(Mentee 2, p. 2, 3-4, 4-5) (2)

(Mentee 3, p. 3-4, 10-11, 12) (2)

(Mentee 4, p. 5) (2)

→ Useful examples, representations, analogies

* *Triangulate with PPA #F2: Provides formative and summative opportunities for pupils to connect their learning to experiences or situations significant in their lives*

- Helpful representation

(Mentee 4, p. 1-2) (2)

(Mentee 2, p. 4) (2)

- Connect to current situation

(Mentee 1, p. 2, 3, 5, 11) (2)

(Mentee 4, p. 5, 10) (2)

→ Awareness of common perceptions and difficulties

* *Triangulate with PPA #F4: Identifies the needs, talents, and abilities of pupils and links these to subsequent lesson planning*

(Connect to Social Justice awareness)

(Mentee 2, p. 4, 9) (2)

(Mentee 1, p. 8-9) (2)

ADDITIONAL BENEFITS FOR MENTEE

Mentor enhanced confidence of mentee

* *Triangulate with PPA #E6: Reflects critically upon his or her teaching experience and identifies areas for professional development as part of a professional development plan and is receptive to suggestions for growth*

→ Professional ability

(Mentee 4, p. 4) (3)

→ Teaching manner

(Mentee 2, p. 3, 12) (2)

Professional growth

***All three mentees had their mentors in class; all three mentors did not have any K-12 experience.*

→ Sense that collaboration is important

* *Triangulate with PPA #E4: Collaborates with colleagues with to improve instruction, assessment, and student achievement*

(Mentee 4, p. 10) (3)

(Mentee 2, p. 12-13) (2)

→ Important to be inspired by discipline

* *Triangulate with PPA #E2: Conveys knowledge and enthusiasm for his/her academic discipline to students*

(Mentee 3, p. 4-5) (2)

→ Encouragement – takes experience, time

(Mentee 3, p. 14)

(Mentee 1, p. 2)

→ Discussions about grad school, future career paths

* *Triangulate with PPA #E3: Maintains interest in current theory, research, and developments in the academic discipline*

(Mentee 1, p. 3-4) (2)

Logistical Benefits

→ One-on-one attention

(Connect to motivation)

(Mentee 2, p. 14)

→ Logistically easy

(Connect to motivation)

(Mentee 4, p. 8)

PERCEPTIONS OF BENEFITS FOR MENTORS

Personal connection to K-12 schools

(Connect to confidence/reinforcement for mentee)

(Mentee 1, p. 6)

Personal satisfaction from supporting teacher preparation

(Mentee 1, p. 6)

Interesting exposure to K-12 realities

→Curriculum: native speakers class

(Connect to SJ)

(Mentee 1, p. 6)

→New content exposure

(Connect to confidence for mentee)

(Mentee 2, p. 9)

→New SJ understanding

(Connect to SJ understanding for mentees)

(Mentee 2, p. 10)

UNDERSTANDING OF “TEACHING FOR SOCIAL JUSTICE”

Demanding excellence from all students

* *Triangulate with PPA #B2: Communicates high standards and expectations when carrying out the lesson*

(Mentee 1, p. 6) (2)

(Mentee 4, p. 6) (2)

(Mentee 2, p. 10) (2)

Increased awareness of resources

* *Triangulate with PPA #D2: Works to promote achievement by all students without exception*

(Mentee 4, p. 7) (2)

Place for social justice in the curriculum

* *Triangulate with PPA #D9: Identifies policies and programs that contribute to, or maintain the existence of, equity or inequity in education through written reflections and actions*

→Guiding discussions with students

(Connect to PCK – connection to current situation)

(Mentee 3, p. 3, 6, 7) (2)

→What knowledge/language is “acceptable”

(Mentee 1, p. 8) (2)

→Even having certain classes (i.e., native speakers)

(Mentee 1, p. 7) (2)

PROGRAMMATICS: PROGRAM PLANNING & LOGISTICS

Unclear logistics

(Connect to got started late)

(Mentee 1, p. 1, 2)

(Mentee 2, p. 2)

(Mentee 3, p. 2)

(Mentee 4, p. 2)

Scheduling concerns

(Mentee 3, p. 2, 9)

Role and relationship of other supervisors

→Clinical supervisor

- Lacking in content knowledge
(Mentee 4, p. 1-2)
- Good for showing organization
(Mentee 4, p. 1)
- Good for help with classroom management
(Mentee 1, p. 1)
- Mentor aware of clinical supervisor, not want to take over ped role
(Mentee 2, p. 8)

→Cooperating teacher served as content mentor

(Mentee 2, p. 8, 11-12)

Recommendations for program logistics

→Pick a professor they have had relationship with

(Mentee 4, p. 8)

→Make sure start earlier

(Mentee 4, p. 9)

(Mentee 3, p. 5)

(Mentee 2, p. 3)

→Recommendations based on unclear logistics and scheduling concerns

