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Dispositions in the field: viewing mathematics teacher education through the lens of Bourdieu's social field theory

Kathleen Nolan

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Abstract Mathematics teacher educators are confronted with numerous challenges and complexities as they work to inspire prospective teachers to embrace inquiry-based pedagogies. The research study described in this paper asks what a teacher educator and faculty advisor can learn from prospective secondary mathematics teachers as they construct (and are constructed by) official pedagogical discourses embedded in mathematics classrooms. Drawing on the theoretical constructs of Bourdieu, I present several pervasive discourses, or dispositions, as storied by prospective mathematics teachers. These discourses highlight prospective teachers' negotiations of conflicting habitus-field fits during their teacher education field experience. The reflections put forth in this paper offer insights into the roles of mathematics teacher educators and teacher education programs in general.

Keywords Mathematics teacher education · Prospective teachers · Field experience · Bourdieu · Field · Habitus · Doxa

1 Introduction

Mathematics teacher educators are confronted with numerous challenges and complexities as they work to inspire prospective teachers to embrace student-focused, inquiry-based pedagogies. Research indicates that, in spite of the introduction of inquiry pedagogies during curriculum courses in teacher education programs, traditional textbook and teacher-directed approaches still prevail in most secondary mathematics classrooms ([Jaworski & Gellert, 2003](#); [Lerman, 2001](#); [Nolan, 2006, 2010](#)). As [Bullock and Russell \(2010\)](#) contend,

... the cultural routines and patterns associated with schools, teaching, and learning are firmly embedded in our culture from a very young age and thus highly resistant to change. Simply put, every adult knows what teaching and learning should look like because he or she has spent thousands of hours as a student in school. (p. 93)

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An unfortunate outcome of the thousands of hours that all students serve in the “apprenticeship of observation” (Lortie, 1975, p. 61) is that prospective teachers enter teacher education programs already feeling quite at ease with their knowledge of what teaching and learning look like (Begg, Davis, & Bramald, 2003; Britzman, 2003; Moore, 2004). The lasting effects of this apprenticeship can be seen in the teacher education practicum (or field) experience, which is often viewed as just another step in the apprenticeship of observation and replication.

In my roles as teacher educator, researcher, and faculty advisor working with prospective secondary mathematics teachers, I frequently encounter discursive practices in mathematics classrooms that regulate practice and stifle opportunities for pedagogical innovation. In university classes, my practices focus on producing more egalitarian classrooms, on enhancing pedagogical effectiveness through inquiry-based approaches, and on encouraging the development of reflective practitioners (Walshaw & Anthony, 2008). The research study described in this paper asks the question of what I can learn, as a teacher educator and faculty advisor, from prospective secondary mathematics teachers as they construct (and are constructed by) official pedagogical discourses embedded in mathematics classrooms. Drawing on the theoretical constructs of Bourdieu’s social field theory, I present several pervasive discourses, or dispositions, as storied by prospective mathematics teachers. These discourses highlight prospective teachers’ negotiations of conflicting habitus-field fits during their teacher education field experience. Understanding the dispositions and actions (habitus) within social practice fields, along with Bourdieu’s theoretical constructs of doxa, misrecognition and symbolic violence, provides key insights for mathematics teacher education.

2 Description of study, methodology, and methods

Research recognizes a disconnection between the theory of university-based curriculum courses on inquiry-based pedagogy and the implementation of these ideas in secondary mathematics classrooms (Nolan, 2008; Towers, 2010; Van Zoest & Bohl, 2002). Studies exploring the theory–practice transitions of prospective teachers are often criticized for being predominantly short-term in duration and for placing blame on prospective teachers for not changing quickly enough, according to the expectations and demands of the instructor (Clift & Brady, 2005). To counter this blaming approach, the research study described in this paper does not point out the disparities and disappointing transitions of prospective teachers as they move between university methods courses and field experience. Instead, the study focuses a lens on what a teacher educator and faculty advisor can learn from prospective teachers as they negotiate their field experience amid officially sanctioned pedagogical discourses of mathematics classrooms. That is, the study asks: What are the discourses positioning and regulating prospective teachers in their mathematics field experience and how might awareness of these discourses facilitate meaningful discussion and reflection in teacher education programs?

The research described in this paper studied my practice as a teacher educator and faculty advisor over a 2-year period, working with prospective teachers first in the university classroom (as their course instructor) and then in the secondary school mathematics classroom (as their faculty advisor during their field experience). In the role of teacher educator, I teach a one-semester (4 months) course in curriculum instruction and assessment to a group of undergraduate students at a university in western Canada. The students enrolled in the course are in their third year of a 4-year undergraduate teacher

education program, majoring in the teaching of secondary mathematics. A key aim of the course is to promote inquiry-based approaches in the teaching and learning of mathematics. Following this semester at the university, the students engage in a 4-month field experience (internship) in secondary school classrooms throughout the province, under the guidance of a mentor (cooperating) teacher. As faculty advisor for four interns, I am expected to visit and conference with my interns several times throughout this internship semester. My experience with this role over many years has resulted in increased apprehension each time I enter the field and encounter the mismatches between the university discourses (especially those of my course) and those of the schools. I am often at a loss for knowing how to enact my role amid recurring regulative discourses. As a result, I have become motivated to understand the inner workings of these discourses, including how/if prospective teachers take them up, as well as the extent to which agency is available to them as beginning teachers. It is my hope that through increased understanding, I will be better positioned in my own practice to address the mismatches between habitus and field through the development of a reflexive stance toward these transitions and dispositions.

To transform and reform my own practice as a teacher educator and faculty advisor, in this study I listen to the stories of prospective teachers. Data for the study included interviews and focus groups with the four interns with whom I worked during two internship semesters. Thus, I gathered data from eight interns in total over a 2-year period (2006–2008). The intent of my interviews was to understand how interns story themselves in their own processes of learning to teach and of negotiating spaces for agency during their field experience. Through an analysis of the data, I tease out a number of circulating classroom discourses and deconstruct them to better understand my role as a mathematics teacher educator and the role of teacher education programs in general.

3 Theoretical framework of study: introduction to Bourdieu's social field theory

There are many possible lenses through which to view, explore, and interpret mathematics pedagogy, including teacher change, teacher development, and the intersections of classroom discourses and individual agency. Research in the fields of mathematics pedagogy and teacher education draws on the theoretical constructs of, among others, Foucault, Lacan, Derrida, Gadamer and Bernstein ([Black, Mendick, & Solomon, 2009](#); [Brown, 2008](#); [Walshaw, 2010b](#)). In fact, [Walshaw \(2008\)](#) suggests “the theoretical resources available for explaining participation in and engagement with teaching practice are considerably more expansive than at any previous time” (p. 119). Bourdieu's conceptual tools are but one valuable set that can be drawn from this deep and expansive toolbox. The key concepts of Bourdieu's social field theory confirm the complexities of teacher education by focusing on the dynamic relationships between structure and agency within a social practice, pointing to the promise and possibility of social change through critical reflexivity. Bourdieu posits a situated critical reflexivity, that is, “a reflexivity which is not separated from the everyday but is intrinsically linked to the (unconscious) categories of habit which shape action” ([Adkins, 2004, p. 195](#)).

By taking a reflexive stance in teacher education, and revealing the habits shaping action in/of the field, prospective teachers and teacher educators can trouble the traditional, taken-for-granted practices of mathematics classrooms. In the research study described in this paper, Bourdieu's social field theory highlights the network of relations and discursive practices that support (and (re)produce) traditional practices in the teaching of mathematics. In particular, the theory is drawn on to view the circulating classroom discourses through

the lens of prospective teacher agency and, through this analysis, to critique my own practice as a mathematics teacher educator and faculty advisor.

Bourdieu's social field theory offers a number of key concepts and terms, namely practice, field, habitus, capital, doxa, misrecognition and symbolic violence. The concepts of field and habitus are central to understanding social practice since the two concepts are produced and reproduced in relation to each other through social practice. According to Bourdieu, everyday decisions are made within a network of structures and relations, referred to as a field. These decisions shape, and are shaped by, a set of dispositions (habitus) that include attitudes, beliefs, perceptions, and practices, all formed through the embodiment of one's life history. Habitus operates at various levels—in one's thoughts, actions, use of language, and in how one embodies experiences of structures and relations. In short, habitus is a whole body experience, but it is not one that can be attributed solely to an individual since dispositions are created and recreated through social interaction and tradition.

Bourdieu posits the existence of many possible fields, all “historically constituted areas of activity with their specific institutions and their own laws of functioning” (Bourdieu, 1990a, p. 87). Bourdieu refers to fields, or these areas of activity, as “quite peculiar social worlds where the universal is engendered” (Bourdieu, 1998, p. 71). Referring to fields as spaces of social positions and relations, Bourdieu reminds us that the practices of/in a field “cannot be accounted for without considering the structure of the power relations among the members” (1998, p. 70) of that field. Within the network of power relations, habitus and field are viewed as mutually constituting and complicit in each other.

A third key concept, and one that plays an important role in the relationship between field and habitus, is capital. Bourdieu describes two main forms of capital (economic and symbolic), but for the purposes of this paper and its focus on mathematics classrooms, cultural capital (a form of symbolic capital) is most relevant. According to Grenfell (2008), cultural capital is basically a synonym for status (or position) and refers to the resources that one brings to (and/or has access to in) the field. Cultural capital “is a credit, it is the power granted to those who have obtained sufficient recognition to be in a position to impose recognition” (Bourdieu, 1990a, p. 138). In short, cultural capital includes all the things that help people gain access to, and position themselves strategically within, fields. It needs to be said, however, that while access to such valued forms of capital can improve one's position and status in the field, it is one's (privileged) position and status in the field that determines access to capital. In other words, capital ensures the protection and reproduction of existing power relations and social class distinctions.

To gain insight into the dynamic roles of these three key concepts—field, habitus, and capital—and their complex interactions, consider Bourdieu's analogy of playing a game. Bourdieu's view is that adjustment to the demands of a field requires a certain “feel for the game” (Bourdieu, 1990b, p. 66). Similar to a game, social fields are constructed with specific structures and rules, and the relative smoothness of the game/field often depends upon the players blindly accepting and following these rules, regardless of how arbitrary they might seem. As one continues to engage in the game, the rules seem natural and unquestionable to the players, resulting in a “feel for the game” which no longer requires the deliberate act of thinking carefully about each and every move before acting. However, should players not follow the rules as laid out before them, penalties will surely follow. Social fields (like games) are competitive, with the players continually vying for better positions and more refined skills in the game. In relation to prospective teachers and teacher education, one can see how (and why) those who have a privileged position, and have learned how to play school well, have an investment in perpetuating and reproducing the

logic and operations of the field as is. A player's complicit and (re)productive role is discussed by Bourdieu (1990b):

The earlier a player enters the game and the less he is aware of the associated learning... the greater is his ignorance of all that is tacitly granted through his investment in the field and his interest in its very existence and perpetuation and in everything that is played for in it... (p. 67)

While a player's role in the game is complicit and reproductive, it often operates to some extent below the player's conscious awareness. This brings me to the concepts of doxa, misrecognition, and symbolic violence, which are also valuable to the analysis in this paper.

Doxa is the set of core values and discourses of a social practice field that have come to be viewed as natural, normal, and inherently necessary, thus working to ensure that the arbitrary and contingent nature of these discourses are not questioned nor even recognized. An understanding of doxa is more easily grasped when discussed in the context of its two counterpart terms of orthodoxy and heterodoxy. Together, these three terms can be conceptualized as three types of dispositions, or "ways of thinking and speaking the natural and social world" (Bourdieu, 1977, p. 169). As described above, doxa is a constructed view of the world that is so natural and self-evident that it is seen as the only view in existence, whereas "an orthodox or heterodox belief [implies] awareness and recognition of the possibility of different or antagonistic beliefs" (Bourdieu, 1977, p. 164). Simply stated, orthodoxy is the recognition of multiple versions or possible constructions of reality, with only one version being the correct or "right" one, whereas heterodoxy is the recognition of multiple correct versions and possible constructions of reality. The interesting relationship between the three terms is expressed by Smart (2009):

To the extent that there is near agreement between habitus and field, we have 'doxa'; to the extent any previous disagreements have been negotiated, we have 'orthodoxy'; and to the extent that there is little agreement between habitus and field, we have 'heterodoxy'. (p. 160)

It is important to note that each of these terms is invisible until placed together with its counterparts since, according to Bourdieu, "[t]he truth of doxa is only ever fully revealed when negatively constituted by the constitution of a *field of opinion*, the locus of the confrontation of competing discourses" (1977, p. 168).

When the existence of a *field of opinion* is not acknowledged, the uncritical acceptance of what constitutes normal, natural and necessary is what Bourdieu refers to as misrecognition (Bourdieu, 1990a; Webb, Schirato, & Danaher, 2002). According to Deer (2008), "*doxa* allows the socially arbitrary nature of power relations... that have produced the *doxa* itself to continue to be misrecognized and as such to be reproduced in a self-reinforcing manner" (p. 121). Being caught up in, and bounded by, what seems natural and normal in the world (misrecognition) creates the conditions for the exercise of what Bourdieu calls symbolic violence, that is, the act of imposing meanings and "impos[ing] them as legitimate by concealing the power relations which are the basis of its force" (Bourdieu & Passeron, 1990, p. 4). Often referred to as a 'soft' form of violence, symbolic violence is particularly insidious due to the fact that it is exercised with the agent's full, though generally unaware, complicity. As will be seen in the analysis section, if agents (prospective teachers, students, etc.) think that their lack of resources, their treatment as inferior, their lack of success, etc. is just "the way things are" then they are complicit in having symbolic violence exercised on them, and thus legitimizing this natural order of things and their place within it. Nash (2002) notes that when the subtext of a practice is

“that’s how it’s done” (p. 279), then that practice “bounded as such, strongly marked by rituals or rules, and given a name, has a special status” (p. 279).

4 Presentation and analysis of data

Through interviews and focus groups, prospective teachers were questioned on their thoughts and actions with regard to diversifying pedagogical practice during their field experience—that is, in moving beyond traditional, lecture-based practices and into more student-focused, inquiry-based pedagogies. My analysis of the transcripts generated several discourses that circulate within secondary mathematics classrooms, regulating practices and stifling opportunities for pedagogical innovation. The themes of the five discourses presented and discussed in this paper are: *time constraints*, discomfort with *creativity and innovation*, traditional classroom *structures*, reliance on *tests*, and mathematics *strength*. The five discourses are undeniably linked and implicated in each other but, in this paper, each one is discussed in turn to provoke critical reflection on underlying themes sustaining these discourses.

With the support of example intern quotes, the discourses are analyzed through the lens of Bourdieu’s social field theory. In doing this, I conceptualize the discourses as dispositions to reflect the Bourdieuan claim that a person’s habitus, or set of dispositions, in a social practice field (such as a mathematics classroom) are tightly bound up in—in the acts of producing and being produced by—the network of practices and discourses within that field. The traditional (legitimate and sanctioned) discourses of the field “persuade” prospective teachers to take them on as their own as they work toward a comfortable, nonconflicting habitus-field match during their field experience. In conceptualizing and labeling the discourses as dispositions in this research study, I confess to being intrigued by the messiness and tensions inherent in the data. While I am drawn to reflecting on the interview data as evidence of classroom *doxa*, the fact that the prospective teachers engage in conversation with me at all on these discourses confirms their awareness of the existence of other possible discourses. In a sense then, the perspective on the data that I present in this paper offers insights into classroom *doxa* as well as a formulation of the beginning teacher’s take on the *orthodoxy* of schooling.

4.1 Disposition #1: pressed for time in mathematics (dis)courses

Those [inquiry activities]... yeah they’re experiential, but that’s an hour out of a day and then you have to go back and figure out how you’re going to make sure that they know it. That’s a big chunk. If your unit’s only seven hours and you take an extra hour, it’s a loss of time. I don’t know. I just find that the time component is a lot bigger than I thought it would be. Like, you are pressed for time. (Intern)

All too often, “curriculum guidelines suggest content coverage and pacing rather than teaching for understanding” (Handal & Herrington, 2003, p. 63), working to establish the clock as the dominant control mechanism for learning. The intern quote above suggests a pervasive discourse in which the *covering* of content is privileged over the actual *learning* of content; where the desire for student learning becomes filtered through the prevalent discourse of “not enough time” and “pressed for time”.

Through the lens of Bourdieu, the covering of content can be seen as a game in elementary and secondary schools, with clear rules and timelines for play: one must address each of the curriculum content objectives within a predetermined number of hours. The penalty for not playing the game according to the rules could very well be a public reprimand from next year's teacher (*who taught them math last year that they didn't cover this?*), resulting in a feeling of not being professionally competent and accountable in one's job. Covering predetermined content is a social practice that has reached doxic status—it is viewed as natural, normal, and inherently necessary to “get through” the curriculum, at any cost.

The tensions of this discourse are further highlighted in conversations where prospective teachers appear to abandon all possibilities for agency. In one research interview, an intern repeated a message from her cooperating teacher with regard to this circulating discourse of time constraints:

The time issue, it's awful. Like really. The first day [my cooperating teacher] says 'you can't answer that many questions of the last day's assignment because it's taking too long. You can't do this. There's not enough time, you won't get done.' So, just knowing that within the first few days, that was a shocker. (Intern)

Even though this intern uses the voice of her cooperating teacher to map out her position with regard to this discourse, it seems significant that she has unquestionably taken it on (“just knowing that”) as part of her own habitus. A transformed pedagogy would demand more deliberate action on the part of agents to disrupt the balance between this disposition and the structures supporting it. As a teacher educator, a critical question is how prospective teachers can negotiate spaces in their field experience to enact agency with/in such a time-honored disposition.

4.2 Disposition #2: the absence of creativity and innovation in mathematics (dis)courses

I think for math it's more difficult [to be creative]. Just because I find that a lot of other subjects are more about creative ideas and stuff, whereas math is always— or has always been in the past for the most part—lecture, seatwork, lecture, seatwork. Other classes just seem to be quite unstructured in that sense. I think math is even harder to try and use what we're doing in university here. (Intern)

On the surface, the lack of creativity and innovation in mathematics is explained by deferring to the perceived close-ended nature of the subject. It is also explained by reasoning that a teacher's role is, ultimately, to prepare high school students for university:

The university is set up so that to not do that [procedural] stuff in high school is actually going to disadvantage them because if they are always doing activities and everything but then they get to university and they're going to be... you know, every class you just sit down and write notes for an hour. That is all we did. We had one prof who wouldn't let us ask questions. (Intern)

In addition to using the nature of mathematics and university preparation as “excuses”, the absence of creativity and innovation in secondary mathematics classrooms is also explained by claiming that inquiry approaches are, in fact, less effective than direct-teaching approaches. For example, one cooperating teacher stated: “I tried teaching in more constructivist ways where the students try to solve the problems on their own, but the

students said they preferred it if I just did an example first and then they could follow it to do more”. Ritchie and Wilson (2000) stress the strong influence of experienced (traditional) teachers in illustrating to student teachers what works in “reality”:

As our students read about and experienced various versions of student-centered, collaborative, and critical pedagogies... they often challenged these pedagogies with stories of other experienced teachers in order to convince themselves that such non-traditional pedagogies could not be successful except in the most idealistic setting. Their response was often: ‘It won’t work’. (p. 35)

Brown, Jones, and Bibby (2004) argue that “[s]chool mathematics, as it is presently conceived, seems to have a habit of deflecting people from creative engagement into more rule governed behaviour” (p. 177). Through the lens of Bourdieu, demonstrating this rule governed behavior and possessing the ability to “just sit down and write notes for an hour” can be seen as important resources to bring to university—that is, forms of cultural capital that enable one to perform well as the university student (especially in mathematics, which has become the new gatekeeper of tradition and hierarchy in university (Bourdieu & Passeron, 1990)). This is a particularly challenging disposition to deconstruct in teacher education because the cultural capital associated with performing well in the game of note-taking and execution of procedures has resulted in considerable success for many students. In essence, the game has doxic status and when I confront its status in my research conversations, prospective teachers defend the necessity of such structures and relations. In fact, their defensive positioning is a form of orthodoxy—they are aware of other pedagogical discourses but they defend rules, procedures, and note-taking as the “right” or best way to prepare students for university.

4.3 Disposition #3: “tried and true” structures in mathematics (dis)courses

It’s hard because you are on a time line—you have to progress and go through procedural stuff and do your homework checks and give your tests back and do all that stuff on top of the lesson plus have 10 or 15 min to work on the lesson and then you do it all over again. So there is like 25 min of class that’s not even in your lesson, getting them in and getting them started and stuff. (Intern)

This was the response from one intern when she was asked to describe her biggest fear associated with stepping out of a comfort zone of traditional direct teaching approaches and into a zone of teaching through inquiry. Her portrayal of how a mathematics lesson is *supposed to* proceed points to a well-documented discourse—one that seriously inhibits the realization of more open, student-generated mathematics. Skovsmose (2008) paints a similar picture of a traditional mathematics classroom, calling the scene “the exercise paradigm”:

First, the teacher presents a new topic, which may include a careful exposition of some details... Second, the students are asked to solve particular exercises... Third, a part of the lesson is reserved for the teacher to control the students’ possible learning and understanding. Exercises are often then checked and worked out at the blackboard. (p. 167)

This accepted and unquestioned lesson structure reproduces a network of relations governing prospective teachers’ pedagogic actions in the field. Prospective teachers “very

quickly learn what particular pedagogic modes are legitimated... and the types of classroom arrangements that are privileged and said to be conducive to knowledge facilitation” (Walshaw, 2010a, p. 122). Viewing the tried and true exercise paradigm through the lens of Bourdieu’s theory, we are reminded of how “reproduction is achieved because social members internalize the ‘rules of the game’ and so adopt practices that ensure their ‘unconscious’ replication” (Nash, 2002, p. 272).

The perceived effectiveness and efficiency of direct teaching embedded within the normalized daily mathematics classroom routine (as described by the intern: do homework checks, return student work, teach *the lesson*, allow students time to work on more questions like those illustrated in *the lesson*) is a form of doxa. Failure of students to learn through this particular pedagogic mode is misrecognized as student inability and/or lack of effort. According to Bourdieu, however, this is in keeping with education’s essential wider function; that is, to reproduce existing class relations by maintaining the unequal distribution of cultural capital, thus sorting and classifying students according to social class. Smart (2009) states:

The success of the educational system, therefore, is not related to how many students it credentials—for those students are essentially and crudely taught what they already are predisposed to know—but to how well it sorts out students, since it must make it seem that most students fail because of their innate abilities or because of social conditions beyond the educational system’s control. (p. 162)

4.4 Disposition #4: what testing tests in mathematics (dis)courses

I think there is value in doing other types of assessment like journal entries and sample note taking. There is value in doing those types of things. But to me you get a lot of information from a test. They’re there by themselves for that time to work through all these problems and they can’t look at their notes and they don’t have someone coaching them through it. You know when someone coaches you through it? I mean I think that’s valuable too, but are they quick enough, efficient, and can they do it on their own? (Intern)

The culture of tests reinforces the notion that knowing and learning mathematics is a competitive timed event—that if one really and truly “knows it” then she/he must be able to demonstrate her/his knowledge in a pre-given timeframe and in complete isolation (not collaboration) with others. The intern defends the orthodoxy of testing, saying that while there is value in other forms of assessment, only testing shows that students can “do it on their own”.

This is a story of regulation through written tests... It is the final written test script that determines who and what these learners are. This erases any information about what each child understands and can do—there is only their script. (Cotton & Hardy, 2004, p. 99)

In addition to “scripting their identity”, such a culture of tests works to separate and label those who have it and those who do not. The image of what it means to do mathematics—entangled with a set of inflexible rules and procedures—limits the kinds of identities students can develop as successful mathematicians.

Through the lens of Bourdieu’s social field theory, acceptance of the characteristics of speed, individualization, and efficiency as markers of being good at

mathematics misrecognizes the objective truth that these markers reproduce the culturally arbitrary practices of sorting, ranking, and ordering. Admittedly, “[c]ategorizations make up and order the world and, hence, constitute and order people within it” (Grenfell, 2008, p. 184). However, symbolic violence “results when we misrecognize, as natural, those systems of classification that are actually culturally arbitrary and historical” (Grenfell, 2008, p. 184). Unfortunately, these categories and systems of classification are easily maintained and reproduced as long as agents (particularly those who benefit from them) carry on as if this is “just the way things are done”, thus drawing attention away from the (arbitrary) origins or roots. A form of symbolic violence is apparent in how students are blamed and labeled for their poor performance on tests rather than questioning the legitimacy of tests. Symbolic violence “allows force to be fully exercised while disguising its true nature as force and gaining recognition, approval and acceptance by dint of the fact that it can present itself under the appearance of universality—that of reason or morality” (Bourdieu, 1990a, p. 85). Taking these ideas seriously in teacher education means working to reveal the arbitrary and contingent nature of the officially sanctioned discourses. Adopting a reflexive stance in teacher education would aim to expose the socially conditioned and subconscious structures that underlie the reproductive nature of the symbolic violence of testing.

4.5 Disposition #5: the strong and selfish in mathematics (dis)courses

Intern 1: I tried doing group work with my math students but some of my better math students felt like it was a waste of their time and it would really slow it down because they were helping the rest of their group. And you know, for the most part, the kids in that classroom were really strong math students and they didn’t want to be slowed down. And at the same time I didn’t want to put all these really strong math students together and then you’d have this group that aren’t so strong that are really struggling. So I kind of fought back and forth with how to organize groups.

Intern 2: Most of my kids were below 75... so what I found difficult was having enough smart kids to go around that weren’t selfish about their learning.

Intern 1: Yeah, some of my kids were selfish about their learning. *They* knew [the math] but they didn’t care if anyone else did... if someone else didn’t get it that was their problem. Plus their attitude has been engrained in them for a long time that... you know, to help other people isn’t really important.

This exchange between two interns supports the view that secondary school students are entrenched in a discourse where learning mathematics is a competitive endeavor and, when all is said and done, there are no rewards for helping one another, especially if you’re one of the “strong” students. Research shows (see, for example, Nolan & Corbin Dwyer, 2004) that when mathematics classrooms emphasize *performance* rather than *learning* goals, students quickly learn there are no obvious rewards for engaging with a community of learners. It is my experience that prospective teachers support and encourage group work and social forms of learning as ways to improve *student attitudes toward* learning mathematics, but not because they believe the outcome is a deeper mathematical learning experience. In other words, secondary mathematics prospective teachers interpret group work and peer teaching as useful management techniques and behavior regulators—keeping the “smart/strong/better”

students occupied while, at the same time, keeping the “slow/struggling” students in the game, so to speak.

... through mathematics education practices, certain students are positioned as low achievers in mathematics. Such positioning does not depend—in most cases—on students’ actual mathematical ability, but on the interpretations made by teachers of students’ participation in classroom interactions and in assessments routines. (Valero & Zevenbergen, 2004, p. 25)

The dichotomous language—strong/weak, smart/not smart, better/worse, above/below—constructs individuals as particular types of mathematics knowers and, unfortunately, also provides students themselves with a language for constructing and describing their *own* positioning with respect to knowing and learning mathematics. The language, primarily constructed out of a set of core values and discourses (doxa), legitimates particular classroom practices and assessments as effectively revealing mathematical “ability”. The language conceals the power relations that construct and maintain ability grouping and classes in mathematics classrooms, and thus constitutes a form of symbolic violence. At the same time, however, achieving a label of “smart/strong/better” is a valued form of cultural capital for students in the mathematics classroom. Students will not willingly relinquish this form of cultural capital because it provides them with better positioning and greater access to resources in the field. In teacher education programs, the challenge lies in revealing the workings of power associated with the privileged players (both teachers and students), drawing attention to how they are complicit in perpetuating and reproducing the discursive rules of the game.

5 Further analysis using Bourdieu’s social field theory

To complement the previous presentation and discussion of the five dispositions individually, I now draw on Bourdieu’s theoretical constructs to reflect on two fields of practice—the field of education in elementary and secondary schools, particularly in mathematics classrooms (F1), and the field of university teacher education, particularly in mathematics curriculum courses (F2). In terms of these two fields, prospective teachers have a social practice journey within/through the social positions and power relations of F1 as a student, F2 as a prospective teacher, and eventually F1 as a teacher. I propose that in each of these two fields, specific (but quite different) forms of habitus and cultural capital are valued and (re)produced. While one may expect and desire that F1 and F2 are compatible fields of play (at least for the sake of smooth transitions for prospective teachers), my analysis and interpretation focuses primarily on the incompatibilities and misrecognitions that expose F1 and F2 as being worlds apart.

As introduced previously, the analogy of playing a game—and thus seeing F1 and F2 as fields of play—helps illustrate the dynamic relationship between field, habitus, and capital in any social space. With regard to the particular context of prospective secondary mathematics teachers, the practices in schools (F1) over many years as a student have shaped their habitus and made them aware of valued forms of cultural capital. This means that, as beginning teachers, they feel for the game in F1 is remarkably familiar, and with this familiarity comes a level of comfort. For prospective teachers, the “peculiar social world” (Bourdieu, 1998, p.

71) of F2 is a brief “detour” between F1 as a student and F1 as a teacher. The dispositions formed and shaped through F1 as a student are durable and, without significant intervention of different habitus and/or different field “rules”, F1 remains a good fit as a teacher. This is not to suggest that the field of teacher education plays no role in the formation of their teacher habitus. On the contrary, the data in this study points to prospective teachers’ awareness of the orthodoxy of schooling as well as the heterodoxy of teacher education. However, as beginning teachers in F1, their experience of how they were taught along with how they see other teachers teaching in F1, inevitably positions them such that the traditional teacherly habitus is easier to develop than alternatives.

My analysis suggests that prospective teachers’ “feel for the game” in F1 comes under the spotlight in F2. As an illustrative example of F1 doxa/orthodoxy, consider the discourses presented in this paper that play a part in shaping prospective teachers’ images of what it means to be a good mathematics teacher: “there’s not enough time, you won’t get done”, “you get a lot of information from a test”, “really strong math students don’t want to be slowed down”, “sit down and write notes”. Parallels can be drawn between these images of the good teacher (of mathematics) and Bourdieu’s description of the good player (of the game): “The habitus as the feel for the game is the social game embodied and turned into a second nature. Nothing is simultaneously freer and more constrained than the action of the good player” (Bourdieu, 1990a, p. 63). Like the description of the good player, the image of the good mathematics teacher may seem freer because it feels familiar; yet it unconsciously constrains through its tight script in the field.

Given that the dispositions and rules of the game in F1 (doxa/orthodoxy) are familiar and (mostly) comfortable for prospective teachers, they see little value in the heterodoxy of F2 since these dispositions will not be well matched for the rules of the game in F1. Instead of recognizing the possibilities in/for reshaping their habitus, and in turn using that new habitus to reshape the field of F1, the mutually constitutive nature of habitus and field is lost in the transitions. Even though habitus and field are dynamic—always evolving, always partial and never a *perfect* match for each other—a person will be most comfortable in a field when his/her habitus is a good fit for the logic and operation of the field.

[Adkins \(2004\)](#) offers possibilities for addressing habitus-field mismatches between F1 and F2 through a reflexive approach to teacher education and associated field experiences. She draws on Bourdieu’s theory in stating:

... a critical reflexive stance towards formerly normalized—or, at least taken-for-granted—social conditions... is constituted in circumstances where there is a lack of ‘fit’ between the habitus (the feel for the game) and the field (the game itself), that is, when synchronicity between subjective and objective structures is broken. (Adkins, 2004, p. 191)

While this lack of fit between habitus and field can be experienced as a crisis for beginning teachers, Bourdieu reminds us that “[c]risis is a necessary condition for a questioning of doxa but is not in itself a sufficient condition for the production of a critical discourse” (1977, p. 169). A critical discourse, framed in reflexive analysis, demands that we “step back and gain distance from dispositions” (Bourdieu & Wacquant, 1992, p. 136), demonstrating awareness that “we are the ones who endow the situation with part of the potency it has over us” (Bourdieu & Wacquant, 1992, p. 136). We are thus faced with powerful possibilities for, yet at the same time the limitations of, reflexivity.

6 Discussion and implications of study

In light of this data analysis using Bourdieu's social field theory, and the study's intent to transform my practice as teacher educator and faculty advisor, I close this paper with brief reflections in two particular areas, making the connections between this study and the broader implications for mathematics teacher education programs.

Firstly, Bourdieu's social field theory helps view the competing and conflicting demands on prospective teachers and their transitions in a new light, understanding that the passive act of *wanting* to change one's habitus is easier said than done when the orthodoxy of the school playing field remains intact. A study such as this one, however, carries the voices of prospective teachers into the field of teacher education and curriculum classes, where the stories/dispositions can be used to foreshadow their practicum and to initiate reflexive analysis of doxa/orthodoxy before entering the practicum field. The dispositions are so inextricably linked to, and implicated in, each other that it is challenging to disrupt or (dis)position them. However, through reflexivity, one can target underlying themes such as compliance and regulation sustaining these dispositions. The promising aspect of using Bourdieu's theory in this context lies in how the key elements of habitus, capital, and field have the potential to become dynamic dispositions, positions, and spaces. The challenge lies in persuading prospective teachers to take risks and consider trying an uncomfortable habitus on for size.

The second area of reflection relates to how this study has impacted and transformed my practice as a mathematics teacher educator and faculty advisor. As a teacher educator, my curriculum course now includes pre- and post-internship journal reflections that draw attention to prospective teachers' expectations of the role that field experience does (or should) play in becoming a mathematics teacher. [Bullock and Russell \(2010\)](#) propose that teacher educators have honest and open conversations with prospective teachers about the limitations of the apprenticeship structure of field experience, "accept[ing] field experience for what it is and what it cannot be" (p. 98). [Smits \(2010\)](#) recommends viewing field experiences as "heightened opportunities for the practice of inquiry about teaching and learning, rather than just practicing teaching" (p. 54).

In light of this recommendation by [Smits \(2010\)](#), my role as faculty advisor now includes more dialog and reflection with prospective teachers while they are in the field (see [Badali & Nolan, 2010](#)). In my work with prospective teachers, I am deliberate in my use of Bourdieu's concepts of habitus and field to disrupt and deconstruct the traditionally performed roles of prospective teacher, teacher educator, and faculty advisor. By openly exploring habitus-field (mis)fits, I construct a valuable lens through which to view the potential for (and, yet, complexity of) reconceptualizing mathematics teacher education and associated field experiences.

As a final thought, one must not forget that while research readily points to the school practicum as a site of (re)production and regulation of teaching practices, the university is no less a site of its own "imposed specific categories of being, acting, and thinking about what effective mathematics teaching is like" ([Walshaw, 2010a](#), p. 119). In the words of [Brown \(2010\)](#), it is possible that "our entrapment in specific pedagogic forms of mathematical knowledge and the styles of teaching that go with them can constrain students' engagement with processes of cultural renewal and changes in the ways in which mathematics may be framed for new purposes" (p. 329). Viewing my practice through the lens of Bourdieu's theory, it is clear that my dispositions of teaching and learning mathematics (my habitus) have been strategically shaped in and through my own journey through the social positions and power relations of F1 and F2. During this social practice

journey, however, I must be mindful of how my own dispositions work to position and regulate prospective teachers' transitions between/within these mathematical fields of play. In other words, I must question whether my critique of the practices of schooling is packaged in heterodoxy in F1 (as I claim) or merely a form of orthodoxy in F2. Perhaps a critical next step in a reflective study of this nature would be to ask the question of how my practice as a teacher educator and faculty advisor must be (cross)examined as its own site of (re)production.

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