
Migrants Becoming Mathematics Teachers: Personal Resources and Professional Capitals

Alan Benson

**Thesis submitted in partial fulfilment of the requirements
of London Metropolitan University for the degree of
Doctorate of Education (EdD)**

December 2017

Acknowledgements

I have spent my life, and my career as a teacher, in London and this thesis owes much to the opportunities that both have offered. I was born into a family from Woolwich in south east London and I am indebted to their good humour, resilience, and ambition. This study has benefited from the generosity of colleagues in teacher training, and from the staff of the professional doctorate course, who have valued academic research and insisted upon its place in university life. I am especially grateful to my supervisors Professor Jayne Osgood and Professor Alistair Ross who were at all times inspiring and demanding in equal measure. This research would have been impossible without the opportunity to share stories of migration with student teachers, both those who were kind enough to take part in this research, and the many others with whom I have talked over the years.

Finally, I would like to thank my own family, whose laughter, encouragement and steadfast support have made this research possible.

Abstract

This study traces the professional learning of student teachers who have lived and studied outside the UK, and successfully applied to follow a Post Graduate Certificate in Education (PGCE) course in London to become teachers of mathematics in English schools. It draws upon Bourdieu's theory of habitus and field to discuss how these student teachers adapt their capitals, as described in migration studies by Erel (2010) and Nowicka (2015) and how, during initial teacher training (ITT), they develop professional capitals for the teaching of mathematics (Nolan, 2012). Recent migration flows have led to a growth of diversity, as measured by countries of origin, in London and other cities around the world, resulting in what Vertovec (2006) has called superdiversity. Through a series of semi-structured interviews with 16 PGCE student teachers hailing from 13 different countries, this study explores the implications of superdiversity for the practices of training teachers.

The focus of the research is on the complications of 'bring[ing] off' (MacLure, 2003:55) the embodied performance of becoming a teacher, and on how student teachers develop 'enough' (Blommaert and Varis, 2011:5) professional capital to pass the course. This leads to a reassessment of the category 'highly skilled migrant', which is used to define those who have academic qualifications for teaching from outside the UK. The study uses instead the term 'highly qualified migrant', to argue that a mathematical degree needs to be complemented by knowledge of the national mathematics curriculum, national pedagogies and local communicative resources. It shows how London can become an 'escalator region' (Fielding, 1992:1), as the student teachers achieve a working life that matches their academic qualifications, and also their own aspirations and those of their families, in the UK and elsewhere. In so doing, they become part of a teaching workforce that reflects the growing superdiversity of the region's school pupils.

List of Figures

Figure 1	Population Pyramid for White Other Category	12
Figure 2	Final Thematic Map for Chapter	72

List of Tables

Table 1	Summary of Life Planning Categories for UK Migrants	13
Table 2	Sample Frame	58
Table 3	Summary of Interview Questions	60

List of Acronyms and Abbreviations

HEI	Higher Education Institutes
ICT	Information and Communications Technology
ITE	Initial Teacher Education
ITT	Initial Teacher Training
IWB	Interactive Whiteboard
L1 Speaker	Monolingual Speaker
L2 Speaker	Multilingual Speaker
MEC	Mathematics Enhancement Course
Ofsted	Office for Standards in Education, Children's Services and Skills
PGCE	Post Graduate Certificate in Education
UK NARIC	UK National Academic Recognition Information Centre

Table of Contents

Acknowledgements.....	i
Abstract.....	ii
List of Figures.....	iii
List of Tables.....	iv
List of Acronyms and Abbreviations.....	v
Chapter 1: Introduction.....	1
1.1 OVERVIEW.....	1
1.2 RESEARCH AIMS AND METHODOLOGY.....	2
1.3 STRUCTURE AND ORGANISATION OF THE THESIS.....	4
Chapter 2: Literature Review.....	6
2.1 INTRODUCTION.....	6
2.2 BOURDIEU’S THEORY OF PRACTICE IN MIGRATION STUDIES AND TEACHER EDUCATION.....	6
2.3 SUPERDIVERSITY IN LONDON.....	9
2.4 MIGRATION.....	10
2.4.1 MIGRATION FROM OUTSIDE EUROPE.....	10
2.4.2 EU MIGRATION.....	11
2.5 PRACTICES OF SUPERDIVERSITY.....	15
2.5.1 GAINING ACCESS TO THE FIELD OF THE PGCE.....	18
2.5.2 EXPERIENCE OF MIGRANT TEACHERS AROUND THE WORLD.....	20
2.5.3 DIFFERENT MATHEMATICS CURRICULA AND DIFFERENT CLASSROOM PRACTICES.....	23
2.5.4 SCHOOL-BASED PGCE TRAINING.....	27
2.6 CONCLUSION.....	29
Chapter 3: Identity Frameworks.....	31
3.1 INTRODUCTION.....	31
3.2 MULTICULTURAL ENCOUNTERS IN SUPERDIVERSITY.....	31
3.3 SPATIALITY: THE PRODUCTION OF SPACE IN SCHOOL ENCOUNTERS.....	33
3.4 DISCOURSE, RECOGNITION AND DISCURSIVE AGENCY.....	35
3.5 EVERYDAY PROFESSIONAL ENCOUNTERS AND THE GROWTH OF PROFESSIONAL AUTHORITY.....	40
3.6 CONCLUSION.....	45
Chapter 4: Methodology.....	48
4.1 INTRODUCTION.....	48
4.2 BIOGRAPHICAL TRAJECTORY AND THE PERFORMANCE OF DIFFERENCE	50
4.2.1 PERSONAL BIOGRAPHY.....	50
4.2.2 WORK AS A PGCE COURSE LEADER.....	53
4.3 DATA COLLECTION.....	54

Table of Contents

4.3.1 SAMPLING	54
4.3.2 SAMPLE FRAME: CATEGORIES AND LINKS TO THEORETICAL VIEWPOINTS	55
4.4 INTERVIEWS	59
4.4.1 INTERVIEW SETTING	62
4.4.2 INTERVIEW INTERACTIONS.....	62
4.5 ANALYSIS OF DATA.....	67
4.5.1 FAMILIARISATION WITH THE DATA: TRANSCRIPTION AND EARLY CODING	68
4.5.2 IDENTIFICATION AND REFINEMENT OF THEMES AND CODING.....	71
4.6 WRITING OF RESEARCH.....	72
4.7 ETHICAL ISSUES RELATED TO THE CONDUCT OF THE STUDY	74
4.7.1 PROCEDURAL ETHICS	74
4.7.2 ETHICS IN PRACTICE	75
4.8 CONCLUSION.....	75
Chapter 5: Capitals and Resources for Teaching	77
5.1 INTRODUCTION	77
5.2 GAINING ENTRANCE TO THE FIELD OF THE PGCE: THE APPLICATION PROCESS	77
5.2.1 THE APPLICATION FORM AND SELECTION DAY	78
5.3 MATHEMATICAL AND LANGUAGE CAPITALS AT THE START OF THE COURSE.....	79
5.3.1 THE MATHEMATICS ENHANCEMENT COURSE.....	79
5.3.2 DIFFERENCES IN LEARNING MATHEMATICS IN THE UK AND ABROAD.....	81
5.3.3 LANGUAGE LEARNING AND REPERTOIRES	84
5.4 DEVELOPING CAPITALS AT UNIVERSITY DURING THE PGCE.....	86
5.4.1 PEDAGOGICAL CAPITAL	86
5.4.2 DEVELOPING A WRITTEN REPERTOIRE: PROJECTS AND EVALUATIONS	89
5.5. THE USE-VALUE OF SOCIAL CAPITAL.....	91
5.5.1 WELL-BEING AND ACHIEVEMENT	91
5.5.2 MOBILISING RESOURCES: TRANSLOCAL AND TRANSNATIONAL NETWORKS	93
5.5.3 MOBILISING RESOURCES: LOCAL NETWORKS.....	95
5.5.4 MOBILISING RESOURCES: FAMILY NETWORKS	97
5.6 CONCLUSION.....	100
Chapter 6: Learning to be a Teacher in Mathematics Classrooms.....	103
6.1 INTRODUCTION	103
6.2 CLASSROOM ENCOUNTERS.....	103
6.2.1 OBSERVING OTHER TEACHERS	103

Table of Contents

6.2.2 FIRST EXPERIENCES OF SCHOOL CLASSROOMS.....	104
6.2.3 COMPARISON WITH THEIR OWN MATHEMATICAL HABITUS AND EDUCATIONAL RESOURCES	109
6.3 DOING MATHEMATICS IN THE CLASSROOM	110
6.3.1 DOING MATHEMATICS IN SCHOOLS: FIRST LESSONS	110
6.3.2 DOING MATHEMATICS IN SCHOOLS: USING INTERACTIVE WHITEBOARDS	111
6.3.3 DOING MATHEMATICS IN SCHOOLS: CALCULATIONS	115
6.4 BEING LISTENED TO: FOR THE AUDIENCE IT IS NOT ALL ABOUT MATHS	117
6.4.1 ACCENT.....	117
6.4.2 RECOGNITION	122
6.5 CONCLUSION.....	128
Chapter 7: Around and About the School Site.....	130
7.1 INTRODUCTION	130
7.2 PROFESSIONAL LEARNING IN STAFFROOMS.....	130
7.2.1 STAFFROOMS RESERVED FOR MATHEMATICS TEACHERS	136
7.3 SCHOOL PRACTICES OF PROFESSIONAL LEARNING THROUGH MENTORING AND USE OF THE TEACHERS' STANDARDS	139
7.3.1 WEEKLY MEETINGS WITH MENTORS	140
7.3.2 CLASSROOM OBSERVATIONS	143
7.3.3 PROFESSIONAL LEARNING USING THE TEACHERS' STANDARDS ..	145
7.4 PUPILS, AND PUBLIC SPACES, IN THE SCHOOL	149
7.5 CONCLUSION.....	153
Chapter 8: Conclusion.....	156
8.1 INTRODUCTION	156
8.2 CONTRIBUTIONS TO KNOWLEDGE.....	156
8.2.1 POLICY AND PRACTICES OF INITIAL TEACHER EDUCATION	157
8.2.2 REMAINING A TEACHER IN LONDON AND DEVELOPING A SENSE OF BELONGING	163
8.2.3 SUPERDIVERSITY AND THE TEACHER EDUCATOR.....	167
8.3 DEVELOPMENT AS A RESEARCHER	173
8.4 FURTHER LINES OF ENQUIRY.....	174
List of References	177
Appendices and Copies of Key Documents.....	191
APPENDIX I: EMAIL INVITING PARTICIPATION IN THE RESEARCH.....	192
APPENDIX II: INFORMED CONSENT FORM.....	195
APPENDIX III: INTERVIEW SCHEDULE 1/ LIFE HISTORY.....	198
APPENDIX IV: INTERVIEW SCHEDULE 2/ POST SE1	199
APPENDIX V : INTERVIEW SCHEDULE 3/ POST SE2.....	201
APPENDIX VI: PAGE OF FINNISH MATHEMATICS TEXTBOOK.....	203

Table of Contents

APPENDIX VII: PAGE OF INDIAN MATHEMATICS TEXTBOOK	204
APPENDIX VIII: PAGE OF ROMANIAN MATHEMATICS TEXTBOOK	205

Chapter 1: Introduction

1.1 OVERVIEW

This thesis focuses on the training of mathematics teachers on a Post Graduate Certificate in Education (PGCE) programme, of which I am the course leader, at a post-1992 university in central London. Amongst the many different axes of diversity represented by students on the programme, that which is related to migration is particularly striking. The migrant trajectories and networks that many of the student teachers bring to the university PGCE course result in a wealth of chance and planned encounters. For example, groups of trainees from across Eastern Europe have shared their stories of belonging to the Young Pioneers (the youth movement of the communist parties that were once common throughout this region); I have laughed with trainees about the exceptional historical irony of a Turk and an Armenian sitting side by side at the table at the back of the class, in contrast to the nervous glances they would have cast over the national frontier that separated their villages, barely 40 miles apart; and students have talked about the confusions and decision making concerning whether to wear, or not to wear, religious dress. The complexities of these relationships and practices will be addressed in terms of the concept of superdiversity, which Vertovec (2006) refers to as the ‘diversification of diversity’, and which includes:

[D]ifferentiation in immigration statuses and their concomitant entitlements and restrictions of rights, labour market experiences, gender and age profiles, spatial factors, and local area responses by service providers and residents.

(Vertovec, 2006:1)

The respondents in this study had already made the decision to migrate to the UK before deciding to apply to the PGCE programme. Some originally came to Europe as refugees or in order to join family members. Some came as young, freely moving EU migrants. Others came to join romantic partners. The research uses Bourdieu’s

Chapter 1: Introduction

theory of practice as a critical perspective to examine the experiences of the student teachers during the PGCE course. In so doing, it throws light upon both the ‘narrow assumptions, [and] hidden complexities’ (Santoro, 2015:858) of policies intended to diversify the teacher workforce and the social justice implications of these experiences for student, and early career, teachers.

1.2 RESEARCH AIMS AND METHODOLOGY

In the context I have described, this study addresses the following questions:

- 1) How do student teachers sustain themselves through their social networks, both within London and transnationally, throughout the PGCE?
- 2) What are the challenges and processes of change and adaptation during a PGCE course in the context of student teachers’ own biographies and migration trajectories?
- 3) How do migrant teachers develop authentic performances as mathematics teachers in the context of the expectations of the English school system, and through their interactions with pupils and staff?

In the analysis, I build on Bourdieu’s concepts of habitus and capital as developed by the work of Umet Erel (2010). Erel uses Bourdieu’s framework to discuss how migrants adapt their resources and develop new ones in the context of the new national jurisdiction in which they find themselves. Bourdieu’s emphasis upon the way in which capitals are accumulated introduces a historical dimension to the analysis, which will be examined by considering the respondents’ trajectories and how they make use of their capitals during the PGCE course.

I make further use of Bourdieu’s work by employing the concept of field to structure the spaces of the university and the placement schools, which are the main sites of

Chapter 1: Introduction

the PGCE training. I investigate how local practices within these fields are based on the ‘rules of the game’ (Bourdieu and Wacquant, 2007:99) and how these usually tacit rules present particular difficulties for the participants. I also consider the fields as relational spaces in which both emotion and power circulate. To emphasise how this happens in different settings, Goffman (1990) in the school he studies distinguishes three spaces of professional interaction: the classroom, the staffroom and school corridors. It is within these settings that the students ‘bring off’ (MacLure, 2003:201) their own professional performances.

This study is based upon data drawn from a longitudinal study of 14 PGCE student teachers who were interviewed during their training, and two early career teachers who had previously completed the same PGCE programme. I first carried out a thematic analysis of this data in order to illustrate and analyse the performance of a professional teaching identity, an analysis that was continually informed by academic reading, as recorded in the list of references.

The consideration of a teaching identity as an embodied performance (Osgood, 2010) is central to this research. The sample is superdiverse, in contrast to research into highly qualified migrants (Ryan and Kurdi, 2014) that focuses on one national group. It represents the emerging structure of the teaching workforce (Department for Education, 2013) as seen in many London schools, and, as such, is part of the growing literature on practices of superdiversity in London. It contributes to an understanding of the role of highly qualified migrants in the supply of mathematics teachers in London.

Chapter 1: Introduction

1.3 STRUCTURE AND ORGANISATION OF THE THESIS

In the next chapter I discuss in more detail how the population of London has become superdiverse. I show how migrants have dispersed throughout the capital and how, as a result, different everyday practices of superdiversity (Wessendorf, 2011) have developed in different locales, affecting both school populations and the student teachers on the PGCE programme. The chapter concludes with a comparison of different national mathematics curricula and educational systems and a consideration of the role of mentoring systems in schools and at the university that support professional learning throughout the course.

The third and fourth chapters outline the use of Bourdieu's work, as well as the details of the methodology used to collect and write up the data. I discuss how a mathematical and pedagogical habitus is developed by respondents in the course of their learning and how, through repeated performances, observed by, and discussed with, school and university staff, they learn to 'bring off' (MacLure, 2003:55) the identity of a mathematics teacher.

The data chapters that follow first, in Chapter 5, discuss the capitals that help respondents gain access to the course and how the university begins the process of developing the professional capitals of a mathematics teacher and the communicative repertoires (Rymes, 2010) that are integral to their professional performance. The chapter distinguishes between this development of professional capitals in the programme itself and the resources available to respondents through other networks. It shows how the latter provide essential emotional and practical support and, as such, have a 'use-value' (Skeggs, 2004:11) in helping the participants to meet the demands of the programme itself. The remaining two chapters discuss the development of professional performances in the mathematics classroom, and in other areas

Chapter 1: Introduction

throughout the schools where student teachers are placed. Finally, Chapter 8 brings together key findings with respect to my research questions. It reflects on aspects of the research methodology and proposes further avenues for research.

Chapter 2: Literature Review

2.1 INTRODUCTION

In this chapter I examine literature that is concerned with both the diversity of London's population and processes of teacher training. I explore the use and relevance for this study of Bourdieu's theory of practice, before engaging with themes concerning the emergence of a superdiverse population in London and the post graduate training of mathematics teachers.

2.2 BOURDIEU'S THEORY OF PRACTICE IN MIGRATION STUDIES AND TEACHER EDUCATION

Personal trajectories and narratives of change and adaptation are central to this study and build upon the work of established researchers in the fields of mathematics teacher training (Nolan, 2012; Walshaw, 2010) and migration studies (Erel, 2010; Nowicka, 2015). Nowicka's work uses Bourdieu's concepts of habitus and field to theorise the shock of arrival experienced by migrants, which is echoed in the work of Nolan in terms of student teachers' first experience of their school placements. Erel focuses on how, subsequently, migrants adapt their capitals in the context of the new jurisdiction in which they find themselves in a way that is similar to the description of the learning process of trainee mathematics teachers presented by Nolan and Walshaw.

Bourdieu emphasises the use that can be made of the accumulation of experiences during a life trajectory and he refers to this as capitals (Bourdieu, 1997), among which he distinguishes economic capital, cultural capital and social capital. Whilst all three are considered in this study, cultural capital, with its emphasis on educational qualifications and social capital, characterised by social networks, are of particular importance. Bourdieu describes how 'the work of acquisition [of cultural capital] is work on oneself' (Bourdieu, 1997:48) and, following Erel (2010), this study draws upon this description to discuss how student teachers of migrant heritage adapt the

Chapter 2: Literature Review

volume of their capitals during their stay in London and on the PGCE course.

The use of the term ‘capital’ also implies the possibility of exchange in a market place which Bourdieu describes as a field or ‘a multi-dimensional space of positions’ (Bourdieu, 1994: 231). The generality of this definition will allow for the concept of field to be used as a basis for the consistent analysis of structures throughout the study, in such different sites as university lecture theatres, schools and school classrooms. In each, it will be possible to discuss how individuals are positioned by ‘the overall volume of the capital they possess [...] and [...] according to the composition of their capital’ (Bourdieu, 1994: 231), and also by its effects on the processes of exchange and by how student teachers are positioned in a field to facilitate this exchange. Importantly, capitals must be recognised in fields in order to be exchanged. This study shows how recognition is achieved in different fields, ranging from national qualifications to the use of mathematics pedagogies and capitals developed in university sessions in the field of the mathematics classroom. In so doing, it challenges the discourse of the migration of graduates as highly skilled (Salt, 1997), as it charts the way in which skills are locally achieved and performed (Nowicka, 2012) in the change from highly qualified migrants to highly skilled teachers in London schools. One of the challenges of using the term ‘field’ is the suggestion of boundaries between fields and the study shows how boundaries are maintained by the operation of power. This will allow the concept of field to be used to spatialise the school site by considering classrooms and staffrooms, as well as on a macro scale through a consideration of the transnational field. The latter will enable a discussion of how resources are distributed in transnational networks as well as creating a space in which students can take decisions by comparing opportunities within the field.

As well as the cultural capital represented by qualifications, individuals bring cultural

Chapter 2: Literature Review

capital as ‘dispositions of the mind or body’ (Bourdieu, 1997:47), referred to as habitus. The relation between the habitus and the field is not deterministic but rather certain practices or actions are:

the product of the relation between the habitus, on the one hand, and the specific social contexts or ‘fields’ within which individuals act on the other
(Thompson, 1994:14)

This study uses the relation between the embodied habitus and the field to describe the process of change experienced by the student teachers during their PGCE. It is important to note that I am not proposing the existence of a unified habitus but am imagining the development of dispositions related to particular fields. This will allow me to distinguish between a mathematical habitus and ‘linguistic habitus’ (Bourdieu, 1994:46), both of which are related to the narrative history of an individual’s own learning and the ‘categories of perception of the social world’ (Bourdieu, 1994:235) that have thereby developed. It is important to recognise that, as an embodied capital, habitus is not limited to neo-cognitive dimensions, and the inclusion of physical dispositions (including ways of standing, talking and dressing) will be an important dimension of the analysis, both of the student teachers’ performances and of the way in which they are recognised by others.

A similar historicisation is represented by the ‘doxa’ of the field or belief ‘that the game is worth playing’ (Bourdieu and Wacquant, 2007:98), which serves to normalise a field’s practices, and which can be either unnoticed or apparently insignificant:

[W]hen habitus encounters a social world of which it is the product, it is like a ‘fish in water’: it does not feel the weight of the water, and it takes the world about itself for granted.
(Bourdieu and Wacquant, 2007:127)

This is a very suggestive metaphor of the possible experiences of student teachers of migrant heritage during the PGCE course. The adjustment of habitus to the fields of the school during placement, and the processes of ‘work on oneself’ (Bourdieu, 1997:48) that are involved in this adaptation, are a key focus of this study.

Before turning to the literature about initial teacher education, I discuss in the

Chapter 2: Literature Review

following section the structure of London's population, amongst which the student teachers live and learn at the same time as becoming teachers of the city's young people.

2.3 SUPERDIVERSITY IN LONDON

Since the 1951 census, the percentage of the resident population of England and Wales born abroad has increased from 4.3 percent to 13 percent (Office for National Statistics, 2013b) and, in this time, the population has become more diverse (Office for National Statistics, 2013b) with, in 2011, the top 10 non-UK countries of birth accounting for only 45 percent (3.4 million) of the total foreign-born population (7.5 million). Migration from the Commonwealth immediately after the Second World War formed the basis of established diasporic communities, and India remains the most common country of birth after the UK (Office for National Statistics 2013a). Recently, following the accession to the European Union of Eastern European countries in 2004 and 2006, there has been a rise in the number of Polish nationals migrating to the UK and they have become the largest group of EU nationals resident in the UK (Office for National Statistics 2013a). These migration flows are, according to the Office for National Statistics (2013a), represented more in the London region than anywhere else in the UK. This diversity is also reflected in school populations where, according to the Department for Education (2013b), in England and Wales 12.9 percent of pupils speak a language other than English and 23.2 percent identify themselves as belonging to an ethnic minority. The complexities of this diversity, represented on axes of religion, gender, race and immigration status, in family groups and school populations, as well as in the population at large, are also found amongst the student teachers in this study. To describe this change in London, Vertovec uses the phrase 'superdiversity':

The 'new immigration' and its outcomes in Britain have entailed the arrival and

Chapter 2: Literature Review

interplay of multi-faceted characteristics and conditions among migrants. This has resulted in a contemporary situation of ‘super-diversity’ – named so in order to underline the fact that such a permutation marks a level and kind of complexity surpassing what Britain has previously experienced.

(Vertovec, 2006:23)

Although this definition lacks clarity, by not specifying how diverse a population should be in order to qualify as superdiverse (Deumert, 2014), it is useful as a framework for analysing the step change I have described in diversity in the population of London. This study examines the nature of superdiversity amongst a group of student teachers and from this draws out possible implications for other professions. I first consider how migration flows and channels structure superdiversity, before discussing how this is reflected in everyday encounters in the public spaces of the city.

2.4 MIGRATION

2.4.1 MIGRATION FROM OUTSIDE EUROPE

After the Second World War, former British colonies, many of which subsequently became members of the Commonwealth, provided labour for post-war reconstruction, and these countries remain an important source of migration, shown by the fact that five of the 10 major countries for non-UK births among UK residents (Office for National Statistics, 2013a) represent this connection. The migration flows of these well-established communities are complicated by the way in which transnational diasporic communities have developed, establishing, for example, a family migration channel that is highly gendered (Kofman, 2012), an issue that is explored through the accounts of female participants in this research.

The use of refugee and asylum channels relates to what Hobsbawn describes as:

a global relapse into the first major epidemic of massacre, genocide and ethnic cleansing since the immediate years after the Second World War.

(Hobsbawn, 2007:85)

Chapter 2: Literature Review

This has contributed to the superdiversity of the population, with a range of relatively small migrant populations that reflect a variety of conflicts around the world. Each of these groups brings particular experiences of dislocation and as refugee families (Rutter, 2006). All these flows result in a complicated legacy of the colonial era, which has affected national discourses within the UK (Ahmed, 2000) and which is examined in the experiences of the student teachers in this study.

2.4.2 EU MIGRATION

EU citizens are entitled to move to the UK without restriction, in contrast to the visa and settlement restrictions and the processes of achieving settled or asylum status faced by migrants from outside Europe. Furthermore, EU citizens who have been ordinarily resident in the European Economic Area for three years before the first day of the PGCE course, and have not studied in that period, are eligible to apply for a loan to pay for tuition fees in the same way as students born in the UK. Freely moving EU citizens represent a significant new flow of migration; for example, the Polish population is now the second largest group of migrants born outside the UK (Office for National Statistics, 2013b). This group and other freely moving EU citizens are categorised as ‘White Other’ in census statistics and the figures for the 2001 and 2011 census are combined in the population pyramid shown in Figure 1. The absolute increase in migrants in each age category can be seen in the difference between the 2001 and 2011 figures. The increase is particularly notable in the bulge in the 25–29 and 30–34 age groups, which I shall now discuss with reference to research amongst the Polish community in London.

Chapter 2: Literature Review

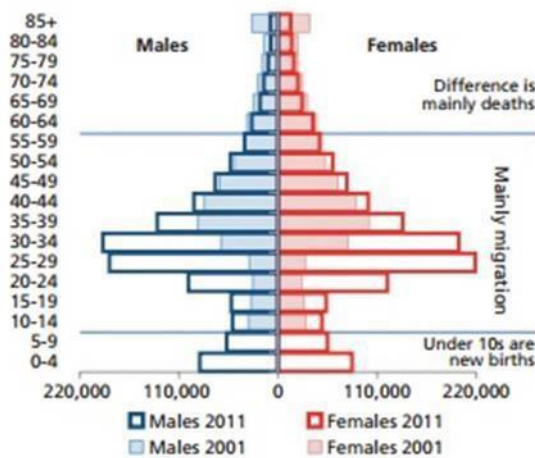


Figure 1 Population Pyramid for White Other Category (Centre on Dynamics of Ethnicity, 2013:4)

The aspirations and migration plans of this group are not homogenous, as shown by the different typologies of Polish migrant in London that are evocatively labelled by

Eade et al as:

Storks (20%) – circular migrants who are found mostly in low paid occupations [...] Hamsters (16%) [...] often embedded in Polish networks and see their migration as a source of social mobility back home [...] Searchers (42%) [...] prepare for any possible opportunity such as pursuing a career in London, returning to Poland when the economic situation improves or migrating elsewhere [...] Stayers (22%) – those who have been in the UK for some time and intend to remain for good.

(Eade et al, 2006: 33–34)

These categorisations caution against assumptions about any group and, more generally, about nations and nationalism – referred to as ‘methodological nationalism’ (Glick Schiller, 2009:3). ‘Searchers’, make up 42 percent of the sample in the research of Eade et al, and the name suggests a sense of people who are in the process of making decisions in a transnational field. They are neither elite migrants nor refugees, and seem to have much in common with the young New Zealanders who have been categorised as middling transnationals:

What is striking about many of the people involved in these kinds of transnational travels is their middling status position in their countries of origin. They are often, but not always, well educated. They may come from wealthy families, but more often than not they appear to be simply middle class.

(Conradson and Latham, 2005c:229)

Chapter 2: Literature Review

The categories ‘well educated’ and ‘middle class’ suggest a group of people who have much in common, not only with other young migrants, but also with young UK graduates facing life after university. Unsurprisingly then, the category of searchers is replicated in other research into highly qualified middling transnationals from both within, and outside, the EU, as the following table shows.

Eade et al (2006)	Szewczyk (2014)	Ho (2011)	Conradson and Latham (2005a)	Ahrens et al (2016)
Storks				
Hamsters	Continuers			Student movers
Searchers	Switchers Late awakeners	Accidental navigators	Career-tending experiential movers	Cosmopolitan movers
		Global careerists	Experiential movers Global city movers Speculative career movers	Career movers
Stayers				Family movers Diaspora movers

Table 1 Summary of Life Planning Categories for UK Migrants

The names other analysts have given to groups that have characteristics comparable to those of the searchers all emphasise the exploratory nature of their migration and decision making. Furthermore, the research shows that the London region provides, in addition to opportunities for learning English and further study, a good location in which to take stock and move on. The cosmopolitan attraction of London and its employment opportunities were part of the plans for onward migration to London from Germany in Ahrens et al’s research amongst Iranians, Somalis and Nigerians:

London’s international character was considered very appealing for some of our participants who wanted to escape the relative homogeneity they perceived in other EU countries.

(Ahrens et al, 2016:95)

The desire to escape homogeneity (along with the attraction of superdiversity) is evident in the responses gathered in this research. During their stay in London, individuals may also address longer-term plans for their lives, in which ‘not only

Chapter 2: Literature Review

economic aspects are the primary factors but also life phase and marital status are important' (Szewczyk, 2014:14).

Both the switchers and the late awakeners of Szewczyk's research amongst Polish graduates made decisions about their life plans after migration to London, and her analysis indicates how the locale, the relationships they made and the networks they became involved in affected their decision making. Ho's (2011) category of accidental navigators, which she found in her research amongst middling transnationals from Singapore, emphasises serendipity in such decision making when she notes, of an accidental navigator, that:

Her migration trajectory – from student to working holiday maker (in a low skilled job) and eventually work permit holder – illustrates the way that some migrants incrementally extend their overseas stay in London by employing a range of migration strategies.

(Ho, 2011:124)

In contrast to the searchers are the stayers (Eade et al, 2006) and the family movers (Ahrens et al, 2016), who are anchored to London and whose decision-making process, as might be expected, is embedded in the context of family and other commitments.

The boundaries of these categories are not fixed (Anthias, 2008) and individuals can move between them, as shown in the narratives in Ho's (2011) work in which, for example, a young woman married her English boyfriend when her visa was about to expire. The explanatory power of the categories was useful in analysing both the decisions made to join the PGCE course and how respondents make use of the social capital that resides in networks, together with other capitals developed during their stay in London, at all stages of the PGCE programme. This decision making and the ongoing accumulation of cultural capital is done in the context of everyday activities, practices of living and earning a living in the London region, which I now discuss in

Chapter 2: Literature Review

more detail.

2.5 PRACTICES OF SUPERDIVERSITY

Gilroy (2004) described London as enjoying an atmosphere of ‘convivial cosmopolitanism’, in which people can walk amongst shops representing many different foods and styles, where many different languages are both understood and spoken. Yet the differences in the mixes of local populations between, and within, the 32 London boroughs means that the daily experience of ‘commonplace diversity’ (Wessendorf, 2011:16) is not always convivial. Reflecting this, Hickman et al (2008) were able to contrast practices in Kilburn in inner London, where there were ‘hybridised patterns of everyday life’ (Hickman et al, 2008:7), with those in Downham in outer London, where what existed was ‘a perception of self-containment and majority ethnic sociocultural homogeneity’ (Hickman et al, 2008:6). They concluded that, in Kilburn, there was a:

willingness to operate some ‘willing suspension of disbelief’ towards newcomers by empathising, preventively, with their potential difficulties and needs, and by accepting that relations between long-term resident and new-arrival groups will improve only by mutual listening and accommodation.

(Hickman et al, 2008:180)

In a study of Hackney, also an area of inner London, Wessendorf found that the fleeting encounters people had in public spaces in superdiverse areas, ranging from the school gate to the corner shop, resulted in a civility by which the locals were:

perfectly comfortable with muddling through the neighbourhood in day-to-day life and somehow communicating with various types of people but [that] many of them know little about other people’s ways of life.

(Wessendorf, 2013:17–18)

Important here is the way in which people did not seem to know, or need to know, about other people, and their necessary improvisations are emphasised by the word ‘muddling’, which suggests an acceptable lack of clarity with which encounters are successfully concluded. Significantly, such everyday practices offer the possibility of

Chapter 2: Literature Review

relative anonymity for newcomers to the area.

This is in contrast to the findings of Hickman et al in Downham, in outer London, where:

[T]he burden of cohesion tends to be placed on the shoulders of newcomers, rather than on those of all subjects involved in community relations.

(Hickman et al, 2008:181)

In the public space of areas such as Downham it is migrants or newcomers who are expected to change in order to support local practices in everyday encounters. This study explores these geographical distinctions of neighbourhoods and how local practices in the public space are used in schools, by both pupils and staff, in their encounters with the PGCE students.

Practices of commonplace diversity help migrants to adjust the fit between their habitus and the local field, to feel comfortable in the local area. In so doing, they also learn the embodied repertoires of everyday communication that might be used in their school placements. Not so immediate – but nonetheless important – is the social capital that can be accessed through local and transnational links, the density and frequency of which are made possible by digital technologies.

Contact with relatives and friends is more easily maintained, in contrast to the delays in communication experienced by previous generations of migrants, as a result of the availability and use of digital technologies. Through the ongoing development of these technologies, users can be virtually and immediately present (Kozachenko, 2013). Although these calls are ‘transnational’, the personal advice and support given is a reminder of the caution with which this term needs to be used in the context of migration. Calls to relatives and friends are to specific places, and their significance is better caught by the description ‘translocal’ (Brickell and Datta, 2011). They act as what Vertovec (2004) describes as a glue amongst social networks and are a reminder of the heterogeneity that is masked by the national categories within which migrants

Chapter 2: Literature Review

live their daily lives in London.

Aside from these routine virtual links, London, through its position as a transport hub, offers the opportunity for migrants to travel quickly at moments of family crisis as well as to welcome family members to London. In 2014, more than a third of the 140 million air passengers to London were in the ‘visiting family and friends’ category (Civil Aviation Authority, 2014), facilitated by cheap intercontinental and intra-European flights (Williams and Baláž, 2009). This study will explore the ‘use-value’ (Skeggs, 2004:11) for respondents of the emotional and practical support offered by transnational networks, even if it is not directly exchangeable as capital in the context of the field of a PGCE course.

This discussion of superdiversity in London has shown how migrants can build new links in the city whilst maintaining existing ones with friends and relatives internationally. The relative anonymity of everyday practices of commonplace diversity provides middling transnationals, and other migrants, with the opportunity to adapt themselves to the practices and routines of the UK. By adapting their skills and capitals and, in accumulating a local London habitus matched to the field to develop a local ‘feel for the game’, searchers might make long-term plans to remain in London. For those with the right qualifications and ambition, this might include teaching. The PGCE programme provides them with the opportunity to transform their capitals into a legitimate, nationally symbolic capital that can lead to employment as a schoolteacher. In this way, London represents an ‘escalator region’ (Fielding, 1992:1). It enables such individuals to take up a career that brings personal satisfaction and, for some, financial benefits, especially in terms of the transnational field; for example, the salaries at all points during the career of secondary teachers in Estonia, Hungary, Poland and Slovakia are below the OECD European average (Organisation for Economic

Chapter 2: Literature Review

Co-operation and Development, 2012). For all this to happen, the prospective students must gain access to the field of the PGCE itself through the interview process organised by the university.

25.1 GAINING ACCESS TO THE FIELD OF THE PGCE

On their application forms, which are scrutinised prior to interview, all PGCE applicants must satisfy publicly available entry criteria regarding the standard of their degrees and their relevant experience. Would-be students have to establish with the UK National Academic Recognition Information Centre (UK NARIC) the equivalence of academic qualifications from outside the UK. In the process of establishing equivalence, UK NARIC does not recognise the prestige of the awarding body itself:

What may be an excellent qualification or a prestigious employment in Hungary or Romania may well not be that excellent or prestigious in the UK.

(Csedo, 2008:820)

This loss may not just be in terms of prestige but, more significantly, in terms of the judged standard of the equivalence itself, which might affect either eligibility for the course or the financial support for which applicants might be eligible. Such difficulties demonstrate the potential pitfalls in the application process for highly qualified migrants. Furthermore, the local interpretation of the phrase ‘relevant experience’ can compound these difficulties which, in tandem, work to corroborate Erel’s claim that:

Migration regimes, professional regulations, and national policies play an important part in the construction of the category ‘skilled migrant’ and instead, many migrants experience a devaluation or non-recognition of their skills.

(Erel, 2010:643)

Arrangements for interviews vary between universities, but they may include a short oral presentation about mathematics, a piece of writing about an educational topic, an interview with the tutor and the completion of a GCSE mathematics paper. All of this emphasises the work that applicants must do to develop appropriate capitals before

Chapter 2: Literature Review

applying to the PGCE course and how, on the day of the interview, they have to be able to convincingly demonstrate them in their interview performance. In acknowledgement of the importance of this local performance, I have chosen in this study to adopt Csedo's (2008) distinction between those migrants who are highly qualified and those who, in developing capitals in the context of the local field, have become highly skilled and thereby gain access to the field of the PGCE.

Once they begin the PGCE, students develop capitals that they can exchange in their school practice in relation to both subject knowledge for teaching mathematics and national policies that structure the field of schools. Drawing on her experience of training mathematics teachers in Canada, Nolan (2012) describes the conflicts between school experience and the pedagogies discussed at the university in support of curriculum innovation in mathematics. The latter is made more difficult because:

[P]rospective teachers enter teacher education programs already feeling quite at ease with their knowledge of what teaching and learning look like.

(Nolan, 2012:202)

Their experience of migration, and of education under different jurisdictions, makes it less likely that the prospective teachers in this study will approach the school experience feeling 'quite at ease', as they anticipate a lack of fit between their own experiences of schools and the ones they are likely to have in London, whatever the intentions of the university preparation. This study is, therefore, able to build upon the work of Nolan and other research carried out with relatively homogenous groups of student teachers who have been educated within the jurisdiction in which they hope to become teachers.

In order to anticipate some of the potential discrepancies between habitus and field, I now discuss research from Canada and Scotland concerning migrant teachers, which illustrates the way in which migrant teachers can be othered by the power of national

Chapter 2: Literature Review

policies and discourses. This is followed by a comparison of international mathematics education and of different traditions of education to indicate the different dispositions that respondents may have developed before beginning the PGCE programme.

2.5.2 EXPERIENCE OF MIGRANT TEACHERS AROUND THE WORLD

Previous sections have shown the complications of migration and migrant decision making. Part of these processes are the incentives that the UK Government offers to address shortages of teachers in mathematics, both by recognising this as a shortage area that receives extra points at Tier 2 under the 2008 Migration Act for migrants from outside Europe and by offering bursaries to all home students (which includes all EU migrants). A similar combination of shortage and migration has led to changes in other highly industrialised countries and elsewhere, as Vandeyar et al's study of South African migrant teachers (Vandeyar et al, 2014) makes clear. These responses to teacher shortages have led to global competition for teachers and a subsequent diversification of teacher workforces, which has resulted in the expansion of research (from, for example, the experiences of modern language teachers [Kostogriz and Peeler, 2004]) to the diversity of the wider teaching workforce. This section draws upon this recent research and, by considering the implications of research in Canada and Scotland, shows its relevance to the teaching workforce in England and the migrant teachers in this study.

In both Canada and Scotland, as in England, the teaching workforce is dominated by nationals of the country itself and, research in the province of Manitoba has identified multiple levels of systemic discrimination resulting from the visible difference of migrant teachers in a provincial teaching force that is 'still predominantly White, monolingual, and Canadian born' (Schmidt, 2010:245). This structure normalises discourses and constructs expectations for what Puwar refers to as the somatic norm of

Chapter 2: Literature Review

spaces:

Some bodies are deemed as having the right to belong, while others are marked out as trespassers, who are, in accordance with how both spaces and bodies are imagined (politically, historically and conceptually), circumscribed as being ‘out of place’.

(Puwar, 2004:8)

This leads to a construction of difference as deficit (Yosso, 2005) in a way that can make finding work difficult for individual teachers, and, in times of financial austerity, make services for internationally educated teachers (IET) vulnerable. Having worked with colleagues at Ontario Institute for Studies in Education to provide services for migrant teachers, Antoinette Gagne noted that ‘from 2012 to 2015 many of the services were either entirely cut or seriously reduced’ (Schmidt and Gagne, 2015:303). Critical race theory, and its use of convergence theory, usefully identifies the dynamic of these changes:

Interest convergence stresses that racial equality and equity for people of color will be pursued and advanced when they converge with the interests, needs, expectations and ideologies of Whites

(Milner IV, 2008:333)

Despite research in Canada (Ryan et al, 2009) and Australia (Santoro, 2015) arguing for the importance of a teaching workforce that reflects the growing diversity of the pupil population, the majority of teachers remain white and monolingual. It is nonetheless important to note that shortages, particularly of mathematics teachers, represent a convergence of interest that can result in mathematics departments (and mathematics PGCE courses) being superdiverse in ways not experienced in other curriculum areas.

As well as displaying a commitment to social justice shared by this study, a critical race studies perspective has sought to challenge normative discourses through the use of the counter narrative:

In particular, counter-narratives ‘told by people of color’ (Lopez, 2003:84) can

Chapter 2: Literature Review

contribute to the knowledge base of those often pushed to the margins in education

Milner IV and Howard (2013:542)

Cho (2010) chose this perspective to document her research into the experiences of internationally educated teacher candidates who were engaged, in a way very similar to the PGCE students of this study, in a Bachelor of Education programme designed to prepare them for the Ontario provincial board. These stories demonstrate, in a way that resonates with Vertovec's description of the complications of superdiversity, the very different ways in which individuals can be othered to 'reveal the complexities through which they must navigate' (Cho, 2010: 11). The importance of counter stories in challenging normativities, by illuminating the micro-experience of migrant teachers, is shown very clearly in the classroom experience of a Scottish refugee teacher:

He could remember the pupils asking him 'what subjects are you going to take us in?' When he answered it was English Language, the class burst into laughter. They shouted 'What! You will end up learning English from us'.

(Smyth and Kum, 2010:515)

As well as showing the symbolic power of L1 (monolingual) speakers discussed by Cho (2010), this counter narrative demonstrates the potentially devastating personal and professional effects of racist belittling and infantilisation (Puwar, 2004) that can be endured by migrant teachers of colour.

The narrative research of Janusch (2015) recounts the travails of four IETs in finding permanent positions as teachers in the province of Alberta, amongst whom is Driada, a white Ukrainian woman. These stories show the effects of visible difference, such as accent, on finding a permanent teaching position and, in Driada's case, the complications of being white but not from a historically established migration country in Alberta. This demonstrates both the importance of aspects of critical race theory for understanding social justice issues for all migrant teachers and a need to review the binary construction of black and white. Superdiversity requires a detailed

Chapter 2: Literature Review

consideration of the way in which the category ‘white’ is defined:

The boundaries that are drawn around the terrain of whiteness (and of colour), despite the assumed rigidity of these criteria of difference, must be viewed as decentred and permeable, thus permitting a challenge to the binary categorisation. (McDowell, 2005:98)

The importance of Driada’s accent as a sign of visible difference (which signals a sort of whiteness that is not Canadian) is a good example of the importance of intersectionality in defining whiteness, which has become particularly important in the UK in the context of the arrival of free-moving white Eastern Europeans subsequent to the expansion of the EU in 2004. Questioning the categorisation and boundaries of whiteness in this way challenges the invisibilities of the somatic norm and:

[E]nables us to see White people as a racialised group which benefits from the hidden and neutral conceptions of being White and benefit from the invisible operations of Whiteness

(Lander, 2014:102)

Lander shows the usefulness of critical race theory, drawn from the work of US scholars, in the consideration of the assumptions and power of whiteness in the English education system. This discussion affects all migrant teachers and usefully moves the discussion of diversity forward, to include the arrival of migrants from Eastern Europe and elsewhere as described in this chapter. It frames both public policy and interactions in all areas of the school where migrant teachers of mathematics experience challenges related to the curriculum and classroom practices.

253 DIFFERENT MATHEMATICS CURRICULA AND DIFFERENT CLASSROOM PRACTICES

The report ‘Mathematics Education in Europe: Common Challenges and National Policies’ (Eurydice network, 2011) on the teaching and learning of mathematics indicates that, although there has been a convergence of the pre-16 mathematics curriculum throughout the European Union differences remain in both content and

Chapter 2: Literature Review

pedagogical strategies. For example, in terms of content, the geometry curriculum shows a difference, in that ‘the depth of the study of topics varies around Europe’ (Eurydice network, 2011:38), and in statistics ‘only a few countries include probability both at primary and secondary level’ (Eurydice network, 2011:39). Variations are also present in post-16 education: for example, Kaiser (2002) notes that the study of discrete mathematics in the English A-level syllabus was not found in the comparable German syllabus for the *Abitur*. But differences in mathematical knowledge, although they indicate training needs for mathematics teachers in UK schools, should not be allowed to mask the considerable overlap shown by the Eurydice network (2011) analysis.

Outside Europe, in India and Africa, there are considerable challenges in the provision of mass education. For example, the five African countries that took part in the Trends in International Mathematics and Science Study (TIMSS) all came in the bottom seven (Ngware et al, 2015). This results in the continuing importance of private education which, in addition to providing a curriculum that enables access to university education – something all those on the PGCE course have experienced – is often taught in English, reflecting post-colonialism, prestige and the importance of English as a global language. The importance of international performance indicators influences educational policy which, in mathematics, draws upon a similar research base to that of the Eurydice network (2011), resulting in similar curriculum differences.

The Eurydice network also describes the use of pedagogical practices in mathematics education across Europe. These stem, in part, from different beliefs about mathematics, which many commentators have indicated as being important for different practices not only between countries (Andrews, 2007; Wong, 2014) but also

Chapter 2: Literature Review

within countries (Ernest, 1989). In contrast to the UK, where, in the Eurydice network's analysis/study, student group work was common throughout secondary school, 'in the Czech Republic, Italy, Lithuania, Hungary and Malta fewer than 15 percent of students at the eighth grade were working in small groups' (Eurydice network, 2011:59). At various stages of their school mathematics learning, pupils in Germany, Latvia, Austria, Czech Republic and Sweden were working on their own for more than 80 percent of the time (Eurydice network, 2011). Finally, the report notes that 'in terms of the use of ICT [information and communications technology] in the classroom evidence shows that teachers make little use of these opportunities' (Eurydice network, 2011:63) and that there are 'significant differences between countries' (Eurydice network, 2011:64) in the use of calculators. In contrast, in England, good teaching of mathematics was found in lessons where 'practical, discussion and ICT work enhance understanding' (Ofsted, 2008:5).

Research outside Europe reflects similar themes, compounded by a lack of resources. In a summary of research from the Learner's Perspective Study, David Clarke (2010) noted, for example, the particularly high use of mathematical vocabulary by teachers in Chinese schools, together with local named practices, such as *pudian*, in which teachers elicit prior knowledge at the start of the lesson. In sub-Saharan Africa, a UNESCO regional report found that 'the supply of reading and mathematics textbooks for pupils in public primary schools is not sufficient' (UNESCO Institute for Statistics, 2012:5). These comparisons give a useful indication of the different classroom pedagogical processes and the stark contrasts in terms of resourcing that respondents might find as they enter mathematics classrooms.

Practices in mathematics classrooms and schools as a whole are also informed by the doxa of the national and local field:

Chapter 2: Literature Review

The set of core values and discourses [...] that have come to be viewed as natural, normal, and inherently necessary.

(Nolan, 2012:205)

This process of normalisation is reflected in the assumptions of school organisation and practices. In Europe, the important and influential traditions of France, Germany and England were summarised by Pepin (1999) as the French encyclopaedic tradition of universality and rationality, the English humanistic tradition of morality and individualism, and the German tradition of Humboldt's emphasis on general *Bildung*, or formation, combined with the worth attached to all occupations. The assumptions of France and Germany shape an expectation that all pupils should make satisfactory progress in each school year and, should this not be the case, pupils are expected to repeat the year. By contrast, the individualised provision in the UK expects differentiated lesson planning to make appropriate provision for pupils as they move annually during their school career. Teachers in France, and in some parts of the German system, have only academic responsibilities, whilst in the English system the legal responsibility of acting 'in loco parentis' means that the teachers are expected to undertake pastoral responsibilities, including regarding students' attendance and personal welfare.

Schools are also affected by wider policy assumptions, illustrated, for example, by the wearing of culturally related forms of dress in UK schools. The *hijab*, a head covering for some Muslim girls, may be worn in schools throughout the UK and has, in some of them, become subject to school uniform policy in terms of the colour of headscarf allowed. In direct contrast, and in compliance with the established principle of *laïcité*, or strict separation of church and state, the *hijab* was banned in all French schools in 2004, along with the wearing of all religious symbols. Despite giving way to local differences of practice in some jurisdictions, national differences in policy and

Chapter 2: Literature Review

curriculum give an important indication of the different dispositions, and assumptions, of the student teachers in this study. The ongoing dynamic between individual habitus and field is well documented by Anna Chronaki, who was educated in Greece, in the description of her initial experiences in a school in the West of England:

Pupils' movements in particular triggered me. I had noticed, in my first visit, that pupils were moving into a different room at the end of each lesson. I wondered what that wild and speedy pupils running through corridors could mean. Was it part of the school's 'sporty' atmosphere? Why do pupils have to pack their bags and move onto another room? In my country pupils are allocated one room and in secondary school it is the teacher who moves around classrooms.

(Chronaki, 2004:153)

Chronaki's recounting of her initial confusion in an English school summarises both the differences between school organisations and the initial engagement of her habitus with an English school. This kind of confusion is documented in this study in the experience of respondents during their school-based PGCE training.

254 SCHOOL-BASED PGCE TRAINING

The current regulations for Initial Teacher Education (ITE) in England and Wales, which were in force also during the research period, require that PGCE trainees spend at least 120 days in schools (Department for Education, 2016). During the PGCE there are two school placements, managed by partnership agreements between each school and the university in order to ensure the quality of this school-based element of the course. The professional co-ordinating mentor on the school staff, who is often also a member of the school senior management team, is responsible for a weekly programme of training on whole school issues relevant to both pedagogy and other areas of the school curriculum. Training in mathematics teaching and pedagogy is the responsibility of a volunteer mathematics teacher who, as the student teacher's mentor, arranges the teaching timetable, holds regular weekly meetings with them, and observes their classroom teaching. The university is responsible for monitoring the

Chapter 2: Literature Review

quality of the school placements, and supports the interactions in the weekly mentor meetings through the provision of training and materials. Furthermore, the university has a role in resolving any difficulties in the placement, in conjunction with the professional co-ordinating mentor. Since the PGCE course is subject to university-approved regulations, the university may, unusually, terminate the training placement. The Teachers' Standards introduced in 2011 (Department for Education, 2011) led to a competence-based model of teacher performance that required mentors to judge the progress of student teachers with reference to eight standards. Although there has been some concern (Pomphrey and Burley, 2012) that this might limit the interaction between mentor and student teacher, at the core of ITE training and school placements there remains:

the notion of [...] someone who is able to develop their own sense of identity through reflecting on their practice with the support of others.

(Sorenson, 2012:209)

This view of reflection, when combined with the observations made of embodied performance in classrooms, highlights the importance of the relationship between the student and experienced teachers in school-based training. In this study, this relationship is analysed by using the professional conversation model (Tillema and van der Westhuizen, 2013), emphasising the opportunity for exploratory talk, which gives student teachers the opportunity to discuss the unexpected in their practice. The benefits of such a system at the level of the whole school and in the development of trust and awareness for mentors and trainees was recognised in a substantial review of research into the mentoring of beginning teachers in England (Hobson et al, 2009). This review also acknowledged earlier research that had referred to the difficulties of the mentoring relationship providing: 'sufficient support for beginning teachers' emotional and psychological well-being, characterised in many instances by general unavailability' (Hobson et al, 2009:210). Such mentoring focused on practical, routine

Chapter 2: Literature Review

issues related to the specific circumstances of an individual school or classroom, resulting in:

[I]nsufficient attention to pedagogical issues, to the promotion of reflective practice incorporating an examination of principles behind the practice, or to issues of social reform and social justice.

(Hobson et al, 2009:211)

The themes that have been reviewed in this section suggest that such mentoring is especially important for migrant trainees as they manage the dynamic between habitus and field in the course of their school placements.

2.6 CONCLUSION

This chapter has built upon the work of scholars in the field of migration studies and mathematics education in using key notions drawn from Bourdieu's theory of practice. It has shown how the London region provides an opportunity to develop capitals such as learning English as well as learning the local rules of the game through both employment and daily practices of 'commonplace diversity' (Wessendorf, 2011:16). This experience provides a context for decision making about achieving longer-term personal and professional ambitions. The period of decision making is supported by a network of digital communications and by those communications created by London as an international transport hub. I have extended Bourdieu's notion of field to provide a context for his concept of decision making, to include a transnational field, itself structured by national boundaries and the power of national jurisdictions to enforce them.

I have drawn on the work of Nowicka (2015) and Erel (2010) to discuss the ongoing dynamic between the habitus – an open system of embodied dispositions – and the structure of the field to theorise the processes of adapting to life in the London region. The work of Nolan (2012) provides a consistent analytic viewpoint, by showing how

Chapter 2: Literature Review

Bourdieu's concepts can provide a useful framework for theorising the experiences of mathematics teacher education.

The literature of comparative education has shown how both local practices of mathematics and national curricula have been used to describe the development of a mathematical habitus enmeshed within national educational assumptions. This underlines the usefulness for this study of Nolan's (2012) discussion of the professional capitals of mathematics teachers and the challenges of developing them during PGCE school placements. This study, by focusing on a sample of student teachers that reflects the superdiversity of the London region, builds upon, and develops, Nolan's work, by drawing, in the next chapter, upon the work of Goffman to discuss the development of a professional teaching identity based upon performance and interactions in different parts of the school. This describes the complexities and opportunities associated with the diversification of the teaching workforce as well as adding to the relatively scarce literature on the further professional development of highly qualified migrants in the UK.

Chapter 3: Identity Frameworks

3.1 INTRODUCTION

This chapter explores both the engagement of the habitus of student teachers and the field of the school, through an analysis of the way in which student teachers are positioned by discourses, including those of the materialism of school buildings and facilities. It uses the work of Youdell (2006) to develop a post-structural analysis to show how student teachers are at once constituted and constrained by professional discourses and other recognitions that result from the regular interactions in which they engage with pupils and colleagues during their school placements. The chapter goes on to show how student teachers might use semiotic resources to exercise discursive agency (Youdell, 2006) in response to the assemblage of discourses that structure the field. This provides a framework for considering the processes by which student teachers develop the habitus of a mathematics teacher as well as the ways in which migrant teachers respond to the particular challenges of other recognitions in classrooms and elsewhere on school placement.

3.2 MULTICULTURAL ENCOUNTERS IN SUPERDIVERSITY

Before joining the PGCE course, in their everyday life in London, the student teachers engaged in practices that are common in superdiverse cities and which are referred to in Australia as ‘everyday multiculturalism’ (Wise, 2009) and in London as ‘commonplace diversity’ (Wessendorf, 2011). Both these terms suggest the many, often fleeting, everyday encounters through which city dwellers develop embodied capitals of communication and in which their own history of migration is often irrelevant. Although the cosmopolitan habitus that begins to develop is a useful resource for the PGCE, what the student teachers are powerfully positioned by, in their encounters in schools, is the discourse of a teacher. With their purpose of educating

Chapter 3: Identity Frameworks

young people and the daily rhythm of classes and familiar faces, student teachers

move from fleeting encounters to what Valentine describes as meaningful contact:

[C]ontact that actually changes values and translates beyond the specifics of the individual moment into a more general positive respect for – rather than merely tolerance of – others.

(Valentine, 2008:325)

Schools are a particular site of such contact, both because pupils are required to attend by law and because of the routine contact they have with teachers in timetabled classes and on many other occasions during the school day. Further to this, discourses of national education policies and local practices sediment the field of the school, and the architecture of the school buildings materially enables and announces the activities of the school site. In this way, there is a particular assemblage of discourses and material opportunities in each school which, by continuous citation, plays a part in the ongoing constitution and constraints of school encounters.

School is a meeting place for many people and the migration trajectories of the student teachers in this sample are part of this. Whilst they are having their first experience as a teacher in an English school, they might also be the first person from their country that some pupils have met, whereas for others they might be a role model. The simultaneous complexity of the personal and institutional dimensions of meaningful encounters of superdiversity in schools is a contrast to the sometimes-optimistic fluidities of ‘commonplace diversity’ outside institutions. It results in a ‘labour of intercultural community’ (Noble, 2009:46), which emphasises both the institutional policy framework and the personal resilience required for the development of cosmopolitanism both in schools and at the university throughout the PGCE course:

[T]he concrete social encounters that bring differences together and the productive forms of communal labour that create local forms of liveability.

(Noble, 2009:60)

‘Concrete’ suggests the materialism of these encounters, and I now turn to a

Chapter 3: Identity Frameworks

consideration of how space makes a difference in school encounters.

3.3 SPATIALITY: THE PRODUCTION OF SPACE IN SCHOOL ENCOUNTERS

This study builds upon Goffman's (1990) dramaturgical distinction between front stage and back stage performance to identify different regions of the school (and to distinguish between school and university sites) for the performance of professional identities: staffrooms, corridors, and classrooms where students teach mathematics.

Rather than seeing these sites as providing empty, material containers that are the backdrop to professional performances, this study will draw upon the work of Doreen Massey in considering instead how:

Space on this reading is a product of relations-between, relations which are necessarily embedded material practices which have to be carried out, it is always in the process of being made. It is never finished; never closed.

(Massey, 2012:9)

This view of material practices underlines the specific importance of different regions of the school, for example, how the organisation of classrooms, in buildings that may be up to 100 years old, embodies discourses of education that emphasise that pupils should be at their desks facing boards, where teachers can expect the attention, and thereby exercise surveillance, of the class. It emphasises the part that the materialism of embodiment plays in the production of space and how, for teachers, the threat of the bodies of others 'is registered on the skin' (Ahmed and Stacey, 2001:54) and there are expectations, or somatic norms (Puwar, 2004), of the embodied subjects that might fill spaces. The embodied performances of speech, and the way people move, are part of the evolution of spatiality in classrooms, emphasised by what Massey refers to as the articulations of space-time. Instead of being invisible, organised separately from time, space will be considered as part of the evolution of encounters suggested, for example, by Goffman's use of the term 'bystanders' to distinguish those who witness an

Chapter 3: Identity Frameworks

encounter from those who actively participate in it.

The asymmetrical power geometries of schools endow teachers with the authority to manage the openness of space. The study will discuss ways in which this ‘practical authority’ (Langton, 2015) develops over time and how, through repeat performances, the spatiality of mathematics classrooms becomes reasonably predictable (even if the class has to accommodate a new pupil). In other parts of the school this may be less so, as student teachers meet pupils they do not teach in corridors, or colleagues who teach other subjects in the staffroom. This increases the openness of space where:

[I]t is important to emphasise that the element of surprise, the unexpected, the other, is crucial to what space gives us

(Massey, 2012:112)

This is especially important in the context of superdiversity, which emphasises ‘the existence of multiplicity in the sense of contemporaneous plurality’ (Massey, 2012:9), and the way in which student teachers may choose to circulate in the school shows how parts of the school develop different meanings for them, with implications for the interactions they may have in these places. This highlights the emotional significance of place and how it is important to acknowledge it throughout the course, both in schools and at the university, and also not to silence the discussion of surprise, the ‘throwntogetherness’ (Massey, 2012:151) of space, for all PGCE students, but particularly those from outside the UK.

By offering two placements, the PGCE course provides access to schools that can be difficult to negotiate, particularly for migrants. This reflects how the boundaries of schools, with their right to include and exclude, are an effect of the power of school authorities and discourses (McGregor, 2003), which can serve to separate out the work of teachers and school pupils by making their trajectories, and their lives outside school, of little import. This study acknowledges the permeability of these boundaries

Chapter 3: Identity Frameworks

by identifying Nesper's useful description of schools as:

[A] knot in a web of practices that stretch into complex systems beginning and ending outside the school

(Nesper, 1997:xiii)

This metaphor demonstrates the potential importance of teachers' biographies and their lives outside school. It is an important indication of how Bourdieu's concept of field, with its tacit rules of the game (Bourdieu and Wacquant, 2007), needs to be supplemented by an appreciation of other discourses and dispositions that are brought to school by pupils and staff. In their local and translocal lives, student teachers have access to resources that can sustain them during the course, as well as to capitals that may be of specific use in schools. Furthermore, the practices of other teachers and pupils may result in particular discursive recognitions and positionings, which have particular implications for social justice and for migrant teachers. This is discussed in the next section.

3.4 DISCOURSE, RECOGNITION AND DISCURSIVE AGENCY

Throughout a teacher's day, from the proximities of classroom encounters to the relative distance of other parts of the school, aspects of embodied performance are subject to 'continuous inspection' (Goffman, 1990:111) during which others have the opportunity to observe them, either in the course of planned encounters, or in the many different ways that 'the chance of space may set us down next to the unexpected neighbour' (Massey, 2012:151).

Local and national discourses constitute the perceptions of the habitus, thereby providing oft-cited categories that frame recognitions in ways that make individuals intelligible and, in so doing, define the observer as much as the person who is being observed:

A national culture is a discourse – a way of constructing meanings which

Chapter 3: Identity Frameworks

influences and organizes both our actions and our conceptions of ourselves
(Hall, 1992:293)

As well as their constituting and constraining individuals at a moment of space-time, it is important to note that these discourses have accumulated histories, through repeated citation, which may make present particular difficulties for migrants identified as coming from other countries. It may open up histories and categorisations in the discourse of English national culture with which they are completely unfamiliar. Also in being addressed as ‘Sir’, ‘Miss’ or even ‘Ma’am’ (a familiar form of address practised in English schools), student teachers may have to manage unfamiliar forms of address at the same time as being hailed into a position from which they have to respond in a way expected of teachers in English schools yet without the resources to do so. The performance of difference in the course of such encounters is a particular concern for migrant teachers, for whom the unpredictability of every-day professional encounters is well described as:

[A] constant and recurring pre-occupation in the representation of people who are racially and ethnically different from the majority population. Difference signifies. It ‘speaks’.

(Hall, 1997:230)

It is important to acknowledge that teachers may be recognised by many discursive categories that are more or less salient in any particular encounter, and may indeed experience the fact that some categories of difference that were previously important are now bracketed off by the national discourses in England. The way in which these categories may constitute an individual is well illustrated by Youdell’s description of a constellation of categories:

Categorical identities might be conceived of and interrogated, as shifting non-necessary *constellations* of categorizations, constellations that are themselves shifting and non-necessary.

(Youdell, 2006:29 original emphasis)

How power might operate to fix any particular category of recognition is an important

Chapter 3: Identity Frameworks

part of this study. Youdell's description of non-necessary shows how categories of recognition might vary during an encounter, and how managing this is important for teachers. By also drawing attention to how these categories become 'meaningful through their relationships to other categories with particular constellations' (Youdell, 2006:29) Youdell also shows how the boundaries of any category may differ in different settings (and how one category may affect another in the course of any encounter). This will be analysed through paying close attention to the linguistic performances of individual, as will be discussed later.

Constituted in this way, by discourse, as teachers, the performance of student teachers is constrained by expectations and, by using their semiotic resources, they can exercise discursive agency (Youdell, 2006). This agency allows individuals (supported by both their own authority and that of all others who have been, or are, teachers) to directly challenge, or reinscribe meaning to, discursive categories. It is important to acknowledge the difficulties of exercising discursive agency whilst simultaneously embodying other categories of difference:

The declaration of oneself as a gendered or racialized member of a group goes against the grain of established norms of professionalism. Thus we need to recognize that the step towards naming oneself as embodied is not made easily.
(Puwar, 2004:132)

The discourse of professionalism is of particular importance in ITE, and I will now discuss its role in the PGCE course and the part it plays in constituting the identity of student teachers.

3.4.1 DISCOURSES OF PROFESSIONALISM

When they go to schools, the student teachers are introduced to pupils ('hailed into position' gives a better sense of the possible surprise and unease) as teachers. At the same time in the back regions of the school, amongst other staff (and by university

Chapter 3: Identity Frameworks

staff) they will be recognised as student teachers which, as members of the PGCE course, is how they recognise themselves. The immediacy and complexity of early professional encounters emphasises how they are, inevitably, improvisations:

[T]he sort of impromptu actions that occur when our past, brought to the present as habitus, meets with a particular combination of circumstances and conditions for which we have no set response. Such improvisations are the openings by which change comes

(Holland et al, 1998:18)

Watched by other teachers and university staff, these are also, for migrant student teachers, performances of difference, emphasising the many different ways in which their habitus engages with the field. During the many repeat performances

Individuals perform certain norms, and it is these repeat performances, these constant imitations, which construct and confirm the norms. Individuals do not only perform their own identities, they perform identities onto others and they negotiate (possibly contradictory) identities that are performed onto them.

(Chadderton, 2013:50)

The processes of such encounters lead both to an awareness of the tacit rules of the game (Bourdieu, 2007) in particular fields in schools, including classrooms and staffrooms and, importantly, to the sedimentation of a professional habitus. This professional habitus is also sedimented by the way in which the Teachers' Standards (Department for Education, 2011) are used and cited throughout the course and also by the processes of the feedback loops (Hacking, 2004) during regular meetings with school mentors and university staff.

The Teachers' Standards constitute and constrain teachers through the use of disciplinary power, whereby processes of target setting, observation and review (used throughout the course) are technologies of power through which teachers:

[L]earn that we can become more than we were and be better than others – we can be 'outstanding', 'successful', 'above average'.

(Ball, 2003:219)

This description of performativity of education illustrates how power is imbricated in

Chapter 3: Identity Frameworks

the sedimentation of the professional habitus, through both regular repetition and technologies of surveillance. The somatic norm of those able to ‘pass as the invisible, unmarked and undeclared’ (Puwar, 2004:8) is challenged by the embodied differences of accent and skin colour that are integral to the performances of migrant student teachers. Such visible differences can be translated into deficits by emphasising that they do not quite fit, which Puwar usefully describes as the burden of doubt:

Their every gesture, movement and utterance is observed. Viewed suspiciously, they are under super-surveillance. There is an element of doubt associated with their coexistence in these spaces. They are not automatically expected to embody the relevant competencies

(Puwar, 2004:145)

This emphasises the extra work that migrant teachers may have to do in order to fit in and manage the personal burden of self-erasure due to the fact that the capitals they have developed in other places (Yosso, 2005) are not considered to be so in English schools. It emphasises the importance of the feedback loops (Hacking, 2004) as another element of teacher professionalism. Taking a view of professionalism as development that does not, like the Teachers’ Standards, bring with it the burden of being unprofessional but is focused on behaviours at work, Linda Evans (2015) identifies three components of development – behavioural, attitudinal and intellectual – that inform the feedback loops of mentoring and professional learning.

Mentoring builds professional knowledge through ‘learning conversations’ (Tillman and van Westhuizen, 2013), which the student teacher can have formally with their subject (mathematics) mentor or informally with any other member of the school staff. The possibility of choice is important, owing to the difficulties of speaking about difference and thereby undoing self-erasure, because:

It is easier to hush things up to seek compromise [...] for fear of the whole artifice upon which careers are built coming apart.

(Puwar, 2004: 139)

Chapter 3: Identity Frameworks

The discourses of criticality and reflexivity that the practices of reflective writing, lesson evaluation and university assignments entail, offer the opportunity to engage, with a degree of privacy, with the difficulties of self-erasure. Such practices emphasise the importance of the building of trust in order not ‘to hush things up’ and to facilitate a critical examination of somatic norms and the power of whiteness and, where necessary, to act in the interest of the student teachers.

The complexities of teacher identity, including the influence of personal biography and the various demands of the job itself, have been well documented by research, which underlines that a:

[T]eacher’s identity is dynamic, and that a teacher’s identity shifts over time under the influence of a range of factors both internal to the individual, such as emotion [...], and external to the individual, such as job and life experiences.
(Beauchamp and Thomas, 2009:177)

I now turn to a discussion of the embodied semiotic resources, especially language, that the student teachers may use in their many encounters throughout the day to ‘bring off’ (MacLure, 2003:55) professional performances and, in so doing, grow their authority as teachers.

3.5 EVERYDAY PROFESSIONAL ENCOUNTERS AND THE GROWTH OF PROFESSIONAL AUTHORITY

To illustrate the processes through which the student teachers accomplish discursive agency and, more generally, to discuss how they bring off their professional identity, this study will consider their use of communicative practices, that is:

[T]he collection of ways individuals use language and literacy and other means of communication (gestures, dress, posture, or accessories) to function effectively in the multiple communities in which they participate
(Rymes, 2010:510)

This focus enables a detailed analysis of how the habitus engages with the field of schools during the students’ two placements. It follows Rymes in acknowledging a

Chapter 3: Identity Frameworks

range of semiotic practices wherever possible, although the collection of data through interviews prioritises linguistic communication. In doing so, it draws upon the emerging field of linguistic ethnography, which Blackledge and Creese (2010) used to study complementary schools that were teaching heritage languages in the UK. This work is particularly relevant because it involved a study of multilingualism, which is central to the experience of the student teachers in this study.

In schools, the language of communication is English, and Standard English claims a place as the ‘legitimate language’ (Bourdieu, 1994:60), which is part of the construction of difference as deficit:

All linguistic practices are measured against the legitimate practices i.e. the practices of those who are dominant

(Bourdieu, 1994:53)

Although Standard English as the legitimate language highlights its symbolic power (and what Bourdieu refers to as symbolic violence in the construction of language deficit), it does not prevent, especially in superdiverse schools, the use of other languages for polite address in fleeting encounters in corridors, or to help pupils in mathematics classrooms. This use of language resources during the day shows how multilingual student teachers might use a range of linguistic resources and how:

Languages cannot be viewed as discrete, bounded and impermeable autonomous systems

(Blackledge and Creese, 2010:30)

Rather, the interplay of English with other language resources can be shown in small strips of conversation as well as in the possibilities of more extended classroom interactions. The possibilities of such communicative interaction, in superdiverse settings, between English and the use of other semiotic resources (be they local vernaculars or languages other than English) are described using Bakhtin’s concept of heteroglossia:

Chapter 3: Identity Frameworks

Every utterance participates in the ‘unitary language’ (in its centripetal forces and tendencies) and at the same time partakes of social and historical heteroglossia (the centrifugal, stratifying forces)

(Bakhtin, 1981 in Morris, 2003:75)

The practices of Standard English, as the unitary language, play the part not only of a means of communication but also that of a restraint, a centripetal force, upon the ongoing use of other communicative practices that are seen as straining outwards, and, perhaps, threateningly, with centrifugal force. The multilingual student teachers in this study have to cope with this simultaneous tension in all their professional encounters, as they manage the dispositions of their linguistic habitus to exercise their discursive agency and, more generally, to develop an authoritative voice as a teacher in schools. Framed by the symbolic power of the legitimate language, the various difficulties faced by multilingual student teachers in the slow process of developing ‘speech which is heard in the public realm’ (Puwar, 2004:115) are addressed in the remainder of this section.

In order to enter the course, all students, in addition to holding a GCSE in English or its equivalent, must pass an English test that focuses on writing and a brief spoken performance during the interview. This highlights the importance of the biographical trajectory by way of which each student has developed communicative practices, including pronunciation and others such as how to mark politeness. It is important to note that the experience of multilingualism may engender a sensibility to language use (and, by extension, to what not to use), a reflexivity that may become an unacknowledged strength rather than a deficit, as student teachers approach the:

Dramatic jumps in learning as one acquires the discourse patterns of specific and specialized professions

(Blommaert and Backus, 2011:10)

By being repeatedly cited, discourses can develop an ideology, a common-sense normativity by which they remain persuasive, although not useful analytically. The

Chapter 3: Identity Frameworks

idealised category of native/mother-tongue speakers forms such a language ideology, which privileges L1 speakers, and this power is exercised in authoritative speech:

[T]he idea that by speaking in a particular style which is highly valued and /or associated with authority [...] a speaker is more persuasive, more convincing, and more attended to.

(Philips in Duranti, 2004:475)

This underlines Bourdieu's description of the power of the legitimate language in defining difference. Furthermore, it is clear how, as native speakers, pupils can be empowered to challenge multilingual student teachers, especially given Puwar's description of the central importance of language in the professions:

Language is intrinsic to the somatic norm in the professions and the imperial/legitimate language is a key tacit requirement

(Puwar, 2004:10)

I now discuss how communicative resources in English might be turned into professional capitals that can position the student teachers in the fields of the school, and specifically of the mathematics classrooms, with reference to the development of authority by multilingual student teachers.

Langton's (2015) distinction between practical authority (drawn from the power delegated to teachers by the school) and epistemic authority (drawn from knowledge of how to teach mathematics) usefully points to how teachers can challenge the symbolic power of English and at the same time be responsible for developing their own professional authority.

The delegation of practical authority to teachers (combined with the expectations associated with being named a teacher) results in student teachers being able to use school procedures, and the performance frameworks (Goffman, 1981) of question and answer and those related to routines of, for example, entering and leaving classrooms. In their performance, they are able to draw upon utterances such as 'Stand quietly', which is commonly used by teachers, and therefore draw authority by being a link in a

Chapter 3: Identity Frameworks

‘chain of speech communion’ (Bakhtin, 1986 in Morris, 2003:87). This strategy of double voicing amplifies the practical authority of the student teachers. At the same time, any utterance is addressed to an addressee and, almost in anticipation, shaped by this. The complications of this are hinted at by Bakhtin’s acknowledgement that the term ‘addressee’ may include audiences that are not immediately present. For migrant student teachers, their addressee may be an audience outside the UK and this ‘polycentricity’ (Blommaert, 2010:39) may compromise their practical authority in UK classrooms. Yet student teachers can develop their practical authority through repeat performances. This may lead them to manage the effects of heteroglossia (and the use of local vernaculars that they may not understand) through the use of what Goffman has usefully called interactive membranes, imagined around an encounter in which practical authority is used as ‘boundary-maintaining mechanisms that cut the encounter off selectively from wider worlds’ (Goffman, 1972:59).

Although this may be useful in individual encounters, it is limited in ‘second lives in the classroom, where unofficial interactions and transactions can occur’ (Blackledge and Creese, 2010:143). These second lives, perhaps represented by humour and parody, present a potentially destabilising centrifugal force of heteroglossia (although also one that allows student teachers to demonstrate humour and an appreciation of that of others) that may draw attention away from their actual performance. This is so not just because of the speed, but also the way in which language is used to index, or suggest, meaning, rather than its being limited to literal or referential meaning.

Significantly, this draws attention to ‘inequalities in communicative resources’ (Blommaert and Rampton, 2011:7), which depend on biographical trajectory and may take longer for multilingual students to develop than is allowed for in the PGCE year. In contrast, epistemic authority focuses on how the student teachers develop authority

Chapter 3: Identity Frameworks

through their performances as mathematics teachers. The unified language of the mathematics register (Halliday, 1978) constructs a transnational discourse of mathematics, which contributes to the assumption in skilled-migration policy that such skills can be easily transferred to address shortages in the teaching workforce. It ignores the part that history has played in the development of mathematics, which has led, for example, to different notations being used in different jurisdictions. For this reason, this study acknowledges Chapman's (1993) view of families of mathematical registers which, whilst acknowledging the similarities in mathematical discourses, does not construct difference as deficit. This view recognises the importance of vocabulary and specialised meaning in mathematics (Barwell, 2009), whilst prioritising, for the growth of epistemic authority, how:

[M]athematics draws on multiple semiotic (meaning creating) systems to construct knowledge: symbols, oral language, written language, and visual representations such as graphs and diagrams.

(Schleppegrell, 2007:141)

This multimodal view of mathematics draws upon the idea of communicative repertoire already discussed. It emphasises how mathematics, and mathematics learning, is constructed, as opposed to being transferred, and shows how a multimodal approach to learning mathematics enables student teachers to develop the pedagogical capitals that allow them to gain distinction and thereby develop their epistemic authority in mathematics classrooms. By discussing the role that university curriculum sessions and school mathematics mentors play in the development of these capitals, this study illustrates the processes by which highly qualified migrants become highly skilled teachers of mathematics in English schools.

3.6 CONCLUSION

This chapter has outlined a post-structuralist theory of the development of teacher identity based on a discussion of superdiverse encounters and the repeated

Chapter 3: Identity Frameworks

performance of professional identities, initially improvised and later becoming sedimented. In doing so, it has nuanced Bourdieu's description of the habitus engaging with the field which, following Erel (2010) and Nowicka (2015), forms the basis of analysis of change and migration presented in this study.

From the start of the school placement, the student teachers are both named as teachers and recognised and regarded in other 'insidious, insistent, and insinuating' (Bourdieu, 1994:51) ways that form their professional habitus as teachers in English schools. Massey's analysis of spatiality has emphasised how, in the ongoing production of space in schools, encounters are subject to unpredictability and the openness of space. This challenges their communicative resources, both in terms of the specific vocabulary of mathematics and during chance encounters. Bakhtin's notion of heteroglossia has been used to discuss the difficulties and tensions that may exist from moment to moment (in small strips of conversation) during such encounters. These small strips of conversation can also show how national discourses and recognitions are able powerfully to constitute and constrain (Youdell, 2006) the student teachers. Issues of symbolic power and embodied communication mean they can be surprised, by being historicised by visible difference: the racism of neo-colonialist discourses based upon colour of skin and audible difference of accent. Constituted and normalised by local discourses, such differences may be constructed as a deficit (Yosso, 2005) and, by not acknowledging other capitals, this results in the tensions and difficulties of self-erasure.

Although Youdell's (2006) analysis of discourse and discursive agency provides a conceptual analysis of the power and the possibility of challenge through the reinscription of categories, Puwar's work usefully draws attention to the specific issues of bodies that are deemed out of place, which is particularly important in this

Chapter 3: Identity Frameworks

study. She develops Bourdieu's work (and provides an analysis of the somatic norm of whiteness) by appealing to Fanon (1986) and critical race theory to identify that, positioned thus, agency is compromised 'because it is easier to hush things up' (Puwar, 2004:139). This challenge has also been taken up in my examination of the development of valued professional capitals throughout the PGCE course. This has been done by using Bourdieu's theory of capitals as a starting point from which to analyse the development of professional capitals that can be used as a source of epistemic and practical authority (Langton 2015). This study shows how this development is achieved throughout the course by way of the development of multimodal communicative resources.

Youdell's (2006) description of identity constellations suggests the multifaceted nature of the positions to which a student teacher may be drawn (or hailed by recognition, with varying degrees of appropriateness) in the course of an encounter. Exploring how the student teachers get the right mix (Blommaert and Varis, 2011) of these features, the difficulties of the field regarding social justice, as described by Puwar (2004) in terms of being bodies out of place, and how they develop the communicative resources and the authority to get things done as teachers of mathematics is an important aim of this study.

4.1 INTRODUCTION

All the participants of this study are student teachers who learn to perform their professional identities in schools and during university training. The clearly defined bounds of these sites make case study a useful research perspective. The focus on superdiversity amongst the teachers requires more than one case, and I have chosen a multiple case study approach (Stake, 2005) both as a matter of definition and because I hope it ‘will lead to better understanding, and perhaps better theorizing, about a still larger collection of cases’ (Stake, 2005:446).

My research questions were:

- 1) How do student teachers sustain themselves through their social networks, both within London and transnationally, throughout the PGCE?
- 2) What are the challenges and processes of change and adaptation during a PGCE course in the context of student teachers’ own biographies and migration trajectories?
- 3) How do migrant teachers develop authentic performances as mathematics teachers in the context of the expectations of the English school system, and through their interactions with pupils and staff?

I have chosen to address the changes across the training year by way of a retrospective longitudinal case study design (Ruspini, 2013) in which student teachers were interviewed twice, at the end of their first school placement, which is approximately halfway through the course, and at the end of the course after they had finished their second placement. At a point between the different waves of data collection, I became PGCE course leader. The fact that I was then both leader of the student teachers’ PGCE course and doctoral researcher emphasises, with its account of change and adaptation, the links between this study and the paradigm of qualitative longitudinal research (McLeod and Thompson, 2009:61). Experience of other roles affected the

Chapter 4: Methodology

research encounters, for both me and the student teachers, as pretextualities, that is:

The features that people bring along when they communicate: complexes of resources, degrees of control over genres, styles, language varieties, codes, and so on that influence what people can actually do when they communicate
(Blommaert, 2005:254)

These pretextualities show how, through the student teachers' different experiences on the course, each interview might be different, despite the disciplines of research procedures and the rationales for choices that I discuss in this chapter. These initial differences, and those that occurred during the performances of the interview, suggest a continuous change in my positioning on the insider–outsider continuum (rather than binary opposites) in the course of this research, in a way that 'value[s] them both, recognizing their potential strengths and weaknesses in all manner of contexts' (Mercer, 2007:7). By extending the Bourdieusian analysis of capitals and field to the analysis of data collection and by using field notes to illustrate the ongoing process of reflexivity, this chapter illustrates the way in which the insider–outsider continuum was an integral part of the methodology of this study.

In order to develop a detailed analysis of professional performance and the implications of migration, this study draws upon ethnographic methods and, in particular, builds upon the work of Blackledge and Creese (2010) in complementary language schools, and that of Blommaert (2010) in sociolinguistics and globalisation, by using linguistic ethnography that:

[A]ttempts to combine close detail of local action and interaction as embedded in a wider social world.

(Blackledge and Creese, 2010:63)

The choices I made and their implications for the practices of data collection, for interpretation and for the wider credibility of this study are the subject of this chapter.

4.2 BIOGRAPHICAL TRAJECTORY AND THE PERFORMANCE OF DIFFERENCE

My own subjectivity and its influence on my performances as both course leader and researcher were integral to the production of this research. In this section, I present aspects of my personal and professional biography that are part of my interest in superdiversity. I describe how particular professional priorities, including social justice, were part of my professional performances as a teacher educator with the student teachers in this sample and how they were relevant to the research process.

4.2.1 PERSONAL BIOGRAPHY

After the Second World War, my parents left their home in a working-class area of Woolwich in south east London to take advantage of the opportunities of home ownership and, for my father, those of employment as an aircraft fitter at London's Heathrow airport. Family ties with inner London remained strong. My mother, unusually for that time, worked in the East End of London as a teacher throughout my childhood. This challenged the normalised expectations that mothers should stay at home or, at best, seek local casual work. Woolwich could be accessed by choice, and it was my mother's choice that I regularly spend time with her parents, although I never spoke to my paternal grandmother who was Irish and lived just across the street. These connections of affection were confusing for me, as I struggled to answer questions about class when I left home. My family did not want to address my intellectualisation of class, yet it was integral to the processes of fitting in to an outer London suburb with its forgetting (of working-class Woolwich), proscriptions (of my wandering onto the council estate) and firsts (of my staying at school beyond school-leaving age and going to university). This has given me a familiarity with the processes of fitting in (and the emotions of not quite doing so) that figure large in the experience of the

Chapter 4: Methodology

migrant teachers in this study. I regularly refer to these aspects of my biography to exemplify the importance of personal narrative in teacher professionalism and to illustrate issues of social justice for girls and working-class pupils.

Going to university was described, by all of my family, as a 'feather in my cap', yet neither I nor my parents anticipated the other changes that this experience might bring. My father, in particular, was appalled when I began to challenge my family's expectation that I would also work in an industrial corporation and chose, on leaving university, to work in Europe: first in the French Forestry Commission and then as a volunteer at a children's home in Switzerland. Although this act of going away had the possibility (and intention) of return, it marked a significant break, in which distance (bridged by occasional letters from my mother) emphasised the deep strangeness of abroad, marked by languages, customs and food. I can remember the difficulties of expressing myself in rudimentary German in Switzerland, where initial assumptions about my linguistic abilities left me positioned as an outsider despite my improved abilities in the language brought about by self-study. I spent 18 months not knowing about England except through the regional Swiss press and have subsequently always been very aware of issues of power involved in nation building.

This was useful when I took up a post as an English teacher in south east London, where I engaged professionally with differences of class and ethnicity. Working with black colleagues and pupils, I became aware of how the power of school curricula silenced colonial histories and post-colonial literatures and, when a colleague explained the pride he felt on the rare occasions his small island of St Lucia was named, of the small pleasures of recognition. This was matched by an awareness of racism. I witnessed pupils questioned aggressively by police officers and, on arrival at university as a PGCE (English) student, I heard a senior education lecturer speaking

Chapter 4: Methodology

publicly, and derogatively, about Indian languages. My subsequent organisation of the first multicultural education course on the PGCE was met not with positive acknowledgement but with silence, which occasionally burst into expressions of guilt by lecturing staff. This is an engagement that lasted throughout my teaching career. In 2003 I organised, in conjunction with black pupils, a Black History Month for the first time in a school with a significant number of black pupils. I was surprised by the indifference of the white staff, which highlighted that little change had occurred since the days of my own PGCE. I brought these experiences (and capitals) with me to my work as a teacher educator, and have used them as part of tutorials (in which I have spoken to student teachers about race, gender and discursive positioning) and in curriculum studies (in which I have run sessions about the history of mathematics).

It is important to acknowledge that I became a maths teacher because I was unable to get a job as an English teacher at the end of my PGCE course, because my first degree was not in English (and in spite of having taught the subject for two years). Subsequently, thanks to the support of a headteacher, I gained a maths degree. I now live in Hackney, an area of inner London renowned for the superdiversity of the local population. These vagaries of employment and residence, and my appreciation of the effort required to become re-established, are part of the recognition that I offer, as Yosso (2005) recommends, to all student teachers, but particularly those of migrant heritage. I often point out that although my French is good I could never imagine training as a teacher in Paris. The key personal challenges I have described, combined with my experience of residence outside the UK, are central to my interest in migration which, combined with the superdiverse group of students I faced as a PGCE course leader in mathematics, led to the choice of topic for this research.

4.2.2 WORK AS A PGCE COURSE LEADER

My experience as a school mathematics teacher involved with professional associations and curriculum development for 25 years has endowed me with a sense of authority. It has enabled me to offer the kind of preparation for mathematics teaching that the course members expect, combined with an emphasis on social justice issues, which, given the students' previous experience of mathematics education, is often unexpected. At first, I found it hard to address larger groups, aware that these might be difficult for student teachers, owing to their own recognitions and my power as a white middle-class man. My confidence grew when a group of women in the maths group said they were pleased that I was raising questions about speaking English during maths lessons because it was something they had to live with daily. This developed (although I am aware of the continuing need to balance the effects of my own power with the possibility of students finding such discussions uncomfortable), and can be seen in the way in which I am able to address social justice issues during mathematics curriculum sessions and throughout the PGCE course. In this way, I have not only acknowledged often unrecognised stories of migration and identity but have also shown my own positioning under the categories in which I might be recognised: that I am a white man who is aware of being such and who takes actions to address matters of social justice during the course. I was once asked, by an anxious student, whether I knew just how difficult migration was. This was at once an indication of how in a superdiverse group, migration and related matters, including visas, are integral to the experiences of many of the student teachers. My choice of the topic of this study is important in identifying the many ways, which may otherwise be silenced, in which migration affects highly qualified student teachers.

This section has shown how my own performances as course leader made the

boundary of insider–outsider during the research necessarily fuzzy and contributed to the confidence and trust with which all participants (except Osasune and Giana who were from another institution) might approach the research interviews. It has also shown how my own experience of the discussion of social justice contributed to my confidence in discussing issues that were directly related to engaging in the ordered conversations of the research interviews. This represents an important selection of capitals and, for participants, recollections that contributed to the processes of the interview, which I discuss in more detail in the section about interview interactions.

4.3 DATA COLLECTION

A pilot study was completed before the main research, which enabled me to trial the approaches to data collection. This resulted in a heightened awareness of the need to listen and reflect carefully during the interviews. I developed routines for using a field notebook and learned how to allocate time to do this when planning an interview.

4.3.1 SAMPLING

I encountered unexpected difficulties in recruiting migrant student teachers from other institutions. After sending an email (see Appendix 1) to course members on another PGCE course in inner London, with the full support of the course leader, I did not receive any expressions of interest. The course leader and I were surprised, but I took no further action as involvement in the study was entirely a decision for participants. Instead, I sent the same research information to another PGCE course leader who had herself migrated to the UK. Two respondents, Giana and Osasune, came forward and both commented that they did so because they had good relationships with their course leader. The importance of the course leader for them both, and the reluctance of others to participate, alerted me to the fact that some students might consider migration,

especially given its rising profile in UK politics during the research period, a sensitive topic (Hydén, 2008), which would require me to pay particular attention to the setting of the interview as a relational space and to the circulation of power during the interview itself.

I did not discuss the research at my university until all the student teachers had been in university sessions for four weeks, in which time they had observed my performance as course leader. At this time, I felt confident to discuss the research with the whole group and distributed informed consent forms to all those I knew, from their application forms, had studied outside the UK. Although participation rates were high, I was aware that this might not be entirely because of the trust engendered by my performances but rather an aspect of my power as a tutor:

[T]he normal student response to a request from a teacher is to accede to the request, even if it is not the student's preference so to do.

(Pressick-Kilborn and Sainsbury, 2002:5)

To underline my different roles during the research, I emphasised those parts of the informed consent form (see Appendix II) that clarified the time that would be taken up by the interviews and the right of participants to withdraw from the study at any time without explanation, or fear of repercussions.

On the basis of expressions of interest, I constructed an initial sample frame that reflected categories I had found to be important from reading, and other statistical sources, with a view to designing a study that would be representative of the trajectories of members of the superdiverse group of student teachers at my university in central London.

4.3.2 SAMPLE FRAME: CATEGORIES AND LINKS TO THEORETICAL VIEWPOINTS

The main migration channels referred to in the literature review are all represented in the sample – three of the student teachers had moved directly to the UK from outside

Chapter 4: Methodology

the EU and 13 had moved directly from an EU country or had moved onwards to the EU from another European country where they had lived or studied. Migration trajectories were, however, more complex than the channels suggest. The nature of these trajectories is itself an aspect of superdiversity and this has been colour coded in Table 2. Of those who had moved from outside the UK, Kombe was a refugee from Somalia and both Aharya and Semye had arrived from India to join their husbands. Movements inside the EU were complicated: love migration (4); student migration (3); free-moving (3); highly skilled (entrepreneur) (1); onward migration (2). Together with Aharya and Semye, those moving to the UK for love were, with the exception of Dieter, women. The student and free-moving trajectories represent those who, at some stage, had arrived in the UK as single young people. Together with the other groups of highly skilled and onward migration, these trajectories emphasise how the decision to become a teacher is part of a process that takes place as individuals develop plans for becoming such after having arrived in the UK for other reasons.

The average age of all men in the sample was 31.6 years and for women it was 34.8 (for EU men it was 33.7 and for women, 36.2). The slightly higher average age of the women is accounted for by Sofija and Tereza, both of whom decided to become teachers after having either worked or studied in the UK for approximately five years before starting the PGCE. The average age for this group was slightly higher than the modal age group of 25–34 recorded in Figure 1 (Centre on Dynamics of Ethnicity, 2013). All of them, with the exception of Pilvi, had begun to develop communicative repertoires and interpretative resources in the context of what Blommaert refers to as:

[R]elaxed identity work, focused on ‘the pursuit of sameness’, that nice feeling of being a community in a foreign context [...] shaping, developing and fine-tuning resources they can and must deploy in less relaxed contexts as well.

(Blommaert, 2012: 11–12)

These histories of practice in the UK are represented by the summary of their UK

Chapter 4: Methodology

work experience and were discussed in the biographical narrative of the first interview (see Appendix III). Some completed a Mathematics Enhancement Course (MEC) prior to the course, which enabled them to adapt their mathematical resources to the requirements of the GCSE and A-level mathematics curricula.

The details of the migration trajectories of the sample and their countries of birth gives an indication of the linguistic and cultural diversity and the various other axes of diversity of this sample, which warrants Vertovec's (2006) description of superdiversity. This is, however, masked by categories based on ethnicity (Department for Education, 2013a), which is used to describe both student teachers and the teaching workforce more generally.

Over the research period, I adjusted the sample in the wake both of reading and of discussion with other researchers. For example, Williams et al (2011) draw attention to the phenomenon of return migration of highly skilled migrants to New Zealand, after a sojourn in the UK. I chose, therefore, to represent return migration in the sample. I interviewed Dieter just before he returned to Germany after three years as a maths teacher in London. Pilvi returned to Finland at the end of the PGCE course, despite her original intention of finding a teaching position in London. It was suggested to me, when I made presentations at research seminars, that it would be useful to include former course members who had a different relationship with me, as ex - alumni, in terms of both power and a different perspective on the course, having completed at least one year's teaching in schools. In acknowledgement of this, I chose to include Christophe and Dieter.

During the research period, it became clear that some trainees make better progress than others, so I adjusted the sample to ensure that it included those who made good progress as well as those who experienced difficulties.

Chapter 4: Methodology

Pseudonym	Age	Gender	Country of Birth	Migration Channel	Migration Trajectory	Degree	MEC UK	Work Experience
Aharya	29	F	India	Family	India-UK	BSc		Teaching Assistant
Christophe	37	M	Cameroon	EU	Cam.-Ger.-UK	BSc Economics	✓	Warehouse Labourer
Demircan	32	M	Turkey	Student Visa	Turkey-Ger.-UK	BSc Maths		Turkish Ed. Group
Dieter	31	M	Germany	EU	Germany-UK	BSc Economics		Retail Manager
Doina	26	F	Romania	EU	Romania-UK	BSc Maths	✓	Hotels
Giana	38	F	Italy	Student Visa	Italy-UK	BSc		Marketing/Mother
Gilles	33	M	France	EU	France-UK	BSc Computing (UK)	✓	Student
Idman	31	F	Somalia	EU	Somalia-Holl.-UK	MSc Maths (UK)		Student/Casual Work
Imane	39	F	France	EU	Fran.-Algeria-UK	BSc Computing	✓	IT Technician
Ivona	39	F	Romania	Family	Romania-UK	BSc Maths		Lecturer
Kombe	25	M	Somalia	Refugee	Somalia-UK	BSc Pharmacy (UK)	✓	Student/Casual Work
Osasune	37	F	Spain	EU	Spain-UK	BSc Chemistry		Chemist/Mother
Pilvi	29	F	Finland	EU	Finland-UK	BSc Maths		None (Teacher in Finland)
Semye	28	F	India	Highly Skilled	India-UK	BSc Maths MSc Maths		Admin Jobs in Asian Community
Sofija	42	F	Bulgaria	EU	Bulgaria-UK	BSc Transport BSc Financial Mathematics (UK)		Student
Tereza	45	F	Bulgaria	EU	Bulgaria-UK	BSc Rocket Engineering		Self-employed: ICT Company

Table 2 Sample Frame

Key

Love Migration

Onward Migration

Student Migration

Skilled Migration

Free-Moving Migration

With Family as a Minor

4.4 INTERVIEWS

I chose to use semi-structured interviews to enable myself to ask the questions that were relevant to the research questions at the same time as providing the opportunity of ‘following participants down their own trails’ (Riessman, 2008:24). Allowing participants to follow ‘their own trails’, in combination with follow-up questions, was an essential part of the interview structure, both for clarification and in developing perspectives that, in the context of a superdiverse sample, I could not have anticipated before the interview. The decision to use only interviews meant that I was able to manage the boundary between the research activities and the other activities in which I, and student teachers, were involved during the PGCE course. The timing and focus of the interviews helped to manage this boundary: the first biographical interview was planned for before the first school placement; the second, which was about the first placement, took place after this had finished, during a period at the university; and the third interview took place at the end of the course. It proved to be very difficult to manage the planned number of interviews and I had ‘to be flexible and responsive to the field’ (Chadderton, 2012:376). The first interview did not fit easily into the early schedule of the course, and when it was not possible to carry it out life history became a preliminary part of the other two interviews (see Appendices IV and V) and part of the follow-up questions.

Chapter 4: Methodology

Interview 1 (App. III)	Interview 2 (App. IV)	Interview 3 (App. V)
Learning Maths outside the UK	Coming to England and starting the PGCE course	Maths
Coming to England	First impressions of London	How the changes came about
Starting the PGCE	The university influence	The classroom interactions
	Relationships with colleagues	Wider school issues
	Pupils	Hopes for the future
	Mathematics	
	Use of Teachers' Standards	
	End	

Table 3 Summary of Interview Questions

For all interviews, I prepared an interview schedule. Adjustments that acknowledged what I had come to know of each student teacher were reflected in specific references, for example to Finland (see Appendix IV), in the interviews. I wrote down the initial questions as invitations to speak about a topic (Blommaert and Jie, 2010), using the question stem 'tell me'. This invitation to speak contributed to 'relatively unstructured, informal, conversation-type encounters' (Goodson and Sikes, 2001:28), in which respondents had the choice of what to include in the answer, and in which I could follow up any points that were relevant to the research questions. In this practice, I gave the control to the participants who, by choosing what to reveal, could build confidence in their first performances at the same time as exploring the rules of the game in the interview field. Recognising that this might be the first time that participants had talked publicly about their trajectories, my follow-up questions were designed to value their contributions as well as to be pertinent to the research questions.

Although the questions in the second and third interviews were also open, I was able to focus on specific aspects of the student teachers' training. The difference in questioning in the second interview is an example of the way in which the insider-

Chapter 4: Methodology

outsider positioning changed (Collier et al, 2015) both in the course of the interview process and during a single interview, with a view to eliciting answers to my research questions. I also prepared a number of follow-up questions, both to build on the conversational style and to maintain the rules of the game that had been established in the first interview.

Distribution of the schedule prior to the interview was an important ethic of care (Kubanyiova, 2008) towards the participant. The initial interview was, nonetheless, an intimidating occasion. It was the first time that many of the respondents had been involved in an interview. In order to establish a common understanding for its organisation, I described it as being like a TV interview; Osasune immediately replied that she did not want to be interviewed on TV. This is an example of the potential for misunderstanding the ‘rules of the game’ (Bourdieu and Wacquant, 2007:99) of the interview, and of how an open conversational style might be a useful practice in the initial interview performances of participants. It also shows the useful role that participants from outside my university might play in resisting my power as a researcher (Osgood, 2010), resulting in a critical reassessment of research practices. In preparation for an interview, I looked over notes from previous interviews so as to be in a position to follow up particular issues that might have arisen, thus demonstrating the value of the research to the participant (who might occasionally be surprised that I had remembered), and to ask follow-up questions on emerging themes for the research. Only occasionally would respondents use the schedule to prepare preliminary notes before the interview, but it was, nonetheless, an important courtesy and showed a sense of organisation and purpose in the research process. This was brought home to me when, for administrative reasons, I failed to distribute a schedule, and Osasune remarked that she would have been able to give better answers if she had received one.

4.4.1 INTERVIEW SETTING

The participants chose the place of the interview, and this was, with the exception of two of them, in a university setting. In the interviews, I emphasised my role as researcher rather than as course leader, and the setting seemed to provide the respondents with an opportunity to express sometimes critical opinions about their experience in schools. For example, Christophe expressed the opinion that schools were employing teachers from outside the UK merely to fill staffing gaps, something he might have felt unable to express in a school.

In addition to this, the university setting was in inner London. Osasune, from outer London, remarked during the interview that, as she crossed the road near the university, she felt that this area of London, with all its different nationalities, was not what she had expected, and that it was somewhere she immediately felt at home. This remark emphasised the favourable context the university setting brought to the potentially sensitive discussion of migration. It also enabled the discussion to be undisturbed. This was in marked contrast to the only interview that was undertaken in a school, which was disturbed, on a number of occasions, by other staff, despite the fact that the room had been specifically booked. The participants also chose the times of the interviews, and I was punctilious in observing both these and the planned duration. I also was careful to extend courtesies of welcome and farewell at the transition points (Merrill and West, 2009) at the start and end of the interviews. I regarded these practices as a central part of exercising my ethic of care to the participants in the research.

4.4.2 INTERVIEW INTERACTIONS

Despite the 'ordered conversation' (Blommaert and Jie, 2010:44) suggested by the

Chapter 4: Methodology

interview schedule, the performances during the interview concurred with the observation that ‘power constantly shifts and slides throughout research processes’ (Osgood, 2010:20). This resulted both from the dialogical nature of the conversation and the way in which, during the interview, participants placed themselves on the insider–outsider continuum (Mercer, 2007). I discuss this, and also the performance of race and gender identities in the interviews and the ensuing possibility for further elaboration and richer data.

It is useful to consider the interview in the context of the first engagement of the habitus with a new field, especially in terms of the structure and volume of the capitals that were brought to the field of the interview. Although those on the course had seen me before, it was the first time they had shared these proximities and, for Giana and Osasune, I was a stranger. In addition to issues of building a rapport through communication (Ryen, 2001), superdiversity has the potential for ‘non-shared knowledge [that] grows in its potential significance for communicative processes’ (Blommaert and Rampton, 2011:6). These processes include issues of indexicality (especially in the use of English) and interpretative resources to contextualise references. Prior to starting the interview the introductory discussion could suggest the volume of my own interpretative capitals, which I was able to draw upon, after preparation, prior to Giana’s interview:

In our initial conversation we talked about my life history esp. knowledge of language and experience of learning German. This, combined with knowledge of Italian history particularly Caporetto and Vittoria Veneto (battles at the end of World War One in Italy), enabled me to show awareness of what Giana referred to as the dark side of Italy.

(Alan Benson Field Notes)

Giana’s reference to the ‘dark side of Italy’, which might otherwise be concealed, suggested that there was the possibility of her making more wide-ranging references in

the interview. This could lead to richer data, which was a key part of my ethical responsibility (Kubanyiova, 2008) to the research study.

The interview was conducted in English and the participants and I were in close proximity. The symbolic power of the language and my own authority as both lecturer and L1 speaker were potentially powerful constraints. The concentration required for listening to the non-shared knowledge of superdiversity, even though it demonstrated reciprocity and interest in stories that might otherwise have been silenced (Puwar, 2004), was hard work, a labour of listening:

[A] labour of juggling the foreground and the background, a labour of keeping all voices in play and erasing none

(Cooper, 2013)

Such attentive listening was a communicative practice, and it enabled me to address issues of L2 (multilingual) speakers by occasionally rephrasing, or asking for clarification in terms of indexing and contextualisation. This focused on what was being said rather than how it was said, in a way that did not inhibit the further development of the interview:

Christophe: Yes. Like I once told them that ‘Excuse me, can someone describe me what is called “success” here?’.

Interviewer: Sausage?

Christophe: Success.

Interviewer: Success? Right, yeah, yeah, yeah, yeah. [...]. Sorry that was me not understanding. [laughter]

(Christophe Interview Transcript)

This misunderstanding was due to accent, which is invisible in the text, and it emphasises the importance of listening in L2 interviews. The necessary, but embarrassed, request for clarification repaired the positioning.

Sometimes listening carefully resulted in further relevant information being provided by my asking for more anecdotal illustrations. Although these required me ‘to give up control’ (Riessmann, 2008:24), they provided small, but significant, details of migrant

life, of which I would have been unaware (and therefore not have discussed). Pilvi related that, because her rented flat did not have an Internet connection, she regularly went to a local café to complete her university assignments and deal with her emails. Such performances sometimes resulted in intimate disclosures about translocal lives. Semye revealed the pressures of her husband's expectations, when she did not do the domestic tasks she had done as a matter of routine when they had lived in India. Although careful listening and follow-up questions resulted in useful data, it always took a lot of concentration on my part. In retrospect, it would have been useful to anticipate follow-up questions more systematically (Mason, 2002) in order to make more profitable use of the time available and to make the process of the comparison of responses easier.

In contrast to these anecdotal confidences, which might lead to vulnerability, moments of 'non-seriousness' were:

a pleasurable and practical act of setting aside some admitted or apparent reality for a moment, something threatening, incongruous, or rigid, and thus being able to get on, eventually, with serious things.

(Myers and Lampropoulou, 2016:4)

This allows for an acknowledgement of the role of laughter (noted in transcripts as a word but which might have ongoing effects on the relational space of the interview) in unsettling assumed positions of race and gender that might otherwise have been silenced.

My occasional use of French and German challenged my L1 status (as a monolingual UK national) and, momentarily, put me in the same situation as participants with respect to their uses of English. When I spoke in German, Dieter suddenly possessed the symbolic power of correction and indexical authority. On hearing my Swiss German accent, he described it as '*kinderlich*' (childish), a disdainful and ironic description of the Swiss dialect by speakers of High German. The ensuing exchange of

Chapter 4: Methodology

laughter, with its acknowledgement of Dieter's point of view as a speaker of High German, developed trust, shifted the balance of power, and provided a transition to a detailed discussion about how he had been recognised as German by pupils in London classrooms.

Unlike the invisibilities of my language capitals, recognitions of my body meant that I performed race and gender in the interviews in ways that impacted upon the collection of the data. Whilst I might choose to reference this where appropriate (and breaking the frequent invisibility of whiteness [Rollock and Gillborn, 2011] is itself significant), it was difficult for participants of colour to do so (Puar, 2004), except through moments of non-seriousness. Christophe, in a discussion of how he adapted his previous capitals and habitus, replied, 'Well, I just said that Africa is crap'. Knowing that he had already described himself as a 'proud African', and remembering other performances from outside the interview, I confessed, to Christophe's amusement, 'to having some post-colonial reservations about that'. This indicates both the possible instability of non-seriousness in revealing my ability (or not) to reply and also its potential to address whiteness in a way that allowed for race and the effects of skin colour to be referred to openly thereafter.

In contrast to this performance of humour, during Semye's interview I recalled something she had said previously:

[Y]ou said 'Look [...] it's got nothing to do with me being in India or whatever, it's I'm a woman as well.'

(Semye Interview Transcript)

This recalled moment of non-seriousness was one in which Semye had been able to point to how the normalising effect of my own positioning as a man had ignored, in the discussion of India and highly skilled migration, that she was a woman. The humour of it had allowed Semye to point to a failure in my performance, despite my analytical commitment to the use of intersectionality. The affectionate recall indicated

the emotional effect of humour, and it was an effective transition to a discussion of the way in which Semye's domestic responsibilities caused difficulties for her during the PGCE.

These descriptions of non-seriousness have shown how they provided opportunities for participants to unexpectedly disrupt positionings in the interview in a way that highlighted difference that might, otherwise, have been unacknowledged. Significantly, my responses revealed instantaneously the ethics of practice that permeated my own performance, changing the momentary circulation of power and continuing to build rapport during the interview. I referred to the effects of these moments reflexively in my notebook in a way that contributed to the ongoing evaluation and improvement of my performance during the interview process:

Humour breaks categories: it is itself aware/transgressive to get a joke. Semye said again just before going that she had just talked; had just said what had come into her mind.

(Alan Benson Field Notes)

4.5 ANALYSIS OF DATA

The research produced a data corpus of 30 hours of interview data and three mathematics textbooks (from Finland, India and Romania). I chose to exclude no data from the analysis and hence the corpus was my data set, in which, shaped by the theoretical understandings and the literature review I have described in previous chapters, I sought to identify patterns or themes. This was done systematically by way of a qualitative thematic analysis (Braun and Clarke, 2006). This identified initial stages but, as I shall identify, was not a:

[L]inear process of simply moving from one phase to the next. Instead, it is more *recursive* process, where movement is back and forth as needed, throughout the phases.

(Braun and Clarke, 2006:86 original emphasis)

This section discusses how this framework was used (and adapted) in the development

of a thematic analysis and shows how my choices and reading were a part of the analysis.

4.5.1 FAMILIARISATION WITH THE DATA: TRANSCRIPTION AND EARLY CODING

The first stage of familiarising myself with the data had begun in the follow-up questions in the interviews, which I have already described. This process of noticing (Braun and Clarke, 2013) important points was continued in my use of field notebooks to routinely reflect upon the interview immediately after its completion. This gave me a first opportunity to record comments on the interview itself which, as well as including my own reflections, referred to aspects of the setting and the performance of the interview that were lost in the transcription process yet were important in developing themes and emphasis for the analysis. For example, I noted Pilvi's bodily reactions when she recounted difficulties in her first placement:

The memory of the first term was extremely difficult [...]. It was tearful and physically the memory of it displayed itself on her body. She was overcome with emotion which was difficult to articulate and one suspects would have been so in Finnish.

(Alan Benson Field Notes)

In addition to such reflections I developed formats and subheadings, which I used regularly to make it easier to write and to compare different interviews.

This process of noticing was continued both during my transcription of early interviews, when I made notes in the margins of the transcriptions and after I had decided that it would not be feasible for me to transcribe the entire data corpus. At the same time, I compared the accuracy of the transcriptions I received with the digital recordings, which were PIN protected for confidentiality. This process emphasised the importance of listening, and I embarked upon an extensive programme of listening to

Chapter 4: Methodology

the interview recordings, using portable devices, during my ordinary working day. Familiarity with the spoken performance of the interviews meant that I was aware of intonations and pauses – ‘the music of speech as well as subliminal information’ (Merrill and West, 2009:125) – that were integral to the meaning of the performance, and this provided a more nuanced understanding of the interview data.

I became aware that some interviews, for particular reasons of performance therein, were more fruitful in terms of the quality of the data that was gathered. Focusing on these, I reduced the data by colour coding parts of the interview text, which allowed me to compare interviews as well as to show the particular strengths of individual ones. This led to more detailed readings of particular parts of the text. I developed initial codes (which often drew upon literature review notes, wherein I developed the practice of writing quotations in ink followed by comments relevant to the data set in pencil) by referring to aspects of teaching, including language and mathematics, as well as other aspects of professional performance, such as recognition by pupils and relationships with staff.

Some parts of the data seemed significant, having what Braun and Clarke (2006) describe as latent meaning, and this resulted in further reading in order to provide a satisfactory analysis. This was often the case with small data excerpts, for example when Pilvi introduced herself to a class by saying, in complete contrast to the accepted rules of English schools, ‘Hello. I am Pilvi’ (Pilvi). I came to understand this in the context of an utterance for which Bakhtin (1986, in Morris 2003) assumes both a present audience (addressee) and one that might be absent (super addressee). Attention has been drawn to the importance of this perspective in terms both of migration and of the sociolinguistics of globalisation, by Blommaert’s (2010) use of the term ‘polycentricity’ to account for the way in which ‘we often project the presence of an

evaluating authority through our interactions with immediate addressees, we behave *with reference to* such an evaluative authority' (Blommaert, 2010:39 original emphasis). Once the idea of polycentricity had clarified the latent meaning of Pilvi's phrase, I was able to use it in the consideration of the data set to highlight the variety of linguistic performances and adaptations that was a key part of the research questions.

Bourdieu's concept of the symbolic power of language was evident in excerpts that showed how L1 pupils were able to correct or, on occasion, choose not to understand L2 teachers. Furthermore, the variety of local vernaculars used in schools emphasised how heteroglossia (Bakhtin, 1986 in Morris, 2003) was useful in reflecting changes in speech patterns, including, for example, momentary greetings, which challenged the language practices and dispositions (linguistic habitus) of individual student teachers. This allowed both for a more detailed analysis of the flow of capillary power during the professional encounters reported in the data set and for me to write in more detail about the way in which, as Goffman (1972) observed, the L2 student teachers could become suddenly vulnerable. Furthermore, the longitudinal design of the study permitted me to discuss the way in which the student teachers developed language repertoires during their school placements that allowed them to develop increasingly authoritative performances (Langton, 2015), both in terms of their mathematics subject knowledge and the way in which they were able to manage classroom behaviour and organisation.

These theoretical aspects of language enabled me to analyse linguistic performance and the way in which student teachers developed language repertoires, but my insider knowledge of schools (from many years as a schoolteacher and, subsequently, a focus on mathematics classrooms as a PGCE tutor) led me to being relatively unaware of the

possibilities of fleeting encounters outside the mathematics classroom. This became clear as I considered Idman's reports of 'mingling' in the staffroom and Imane's report of the way in which pupils would address her with the religious greeting of '*Salaam Aleikum*' in the corridors, but nowhere else. These accounts suggested the possibilities of different proximities in different parts of the school, where teacher identities might be performed differently from in classrooms. This led, through a consideration of the work of Massey (2012) and McGregor (2003), to a critical awareness of space in schools: the way in which it can be considered a relational space 'created by social interaction' (McGregor, 2003:357) and how opportunities for circulation and 'mingling' in staffrooms are affected by the material organisation of chairs and tables. This allowed me to complicate Goffman's (1990) distinction of front and back regions and, through Massey's (2012) notion of the chance of space, to account for the sense of the unknown (and its potential difficulties) that could accompany movement about the school. Developing a critical awareness of the school as an interconnected network of spaces, enabled me to draw together a range of important, yet apparently disparate, aspects of coding and themes into the final data chapter, entitled 'Around and About the School Site'.

4.5.2 IDENTIFICATION AND REFINEMENT OF THEMES AND CODING

I used Post-it Notes to gather my early coding into what Braun and Clarke describe as candidate themes. For example:

Theme 1 Discourses of Classroom organisation and Behaviour management
(Code 1a: Cultural knowledge and interacting with children; Code1b: Managing the implementation of strategies)

Theme 2 Classroom performance as teacher of Mathematics (Code 2: Issues arising from the entanglement of the above in the process of classroom teaching)

(Alan Benson Coding Notes 2011)

These candidate themes and the codes assigned to them represent the first stage of the

Chapter 4: Methodology

process of identifying themes and relevant codes. I have already exemplified how reading could refine the analysis and it is important to acknowledge that, as the analysis and the production of drafts proceeded, reading, analysis and research questions were intimately entwined, each affecting, and being affected by, the others over a long period. For example, my developing understanding of performance and semiotics was able to identify refined coding to reflect the various dimensions of what I initially was only able to identify as ‘entanglement’, which resulted in my revising the names of the themes during the writing process, with a view to their being memorable and indicating their content to the reader.

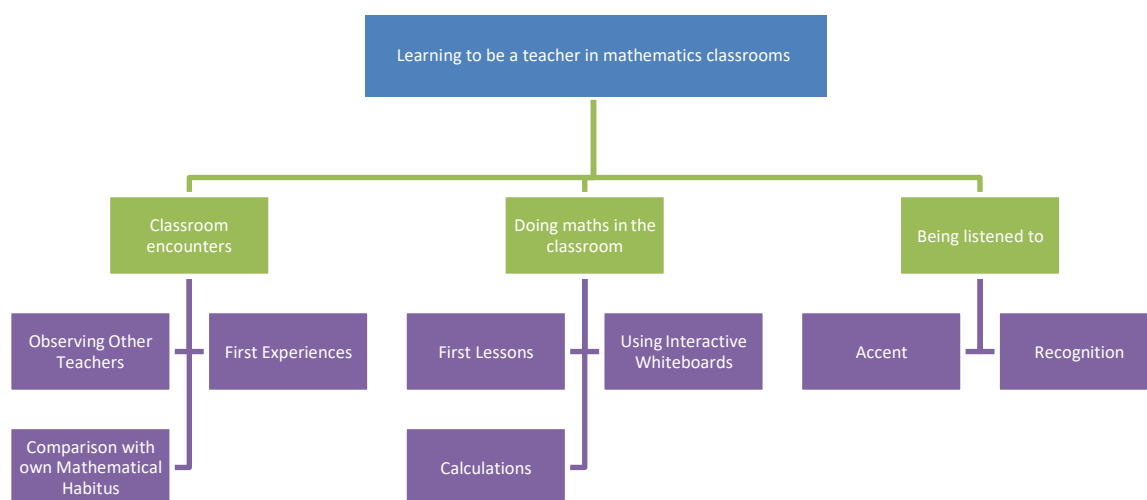


Figure 2 Final Thematic Map for Chapter 6

4.6 WRITING OF RESEARCH

The regular scrutiny of my preliminary drafts by my supervisor and members of various research groups, focused on the experiences of migrant teachers. At meetings of the Diverse Teachers for Diverse Learners Network at the University of Strathclyde in the period 2011 to 2014 I was able to discuss the process of research, relevant

Chapter 4: Methodology

literature, and theoretical approaches. Novels and memoirs of migration, for example *Brooklyn* (Tóibín, 2009) and *Chernobyl Strawberries* (Goldsworthy, 2005), gave insight into the forgotten minutiae of migration, and the importance of love as a motive. These were particularly important in informing my understandings of migration trajectories from the countries of Eastern Europe and, more generally, of discourses of migration within the UK.

The process of unsettling and redefining categories, which was part of my own development as a researcher, was continued in more detail in the process of drafting and redrafting, which I experienced, simultaneously, as one of learning and apprenticeship.

In writing this research, I have deliberately chosen to establish an authorial tone by the use of the pronoun 'I'. Yet, particularly in the data chapters, I have also presented an argument that is more reliant on the use of the passive voice, thereby seeking to provide a space in which the reader can engage with the text. In these parts of the text, I have, for the most part, reserved the interjection of my own voice for the conclusion of each chapter.

The difference in position that the process of redrafting can bring is illustrated by the choice of names for the research participants. I did not give the participants the opportunity to choose their own names for the research and this decision revealed my own subsequently inability to choose suitable pseudonyms. It took a long time for me to resolve this nagging, but important, issue by conducting an Internet search, which highlighted sites dedicated to common names by country of origin. This enabled me to match names to participants, ensuring that the sounds of the pseudonyms resembled their own names. Where, for example, women from Eastern Europe had Western European names, this was reflected in the names they were given in my writing. It is

my intention that the reader will experience both familiar and unfamiliar names in just the way in which individuals become familiar with different names in their everyday practices of superdiversity.

4.7 ETHICAL ISSUES RELATED TO THE CONDUCT OF THE STUDY

The ethical requirements of the university, which were a precondition for this study, were interpreted in the face of practical dilemmas throughout the research process. The distinction between general guidelines and the ethical dilemmas faced in the field, and during writing, has been usefully described by Guillemin and Gillam (2004) as one between procedural ethics and ethics in practice.

4.7.1 PROCEDURAL ETHICS

Ethical guidelines from the British Sociological Association, and those followed by the University Ethics Committee that approved this research, provided a framework for the implementation of many of the research procedures and protocols I have discussed in this chapter, including, for example, letters of informed consent (see Appendix II).

Informed by a position of social justice, the research seeks to broaden the current research base on overseas trained teachers, to provide a discussion of those who decide to become teachers after they have migrated. In so doing, it contributes to the knowledge of how highly qualified graduates from universities outside the UK can develop their resources and skills within the country. It is a contribution to the discussions of skilled migration, something often considered to be crucial in addressing labour shortages in the UK, as during the Brexit campaign and vote, which occurred as I was writing up the research.

Chapter 4: Methodology

4.7.2 ETHICS IN PRACTICE

My response to ethical issues during this study, often in the very moment of interviewing, and with particular concern for the circulation of emotion, was the outcome of reflexive practices throughout the research period. These were important in making reflexivity a routine part of the fieldwork. For example, I used a field notebook to record impressions after each interview, about both the data and the conduct of the interview, which both resulted in changes to later interviews and provided an ongoing evaluation of the research.

My own subjectivity informed all aspects of the research process. Although I prepared for each interview, my limited knowledge of other countries emphasised what I did not know about the participants and highlighted the importance of an ongoing awareness of what Young (1997) describes as ‘the remainder’:

[T]hough there may be much that I do understand about the other person’s perspective through her communication to me and through the constructions we have made common between us, there is also always a remainder, much that I do not understand about the other person’s experience and perspective.

(Young, 1997:53)

This sense of the unknown in superdiversity brings particular difficulties in the context of global migration and superdiversity in terms of categorisations that are inflected by colonialism and the invisibilities (Carling et al, 2014) associated with particular trajectories. As the basis of the communicative ethics during interviews, I listened carefully and drew on my ongoing reading of fiction and history, as research practices that demonstrated a ‘respect for persons’ (Kubanyiova, 2008:505), which was a core ethical principle of this research.

4.8 CONCLUSION

This chapter has drawn on the literature of qualitative research and on written

Chapter 4: Methodology

university and professional guidance to show how this study has provided a framework of appropriate practices including, for example, informed consent and anonymity. It has demonstrated reflexivity by treating ‘the interview situation itself as a rich source of data’ (Briggs, 1986:102) and by using the concepts of Bourdieu and the idea of a performance identity (MacLure, 2003) to exemplify the methodological assumptions and ethical dilemmas faced.

In the context of this general methodological discussion, the chapter has addressed the issues faced in studies of migration and superdiversity, and in particular the issues of ‘non-shared knowledge’ (Blommaert and Rampton, 2011:6). It has shown the importance of letting participants follow ‘their trails’ (Riessmann, 2008:24) in order to develop their own confidence and make public knowledge that is often hidden, and made to seem irrelevant, in the processes of migration and adaptation to the UK. The conversational approach to interviewing, which made use of non-seriousness and follow-up questions, showed how, by developing rapport (Ryen, 2001), non-shared knowledge might become shared and normative discourses challenged. The potential of these processes and strategies has been illustrated with reference to vignettes drawn from research interviews and notebooks which will, together with other data generated by the methods I have discussed, form the basis of the analysis and discussion in the chapters to come.

Chapter 5: Capitals and Resources for Teaching

5.1 INTRODUCTION

Bourdieu and Wacquant's description of individuals as 'bearers of capitals' (Bourdieu and Wacquant, 2007:108) that have been accumulated in the course of their life trajectory, will be used in this chapter to discuss the processes by which the participants:

[A]ctively constitute their cultural capital to fit in with the ethnically dominant culture of the society of residence.

(Erel, 2010:642)

The chapter begins with a discussion of how the participants develop mathematical, linguistic and pedagogical capitals, which are used throughout the PGCE course.

There are also many other resources that the participants may make use of during the course, which Bourdieu describes as social capital:

The aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition

(Bourdieu, 1997:51)

The concept of networks, which may be virtual or real, local or transnational, is important in the context of communication and migration. This chapter explores how, though not exchangeable as capital, 'resources (economic, cultural, moral) [...] have value for those who use and make them' (Skeggs, 2004:17).

5.2 GAINING ENTRANCE TO THE FIELD OF THE PGCE: THE APPLICATION PROCESS

The application process to PGCE mathematics is in two stages. After I, as course tutor, consider the application forms against criteria, the selected applicants are invited to an interview at the university. Following the interview, successful applicants are offered a place on the PGCE, with conditions deemed necessary, by the interviewing panel, to prepare them for the course.

5.2.1 THE APPLICATION FORM AND SELECTION DAY

The annual recruitment targets for PGCE programmes are set by the National College for Teaching and Leadership for the category of ‘home students’. These students are eligible for grants from local authorities as well as specific bursaries for shortage subjects, of which mathematics is one. The targets prioritise home students, although international students are occasionally accepted. Included in the definition of home student are citizens of the UK, those who have permanent leave to remain in the UK, and citizens of EU member states. Home students receive a bursary if their degree qualification is certified as equivalent to at least a UK second class honours degree by UK NARIC. All the participants in the sample satisfied this criterion, and were in receipt of a bursary, with the exception of Semye, an Indian citizen, who was accepted as an international student.

In a personal statement, exemplars of which are publicly available, applicants are able to discuss, on the application form, the relevance to teaching of their life experience and personal capitals. The sample frame (see Chapter 4 Section 4.2.2) shows the wide variety of academic qualifications and previous experiences that existed amongst the participants, all of which indicates the development of ‘national capital’ (Erel, 2010:642). Four had studied for a degree at a UK university, where they had taken part in courses that had given them experience of UK schools. Four had worked as a teaching assistant in either supplementary schools or state primary schools. as teaching assistants. Five had worked in the UK business sector and were seeking a change of career, for either personal or domestic reasons.

The selection day gave all applicants the opportunity to show themselves to be suitably skilled, by demonstrating different dimensions of their communicative repertoire (Rymes, 2010) in a range of activities: a presentation to a group, a piece of

writing reflecting on the perceived challenges and opportunities of being a mathematics teacher, and an interview in which they discussed their reasons for wanting to be a teacher. Their mathematical capital, further to that demonstrated by their degree qualifications, was demonstrated by a written GCSE (higher) mathematics paper, which reflected the English mathematics curriculum and expectations for pupils aged 16. These assessments were the basis of the decision to offer a place on the PGCE course.

If successful, applicants either were straightforwardly offered a place or had to complete a MEC immediately prior to taking up the offer of a place. The MEC began, for some, the process of formally developing capitals for the PGCE course.

5.3 MATHEMATICAL AND LANGUAGE CAPITALS AT THE START OF THE COURSE

Each participant had, through the process of interview, demonstrated relevant mathematical and language capitals. Some of these were further developed by the MEC, and an appreciation of how they were accumulated provides a clearer understanding of the way in which participants were highly qualified beyond holding an appropriate university qualification.

5.3.1 THE MATHEMATICS ENHANCEMENT COURSE

The MEC, which five participants attended, is a long course designed to provide those without a degree in mathematics the opportunity to improve their subject knowledge before embarking on the PGCE. Despite being eligible for a training bursary for the course, offers of a place on the PGCE that required the completion of a MEC could be met with dismay. Imane, who had been awarded an engineering degree by the University of Algiers, wondered: ‘Why? Why should I do it? My math [sic] is good’.

Chapter 5: Capitals and Resources for Teaching

The repeated use, and emphasis upon, the word ‘why’ gives a clear sense of the indignation she felt. Her counter assertion, that she knows her ‘math is good’, points to her personal discontent at being categorised in this way and concurs with Erel’s observation that ‘many migrants experience a devaluation or non-recognition of their skills’ (Erel, 2010:643). Imane’s claim that her ‘math is good’ shows no awareness of the differences in national mathematics curricula described by the Eurydice network (2011), nor does it acknowledge the effects of different pedagogies, or of teaching the subject in a different language. Her resolve to become a teacher meant that she decided to take a place on the MEC, of which her experience was immediately positive:

Actually when I started doing the math class, ‘Oh! Thank God. I did this course’ because it helped me a lot to convert my maths. Because I did math in Arabic and French to convert it to English.

(Imane)

Imane demonstrates a clear sense of relief when she refers to the importance of developing her repertoire in English for learning mathematics, something that was impossible for her to imagine before she joined the MEC. Her use of the word ‘convert’ clearly indicates the first steps in changing the volume and structure of her capitals. Christophe, and others, expressed similar opinions about the MEC:

I would really say at this point in time that, [for] teachers coming [...] out of the UK, doing the MEC course also put them in terms of the way they see it for the very first time and that culture shock of how much to be learned at the start.

(Christophe)

Even Semye, who had significant experience of being a teacher in India and had arrived in the UK as a Highly Skilled Migrant, commented ironically:

I came under highly skilled but I realise that doesn’t help, I need to learn again, I should be more highly skilled not [...] this highly skilled is not enough.

(Semye)

Semye’s ‘need to learn again’ emphasises her appreciation of the importance of restructuring her capitals, developed in India, in order to work as a teacher in the UK. Her determination to do so is attested by her decision to ‘to invest in myself’ by

financing her own place on the PGCE course in order to adapt her capitals. The challenges of adapting mathematical and pedagogical capitals at the start of the PGCE, and hence the possible benefits of the MEC, is best shown, as Christophe implies, by considering the differences that participants perceived between their own learning of mathematics and the practices in English schools.

5.3.2 DIFFERENCES IN LEARNING MATHEMATICS IN THE UK AND ABROAD

Statistics was identified as a topic that presented difficulties. Some recognised this as an opportunity to develop their own mathematical capital; as Pilvi put it, ‘statistics is so important in the modern world that it is vital it should be in the mathematics curriculum’. In contrast, Doina, despite having begun a Master’s in probability and statistics, found it difficult to adapt to the requirements of this part of the curriculum, particularly its emphasis on interpretation:

With statistics [...] I don’t see the big maths involved in it, apart from doing the Spearman’s correlation or whatever we’re doing, but not actually interpreting [...] I don’t see it as maths so much. I do it, but I’m not that [...] not uncomfortable, but I do the maths part of it but interpreting is a little bit different because, you know, you play with the numbers.

(Doina)

There is a contrast between Doina’s assumed hierarchy of ‘big maths’, referring to the calculation of statistical formulae, such as Spearman’s correlation, and her unwillingness to interpret data, which she describes as ‘play[ing] with the numbers’.

The formal structures of Euclidean geometry had been an important part of Osasune’s school mathematics, and, for her, the processes of adaptation were impeded by the pedagogies and the classroom mathematics presented in the PGCE course:

[the] conception of what teaching math should be like. And so many games and so many activities and so many [...] it’s like [...] Well and when are we going to teach math? I always thought, now we are going to get the understanding of [...] and I don’t know if I have really seen that actually.

(Osasune)

Osasune’s opinion was shared with that of an older man on her course who had

Chapter 5: Capitals and Resources for Teaching

attended UK schools as a child, which is an important indicator of the way in which the reservations of Doina and Osasune were part of a spectrum of opinion held by all student teachers on the PGCE course. Others, including Dieter, referred to the ‘lots of little differences’ that student teachers from outside the country did not share with their counterparts from the UK.

The little differences were reflected in mathematical symbolism and methods of calculation, which were part of the history of mathematics (Cajori, 1925) and the history of different jurisdictions. Imane, who had been educated in Algiers, in a system she described as ‘totally French’, was able to give a summary of little differences that typified that of many participants:

And also that mathematical aspect, for example for decimal numbers we will use a comma. And here in England they use dot. [...] In Algeria, we say two point two hundred and thirty-four, and which is wrong here. Because it doesn’t make sense, it has to be two point two three four. In Algeria it will be different. The division side, division it took me ages just to remember how to do the division. Because the dividend will be in [...] we do the French way actually, the dividend is in the left [...] and the divisor is in the, divisor is in the right-hand side. In English here it’s the opposite.

(Imane)

This excerpt shows how the algorithms for elementary calculations, repeated many times in various calculations, left powerful dispositions as part of the mathematical habitus, which were difficult to change. These micro, and hence easily ignored, practices and capitals became important in the context of the field of school mathematics, in the way in which participants taught, and could be recognised, in classrooms.

The participants, unless they were educated in English-speaking schools in India or parts of Africa, had also learned elementary mathematics in a language other than English. Giana, who had lived and worked as a marketing executive in the UK for 10 years, commented:

I cannot translate mental arithmetic [...] Even when I’m doing some exercises at

Chapter 5: Capitals and Resources for Teaching

the board, I've got to think of numbers in Italian and I work them out, and then I just translate the answer in English. That's what I do mentally.

(Giana)

Giana, a long-term resident of the UK, illustrates the durability of mathematical language practices and the way in which teachers might use them in mathematics lessons.

As well as the development of a mathematical habitus, the practices of schooling and organisation of classrooms 'regulate bodies, [and] produce and normalize movements and observable bodily practices' (Walshaw, 2010:118) for student teachers. Imane's recollection of her own classroom experiences was typical:

The teacher talk about and write the whole [...] it will be like [...] it's like 40 meters in length, you know, the board, and the teacher would be writing the whole lesson on the board or ask somebody actually to come to the board and write the whole lesson. And we'll be copying and then do few examples and go on the textbook and do the textbook. That was the lesson and that was the routine of the lesson from Year 1 to university. It has been always like that.

(Imane)

Whilst some, like Semye, recalled challenging the routine by asking the teacher questions, the themes of practice and textbooks were common reference points for many participants. Imane's phrase, 'It has been always like that', captures a sense of the unquestioned and timelessly routine nature of these practices. The superdiversity of the sample allowed for contrasts between very different jurisdictions, which suggested how widespread Imane's experience is. Dieter, from Germany, drew attention to similar practices in his comments about his mathematical education at a *Gymnasium* (an academic school in the German tripartite secondary system):

Obviously first of all when I was a pupil myself, student, we weren't taught in that way. Kind of no group work generally, no group work, and very much kind of like teacher led, lots of repetition and examples. [...] Just 'if you can do these, try the harder ones', and that sort of diet really. So in university kind of going on this course that was kind of my first experience to a different way of working.

(Dieter)

The examples and curriculum selections were evident in the mathematics textbooks that Semye, Doina and Pilvi made available. Semye's Indian and Doina's Romanian

Chapter 5: Capitals and Resources for Teaching

texts (see Appendices VII and VIII) address themselves exclusively to the practice of mathematical topics by way of mathematical examples and diagrams. In contrast, Pilvi's Finnish text (see Appendix VI) has illustrations and examples that also refer to the applications of mathematics. These range from finding a route on a map of Helsinki to the use of the achievements of Finnish ice hockey teams in the drawing of statistical diagrams. The format of the Finnish textbook is similar to that of English ones, and is designed to use examples drawn from everyday life. In contrast, the Indian and Romanian texts present mathematics in a formal manner, without illustration, and relevance is solely sought in terms of the form of mathematics required to pass examinations.

Recalled over time, and from within the discourses of the UK, memories of educational practices 'back home' could be an unreliable yardstick against which to compare experiences as London teachers. This was, in any event, complicated by different school systems and some participants, in particular those from outside Europe, had attended selective, fee-paying schools. Semye's comments about her recent experience as a teacher in a large Indian city bear out the difficulties of memory by challenging the stereotype of Indian pupils being well behaved: 'I was in a large metropolitan city, so I could not find much difference between the kids in here and there'. Her comments underline the importance of regular contact, through news, and with friends outside the UK, so that 'back home' remains a well-informed comparison with life in the London.

5.3.3 LANGUAGE LEARNING AND REPERTOIRES

The different migration trajectories of the participants led to different opportunities to use English, and the repertoires they developed positioned them differently at the start of the PGCE course.

Four of the sample had gained degrees from UK universities since their arrival in the

Chapter 5: Capitals and Resources for Teaching

UK. Both Gilles and Sofija had UK partners who had supported them during that period, whilst Kombe and Idman had both been young enough on arrival to join their peers at a UK university. As well as gaining the symbolic capital of a UK degree, this experience offered them opportunities to participate in university activities, and allowed them to develop repertoires in English, which were useful in the academic parts of the PGCE, such as essay writing and presentations.

Without support, others, who were already graduates, learned English both in the practices of everyday diversity (Wessendorf, 2011) and by finding work. Although they were overqualified for such work in the first instance (Demircan's first job was as a hamburger flipper), these jobs were easy to find. Subsequently, and as they developed communicative repertoires in English, they were able to find other employment. Sometimes this was in sectors where their own language capitals were important: Demircan worked for a Turkish educational charity and Semye worked as a receptionist in a solicitor's office with a large client base in London's Indian community. Others were able to deliberately plan a way forward with a view to improving their language skills: Doina chose to work on the front desk of a hotel where she would experience resolving conflict; Aharya, with specific reference to planning a career in teaching, had worked as an assistant in primary schools; and Dieter had worked as a management trainee in a supermarket chain.

These were embodied communicative repertoires and, in their everyday, convivial lives, the student teachers had been engaged in:

[M]oment[s] of 'identity rehearsal', shaping, developing and fine-tuning resources they can and must deploy in less relaxed contexts as well.

(Blommaert, 2012:12)

In this way, as well as developing language capitals and employment records that would be useful at interview, participants in this research began to accumulate styles

of dress and the embodied semiotics of glances and accent that would be important in classrooms. These activities and developments are reminiscent of the activities of the New Zealand students described by Conradson and Latham (2005b). The average age of 34 of the student teachers in this sample is indicative of the time required to respond to the challenges both of migration and of a new language, in a situation where they were not all, unlike Conradson and Latham's New Zealanders, able to have access to an existing network of well-connected compatriots. Nonetheless, they were able, in successfully applying to the PGCE, to make use of the opportunities that London offered as an 'escalator region' (Fielding, 1992:1), either to begin a career as a teacher or to achieve an ambition that had been interrupted by the processes of migration.

5.4 DEVELOPING CAPITALS AT UNIVERSITY DURING THE PGCE

5.4.1 PEDAGOGICAL CAPITAL

Most of the first part of the course was dedicated to maths pedagogy delivered in a workshop format. The content reflected the requirements of the National Curriculum and, by considering mathematical tasks in the various areas of the curriculum, focused on how pupils learn mathematics and on the assessment of that learning.

These workshops represented practices that were based upon the Anglophone tradition of mathematics education research. These could challenge previous experience, and some of the participants felt that other academic traditions were overlooked. For example, Tereza, who had grown up under the communist regime in Bulgaria and gained a degree there from the University of Sofia, argued for the acknowledgement of different mathematical practices:

Even the teacher was surprised [about a method of integration she introduced] and, because it was very quick, could not understand why I am doing it. I think that even the ways that are taught here are more difficult so we have to be open because it leads to better results.

(Tereza)

Chapter 5: Capitals and Resources for Teaching

Others accepted the new practices less problematically, as part of the process of adapting their capitals, although, without the experience of teaching in an English school, they found the pedagogies difficult to imagine as a resource for teaching:

We enjoyed it [the university sessions] but we all said that when we get into schools we will carry on teaching maths in the same old way.

(Demircan)

For many, particularly those migrating from the perceived periphery to a powerful centre (Blommaert, 2010), the discourse of modernity was important in legitimising the differences between their mathematical habitus and the practices of the course: ‘certain techniques, modern techniques, in terms of teaching modern things’ (Christophe). Many of the participants framed the use of ICT in mathematics classes within a discourse of modernity and opportunity. Pilvi, echoing Christophe’s excitement, described her surprise when she found that ‘in the classroom, I see the most advanced technology that I haven’t seen in Finland. That’s quite amazing’ (Pilvi). This excitement was not universally shared. Many trainees had learned mathematics with little use of calculators, or came from jurisdictions that did not have the educational budgets or infrastructure to support complex ICT equipment. For example, Doina, with a degree of ironic humour, claimed she had learned how to use a calculator on the MEC.

The pedagogy of workshops itself was not unproblematic and could cause problems for participants. Pilvi, who had spent relatively little time in the UK before starting the course, described how in the first two weeks she experienced difficulty in both understanding and participating in the linguistic demands of this way of learning. For Kombe, used to formal academic lectures, the collaborative learning with peers that was a feature of the workshops was entirely new and he initially assumed that he was just having time off from learning. Both Kombe and Pilvi remained on the course despite these initial difficulties, making use both of strategies recommended by the university, to develop specific areas of their relevant capitals, and the support of

various aspects of other social networks.

5.4.2 SPEAKING AS A TEACHER

During the workshops, I drew directly upon my own experience as a schoolteacher to highlight a number of routines and expectations, related to attendance and punctuality for example, and to evaluate aspects of such performances. For example, by discussing voice projection, I was able to draw attention to the role played by the body in classroom communication. This was recalled by Idman:

Actually, the first couple of weeks when you came in and you actually act as a teacher, said, 'John, you're late', 'Sofia, turn off your phone'. And actually, sort of doing the role-play of how a teacher should be. I've picked up a lot from there. So in that term, you've actually, you've prepared us what to say, how to act if the child comes in late, if the child has a phone, and a load of other behaviours.

(Idman)

This use of occupational scripts (Puwar, 2004) concerning the management of institutional policies developed confidence that the university course was addressing behaviour management, and modelled the manner in which these policies might be implemented. The way in which certain phrases are delivered by teachers is not new for anyone who has attended UK schools. For those without this experience, this was, as Idman noted, a valuable first step in developing a repertoire, and occupational scripts much rehearsed by other teachers, in the performance of which student teachers were able to accumulate authority.

Student teachers made short presentations to a variety of audiences throughout their time at the university, on which they received feedback from their peers and were asked to give feedback themselves. This cycle of preparation, performance and feedback was at the centre of developing practices of reflection and evaluation, and was designed to help student teachers to adapt their capitals. It also provided an opportunity to draw attention to different parts of the performance, as mentors might do in the schools, and once again constituted a valuable precursor to the experience of

school placement:

I'm a very shy person, even when I was doing talks in the mosque but, you know, actually standing in front of everybody and do a presentation: that was really good. It helped me a lot at school. You know the presentation I did with you about the balancing equation?

(Imane)

Here we see how presentations not only prepared student teachers for the future work of being a teacher but, for Imane, linked in with her past experience. They extended her communicative repertoire, not least by enabling her to address mixed groups of men and women, which mirrored the boys and girls she would be likely to teach at some stage during her placements.

5.4.2 DEVELOPING A WRITTEN REPERTOIRE: PROJECTS AND EVALUATIONS

Writing was used in a number of different genres during the course. Emails were the main means of communication in which I modelled, and required student teachers to use, the register of professional communication. Further to this were a range of assessed assignments that used the register of academic writing.

Like other linguistic capitals, each participant's written repertoire reflected their trajectory and, for those with a mathematical or scientific background, the act of writing itself, quite aside from doing it in another language, was one with which they were, often, relatively unfamiliar. Sofija's degree at a UK university in a numerate discipline had, however, required a considerable amount of academic writing, and meant that writing a 4,000-word project was, to her, a familiar task. Writing was important during Pilvi's course at a Finnish university, but she emphasised the challenge of the amount of writing in a second language:

I have never done so much writing in English. I think, these are the longest things that I've written in English.

(Pilvi)

Chapter 5: Capitals and Resources for Teaching

The challenge of length aside, the capitals required for producing such writing are different from those required for speech (Bourdieu, 1994), and one of the distinguishing features of writing is the use syntax and grammar:

The recognition of this invisible, silent violence [...] is never more manifest than in all the corrections [...] to which dominated speakers, as they strive desperately for correctness, consciously or unconsciously subject the stigmatized aspects of their pronunciation, their diction, and their syntax

(Bourdieu, 1994:52)

Echoing Bourdieu, Imane explained the effects of stigmatisation: ‘I had actually phobia of writing in English’. The practice of correction and redrafting (English and Marr, 2015), as well as improving their written English, allowed some participants to develop coping strategies for what was an important assessed element of the course. Some drew upon their knowledge of their whole language repertoire to contextualise the difficulties they experienced in writing their assignments:

I don’t care if I can’t make the best Master’s in writing. [...] because I have really nice ideas and if I could write it in Finnish it would be Master’s level. But then, in English, I am not trying to be at Master’s level.

(Pilvi)

Pilvi demonstrated how a clear comparative understanding of repertoire in Finnish and English authorises her underperformance in writing in English. She showed how the judgement of ‘enoughness’ (Blommaert and Varis, 2011:5), as a satisfactory coping strategy, helped her emotionally as well as to satisfy the course requirements.

Appealing to the authority of polycentricity was not always enabling, as Aharya, who had attended an English-speaking school and had completed her degree studies in India, found:

[I] didn’t know how to do it and I didn’t know how to reference and do it, but once you gave me the clue in the session, university session, then I got it from there then I thought ‘Okay, this is how you have to write it’ so after that I could do it.

(Aharya)

The university session Aharya referred to was organised by me, as the course tutor, in order to give particular support to those who had been unsuccessful in the first submission of a written project. That Aharya was successful in her second submission

indicates the importance of specific guidance on academic writing and university submissions.

This section has discussed the difficulties some participants experienced in accumulating the various capitals upon which they could draw in their professional performances and also the coping strategies they used. Another source of coping strategies was their social capital (Bourdieu, 1997), represented by their local and transnational networks.

5.5. THE USE-VALUE OF SOCIAL CAPITAL

In order to be accepted for the PGCE course, participants had already adapted their capitals. The sense of well-being and pride gained from being a member of the PGCE course was a resource that had ‘use-value’ (Skeggs, 2004:11) throughout the university course, but it could not be exchanged like the professional capitals they had begun to accumulate during the course itself. In the context of migration, use-value throws particular light on the translocal and transnational lives of the participants as well as on the significance of the social capital to which they had access through local networks in London.

5.5.1 WELL-BEING AND ACHIEVEMENT

Christophe exemplified the complexities of translocal networks when he spoke of his uncle having on his wall a photo:

of me with a very good coat, [...] the way I’m dressed now, with the school in the background and this picture of me is in the sitting room of my uncle in Africa, and when his friends come to visit he says ‘That is his child and he is working in the school there in London’.

(Christophe)

Taking pride of place in the sitting room, the photo expresses pleasure in personal achievement, in the same way as a parent might, but it simultaneously refers to the

Chapter 5: Capitals and Resources for Teaching

importance of London as a centre, as opposed to the periphery represented by the Cameroons, not only for Christophe, who stands proudly in the photo, but also for his uncle, who shows it to his friends. Christophe emphasised, through a moment's hesitation and his deliberate, emphatic use of the word 'London', the significance of this achievement. His English-speaking parents in Southern Cameroons had joined fierce protests against French becoming the national language upon independence in the 1960s and had faced discrimination because of this. The photo, therefore, represented success in, and the ongoing symbolic power of, the former imperial centre, for both Christophe and his family. Showing him dressed in 'a very good coat', in front of the school where he was employed, this picture symbolised achievement for both Christophe and his uncle. Personal pride and symbolism also inflected Aharya and Imane's recognition of themselves as 'London teachers now', when they visited India and Algeria respectively.

Some EU migrants emphasised how being a teacher in London allowed them to earn more, financially, from the educational capital represented by their degrees. Ivona, from Romania, noted that her sister, who was a teacher of mathematics in that country, had to regularly supplement her income by giving private tutorials. Others valued the opportunities available in the UK in contrast to in their own countries. Giana, for example, who described herself as coming from a working-class family and who had married an English man, said that in Italy:

[I]t is more difficult to achieve because you need to have connections, you know what I mean?

(Giana)

This sense of well-being associated with, and generated by, living in the UK, was comparable to the pride of being a London teacher experienced by Christophe, Imane and Aharya. For the participants, the use-value of being, or becoming, a teacher was important during the ups and downs of the course itself, when they were also able to access the resources of their other transnational and local social networks.

5.5.2 MOBILISING RESOURCES: TRANSLOCAL AND TRANSNATIONAL NETWORKS

The participants in the study were variously affected by the policies and infrastructure of the different jurisdictions where they might have resources or obligations. For those from outside Europe, this might mean visa restrictions in terms of travel, and for those inside Europe, although free movement was possible, travel might entail arduous journeys. In contrast to this, recent changes in:

One-to-one communications such as the telegraph, fax, telephone, mobile phone, as well as many-to-many communications effected through networked and increasingly embedded computers

(Sheller and Urry, 2006:212)

have resulted in easy direct access to friends and relatives outside the UK, and this became increasingly the case with the advent of the smartphone during the period of the research. The opportunity to be in easy contact with others offers a different level of communication, emphasised by the use of the term ‘translocal’ (Brickell and Datta, 2011). This section discusses the ways in which the participants made use of these networks and, in turn, were affected by them.

The evolving effect of digital technologies on communication was described by Aharya when she recalled the changes in her use of Skype over a 10-year period:

I would say [more] expensive than what it is now, so. That time I used to call about weekly once, when I was there with my sister I used to call weekly once to India. But now it has become very cheap so I just call every [...] every day.

(Aharya)

Aharya’s phrase, ‘I just call every day’, betrays the normalisation of transnational communication through its almost casual use, making it very easy to mobilise family resources. These contacts had a gendered significance for women in the sample, who were able to accrue emotional capital (Reay, 2004) in the context of the family. Ivona reported how her mother had been closely involved in talking about after the care of her young daughter, in a way that paralleled the conversations she might have had if

Chapter 5: Capitals and Resources for Teaching

she had been in her home town, where she had always planned to stay. As Ivona's children grew up, she spoke of how happy she was when they were able to speak to her parents in Romanian, despite her decision that English would be the main family language, because of her own struggles with learning English.

In the period of the research, the advent of the smartphone meant that one-to-one multimodal communication, including simultaneous sound and vision, became possible:

We had a maths problem that nobody could solve today. By the end of the session Ema had received a solution from her friend in Bratislava. Ema had photographed the problem and sent it as an attachment to her friend.

(Alan Benson Field Notes)

This note is included as an example of how smartphones transformed the use of networks outside the UK, and is a very good example of how these resources are shared translocally. This type of immediate communication was in its infancy at the time of the research project, but it had the potential to continue and to intensify the kind of changes that Aharya described in the case of Skype.

Despite the growing importance of translocal communication, the boundaries of national jurisdictions impinged upon migrants' plans and their access to resources. Although trainees travelled to meet relatives during the holidays, and occasionally for family emergencies, there were various aspects of what Massey (2012) referred to as power geometries, which differentially affected the ability of individuals to travel with ease. This challenges the metaphor of fluidity that is sometimes associated with discourses of globalisation and reminds us of the way in which structures, for example those of airline timetables, might make emergency journeys arduous. Furthermore, inequalities of wealth amongst participants, and difficulties associated with satisfying the requirements of national border regimes, made it difficult, although not impossible, to mobilise resources, as Aharya made clear:

My mum and dad are well off so they're not bothered, and the second thing is they would do anything for their daughter [...] So that's why even if I call my

mum, 'Mum I'm suffering' she will be here any time.

(Aharya)

Although the use-value (Skeggs, 2004) of the arrival of parents is clear in Aharya's case, parents being present could also mean the provision of child care, which provided opportunities, particularly for women, to engage in the PGCE course.

Some opportunities and resources were available only within the borders of national jurisdictions, and this led to return migration for some participants. Having worked as a teacher in London for three years after his PGCE, Dieter decided to return to Germany in time to qualify for being a teacher there under the national regulations concerning the hiring of teachers, which brought with it significant financial benefits. Pilvi's plans to teach in London were disrupted when her partner found it impossible to gain a medical research grant, and they decided to stay in Finland where he worked as a hospital doctor. These are examples of the way in which migration plans may change and they indicate the possibilities for further research on teachers from outside the UK during their teaching careers.

5.5.3 MOBILISING RESOURCES: LOCAL NETWORKS

The participants were members of a variety of different networks in London, through which they could access resources that had use-value during the PGCE course. Here I make a distinction between community networks and family ones.

For those who had come to London with family responsibilities and from countries without traditional ties with the UK, community resources in the first instance were not substantial. Friends or relatives, who themselves had come to London as employees of international companies, or for personal reasons, might have been able to provide accommodation. Acquaintances could also, during the course, provide opportunities to compare and discuss experiences of migration and of working in the

Chapter 5: Capitals and Resources for Teaching

UK, as Pilvi, who met each week with employees of the Finnish company Nokia, described:

We've been sharing really similar problems. She told about her first year in Nokia. She told about how she felt and how I was feeling in my first year. It's something really similar.

(Pilvi)

Pilvi's repetition of the phrase 'first year' emphasises that the difficulties were in this period. Being able to share stories of migration (for example, the difficulties of finding a flat and the practice of being required to produce documents such as bank statements for proof of address, which she had never had to do in Finland), enabled her to discover that she was not isolated, despite working in a different sector from those she was talking to.

Other young people, who had travelled alone to London, often, in the first instance, to learn English, were able to share their stories amongst networks that were made up of international acquaintances or friends originally from the same country, as opposed to English friends. Although this was useful in the early stages, in terms of adapting capitals, it could restrict opportunities, and some found their own ways to manage this boundary. Doina became aware of the possibility of becoming a teacher on a one-year PGCE course (a system of teacher training that is quite different from the processes of selection in Romania) through a chance encounter with a UK citizen who became her mentor. Such support was the first step in helping Doina to use her educational qualifications and capital to move from employment in the service sector to employment as a teacher in the UK.

Demircan experienced a similar move after working for five years in a Turkish educational charity, and he explained his pleasure on joining the PGCE:

Finally I live in London. I interacted more and more English people [...] it doesn't have to be English obviously. From Cameroon [...] for example from other backgrounds, from other countries as well as English or Scottish people. There's more than that, obviously is enjoyable in that way.

(Demircan)

Chapter 5: Capitals and Resources for Teaching

His use of the word ‘finally’ indicates the length of time it can take migrants to rearrange the volume of their resources, and exchange them into capitals, in order to satisfy the entrance criteria of the PGCE course. Furthermore, it suggests a sense of achievement and pleasure regarding how Demircan gained access to the superdiversity of London through both fellow students and teachers he met in London schools.

5.5.4 MOBILISING RESOURCES: FAMILY NETWORKS

I conducted one interview with Demircan in his home, and I was asked, following the Turkish custom, to take my shoes off upon entering the apartment, which he shared with his wife who was from Istanbul. This marked a borderline between a public space and a private space, better considered in terms of the ‘interaction membrane’, through which Goffman (1972) emphasised the way in which boundaries are maintained by power and how, being porous, they allow for different mixes of practices at different times. For example, Demircan told me of his feelings of unease about the forthcoming arrival of his Turkish parents-in-law, who would bring with them values and expectations which might be at odds with the way his own London family life with their daughter was evolving.

The porous nature of these boundaries is best seen in how languages were used in families. Even for those who were recently arrived in the UK, like Pilvi, English was used in their conversations at home:

Sometimes, when I have to explain what happened during the day to my partner, it’s difficult to do it in Finnish because I have to translate. So then I pick some words in English because something happened in English and the word exists only in English. So, in partly, the working vocabulary exists in English then in home, we have different stuff to talk in Finnish.

(Pilvi)

Pilvi’s use of English repertoires to discuss her working life clearly indicates how her use of language became increasingly heteroglossic, even in a situation in which she

Chapter 5: Capitals and Resources for Teaching

was alone with her Finnish partner.

The practices of heteroglossia can be more pronounced, and complex, in families in which migration trajectories, immigration statuses, and ages are diverse and affect the use-value of the resources available in family networks. In larger families, these complications might be increased depending on the age of the interlocutors: Idman reported how her younger siblings who attended London schools offered advice about the language she should use as a teacher, and the language pupils might use about her. The roles of parent and partner could conflict with the demands of being a PGCE student but, sometimes, they were a resource. Dieter was clear about the difficulties of combining the different roles of father and PGCE student:

The NQT year and also the PGCE year they were quite [...] there was a lot of work involved [...] and yeah I was less of a father then [...] and my wife currently she had to like [...] she had to fill the gaps, kind of like jump in with child care much more than I did. Yes and juggling the two things is very difficult I find, it's very [...] to be proper parent and a proper teacher is not [...] it's very difficult I still feel.

(Dieter)

This demonstrates how Dieter had less time for family activities during the PGCE year, and his use of the phrase 'less of a father' indicates that this was a personal compromise, even though the distribution of capitals within his family meant that his wife, who was an undergraduate student, was able and willing to spend more time looking after their children. In Pilvi's case, her partner took on the role of carer for her child. She laughed when she recounted how he had been invited to join the parent-teacher association at the local school where he made social networks amongst other parents. Further to this, in the face of Pilvi's 'feeling of almost constant failure' throughout her PGCE year, he offered her 'total support' at difficult moments, which emphasises Anthias' (2007) comments about the use-value of confidence building. Both these performances were those of middle-class family groups, who were conscious of challenging, more or less successfully, what they regarded as the traditional family division of labour. In other families, the division of labour was

Chapter 5: Capitals and Resources for Teaching

different, and the student teacher had to be assertive in order to be able to pursue the PGCE.

Semye joined her husband in England from Chennai on the Highly Skilled Migrant Programme, and decided to finance herself on the PGCE course, after failing to find a teaching job as she had anticipated. Her husband complained:

No you're not looking after us, when you was in India [...] you went to job as well. Apart from this job, that job, you did all the work and you look after us. But here you didn't do anything, you are just going to school and you do some quick foods and that's it. And I said 'You know what, I'm not in India, I'm in England, you know, I need to cope up. I can't just [...] you know, like I'm working so I'm getting money and that's [...] that's for our living, so I need to be honest with them and I need to basically it is not kind of honest, if I want to compete if I want to stand up and face the kids I need to be really confident and I need to spend my more time so that I can, you know [...] so I accept it, I'm kind of ignoring my family. Not ignoring, couldn't able to spend more time with my family, but it is a starting stage.

(Semye)

In this excerpt, Semye is positioned in her family sphere by discourses and gendered expectations from India. Unlike Pilvi and Dieter, the structure of the field of the family was not changed by her employment as a teacher after finishing the PGCE, and as a result, with qualification, Semye accepted that she was 'kind of ignoring' her family. The qualification 'kind of' expressed her unease with this positioning, and the way in which UK gender discourses were imported through the membrane of the family. Semye was unable to count on the support of her husband, who did not appreciate that the performance of the job of teacher, as opposed to the title of the job itself, was any different as a result of Semye coming to London. By way of contrast, in family networks where partners were from the UK, participants had access to advice that could have direct relevance to situations in which they found themselves during the PGCE course.

When she arrived to live with her partner in London, after having left a well-paid job in Bulgaria, Sofija's English partner helped her through what seemed to be a labyrinth of administrative procedures to find courses, which eventually resulted in her gaining a first-class degree from a UK university. Furthermore, as a teacher, he was, through

Chapter 5: Capitals and Resources for Teaching

discussion and reflection, able to add to her volume of professional capitals. Although not a teacher, Aharya's husband told her, when she arrived in London, to write down and discuss with him any difficulties she experienced. This practice enabled her to manage the tensions and difficulties associated with the shock of living in a new country (Bron, 1999). On this basis, when Aharya joined the PGCE, her husband was able to give advice on how to address possible challenges, by drawing on his own experience as a local government employee, as the following quote illustrates:

If you've got any [...] if you think there's a racist issue just discuss with your immediate line manager or [...] so just as I said, just be open and discuss with them, don't be rude or don't [...] don't come to conclusion. Just tell them and ask them to think about it rather than you coming in and concluding things. That's what [...] that's a valid thing he told me, he said 'talk things to people, don't keep everything within yourself'.

(Aharya)

As a result, Aharya had the strength to successfully challenge a school placement on the outskirts of London, because she felt uncomfortable about the potential for racially motivated violence when travelling to and from school.

This section has shown the importance of the family field in terms of providing resources, and sometimes capitals, that the participants were able to exchange in the course of their PGCE. The notion of an interaction membrane between the family and the world of the PGCE training has been useful in showing how power can maintain translocal practices or how the practices of families can change to make resources 'mobilisable' (Anthias, 2007:789) in support of the PGCE training of participants in this study.

5.6 CONCLUSION

This chapter has shown the important role that social networks and families play during the PGCE year. The many resources that the student teachers find in these

Chapter 5: Capitals and Resources for Teaching

networks sustain them during the course and enable them to complete it. This has extended the analysis of adaptation of habitus and field to include the use of Skeggs' (2004) concept of use-value resources, which includes both the development of confidence and other practical support in terms of advice and domestic organisation.

Whilst local London networks are important in this process, the chapter has also acknowledged the way in which digital technology and international transport links are important in the development, and maintenance, of extended international networks. Relative ease of travel to London means that relatives can arrive in person to provide help when needed. Digital communication, represented by the end of the research period by smartphones, provided the possibility of an intensification of communication both within London and abroad. It enabled connections with regions of countries, and home towns, and this study has used the phrase translocal (Brickell and Datta, 2011) to emphasise the scale and importance of such communication and to contrast it with the scale of transnational. Student teachers have, as a result, a wider social network with which to engage, and from which to derive use-value, during the PGCE.

National policies affect all highly qualified migrants who wish to train as teachers. They provide a framework for migration decisions to remain in the UK and for some, as this study has shown, to return to other countries. Some participants were initially surprised by the requirements of teacher training in England and Wales and their own eligibility for the PGCE. The comparability of their degree qualifications, confirmed through the process of UK NARIC validation, was an important part of this eligibility, and the potential difficulties of this process indicate possibilities for further research. Furthermore, government bursaries are available for the PGCE in mathematics if individuals are adjudged to be home students. This chapter has shown how

Chapter 5: Capitals and Resources for Teaching

information about national teacher training and the PGCE may be difficult for migrants to obtain without the help of social networks. As well as the need to develop other national capitals for admission to the PGCE, including work experience and communicative repertoires in English, this explains the relatively high average age of the group of student teachers (see Table 2) in this study.

National educational policies and histories also result in general and particular differences in the school mathematics curricula. This chapter has shown how many highly qualified graduates found the MEC, and the initial university sessions of the PGCE, useful in helping them to start the development of professional capitals before beginning their school placements, which are addressed in the next chapter.

Chapter 6: Learning to be a Teacher of Mathematics

6.1 INTRODUCTION

In classrooms, student teachers were responsible for the learning of mathematics and for ensuring that this was conducted in a manner deemed appropriate in the context of school and university practices. This chapter discusses how teachers achieve this by using the concept of voice: ‘the ways in which people manage to make themselves understood’ (Blommaert, 2005:68). The pedagogical capitals they have developed at the university are sources of epistemic authority, defined as ‘expertise plus credibility’ (Langton, 2015). By the same token, the authority delegated to them by the placement school, by which a teacher can permit, or require, actions, is a source of practical authority (Langton, 2015) in the mathematics classrooms. Both practical authority and epistemic authority are important features of the student teachers’ voice, and this chapter traces the strategies they use to accumulate authority, by making their speech more authoritative: ‘more persuasive, more convincing, and more attended to’ (Philips, 2004:475).

6.2 CLASSROOM ENCOUNTERS

6.2.1 OBSERVING OTHER TEACHERS

At the start of their placements, all trainees completed a document prepared by the university, called ‘Building a School Profile’. This gave them the opportunity to collect data about the school, observe lessons in mathematics and other subjects, and interview key members of staff, for example those responsible for special needs (children with learning difficulties). These activities structured the initial period in school and provided an insight into school routines, such as how different staff, in mathematics and other subjects, acted in classrooms and during the other duties they performed. This engagement with the field gave the student teachers an opportunity to compare and evaluate the structure of their own pedagogical and other professional

Chapter 6: Learning to be a Teacher of Mathematics

capitals, developed during the university course, as well as the dispositions of their own habitus, of which they might not have been aware during the university training.

6.2.2 FIRST EXPERIENCES OF SCHOOL CLASSROOMS

The impact of initial impressions was significant. Demircan drew attention to the classroom setting in which he was educated:

Again, in contrast to English schools, actually, English classrooms, so it was just, let's say, white, mostly white painted classrooms with no posters and no colourful things in the classroom. [...] It was a kind of depressive classroom or let's say, to study there and because, as I said, not colourful at all. And the whole system is the teacher, I mean, in the middle of the circle there's a teacher and the surrounding area was for students. So we have always listened to the teacher and there was no creative things, activities at all in my experience.

(Demircan)

Here it is possible to see how the material configurations and organisation of the classroom reflect discourses of education and teacher authority that reinforce the power of the teacher to teach and of the pupils to listen. In comparison with the sense of colour and pupil activity he found in London classrooms, Demircan describes as 'depressive' his memory of schools in Turkey. Pilvi, from Finland, a smaller and richer country than Turkey, expressed both bemusement and surprise that:

[M]y keys for the classroom, it's like ancient keys and it looks like Britain is really not an advanced country. But then in the classroom I see the most advanced technology that I haven't seen in Finland. That's quite amazing.

(Pilvi)

This remark demonstrates well the confusion of impressions as they happened, in quick succession, and again the importance of material comparison with other countries, which resulted in very different impressions, at both an individual level, and amongst all the student teachers in this sample. They were able to reflect upon these positionings both privately in writing their 'Building a School Profile' document and during university sessions. In contrast, engagement with the routine practices of the school presented more public difficulties.

Movement about the school immediately required a specialised vocabulary, which

Chapter 6: Learning to be a Teacher of Mathematics

confused Gilles who, like Giana, had lived in the UK for more than five years:

For example stupid things like what's a period? What's an assembly? What's a form class [...] I was embarrassed. I felt everyone knows it and I should know it. They are not used to these sorts of questions.

(Gilles)

Gilles' embarrassment goes beyond a sense of finding out information for his 'Building a School Profile' to suggest a fear of infantilisation, which 'involves [...] being imagined as much more junior, in rank terms, than they actually are' (Puwar, 2004:60). He also pointed to his surprise at the forms of polite address amongst staff:

The ways teachers speak to each other. They say Miss and Sir [...] they were things I did not really know before

(Gilles)

These normalised practices of polite address, which, implicitly, supported the hierarchy of the school, made clear to Gilles how he would have to adapt. He felt himself lucky to be able to hide his unexpected lack of knowledge by consulting a fellow student teacher he already knew from the university who was also in the maths department. Such private dilemmas were also faced by others:

[I am] as, you know, a Muslim woman, I'm not allowed to touch boys when they are like in their puberty and things. [...] At the beginning, it was like, 'Oh can I separate them? Can I do that?' and, I was holding back because normally, I'm not allowed to touch [...] you know, but in a certain point, I have to do it. That's the way.

(Imane)

Although her acknowledgement, 'that's the way', points to the power of the doxa of a school, Imane, like Gilles, was able to reach this decision after private discussion, in her case with Muslim colleagues on the school staff. Both these cases illustrate the experience of difference, and the necessity of adaptation from the very start of the school placement. Despite the fact that 'the university had done all it could to prepare us' (Gilles), this illustrates the possibilities of isolation and insecurity, amidst the many different migration trajectories and biographies typical of superdiversity, even if, like Gilles, a student teacher has been resident in the UK for a number of years.

Through observing different classes, the student teachers became aware of aspects of the classroom setting that they were able to compare with both their own experience

Chapter 6: Learning to be a Teacher of Mathematics

and the discourse of the university:

Each classroom operates with an established set of rules of formation, through a network of material and embodied relations that invest the individual with certain aptitudes and predispositions

(Walshaw, 2010:120)

Many, including Imane and Osasune, described the rows of desks of their youth, which organised the space so as to emphasise the preferred power relations between teacher and pupils, and the possible interactions between them:

When I was six years old up to 18, when you get into the classroom, it's the same way of sitting. It means the tables in twos will be facing the board and that's it. It has been always like that. And actually when I started it was amazing, the way the classroom was set.

(Imane)

Here the use of the word 'always' hints at the unchanging normalised routines that had built up the dispositions of Imane's pedagogical habitus, and her use of 'amazing' acknowledges the potential difficulties and opportunities in her placement school. Christophe also experienced such issues, not in terms of challenges but as opportunities presented by becoming a teacher in London:

We saw maths teachers then as instructors, as people who had to put up [...] you doing the right thing, but here I finally realised I had to create an environment where the children could develop their thinking, not only in maths, but mental thinking, how to become like smart. There were other issues involved in the maths lesson.

(Christophe)

These observations provided not only an opportunity to begin the process of discursive repositioning, but also evidence of different practices, of ways to 'bring off' (MacLure, 2003:55) being a teacher. In contrast to the length of time taken to adapt some dispositions of the habitus, which Christophe alluded to by his use of the phrase 'finally realised', dress offered an important and relatively easy way for trainees to begin to adapt their embodied performance.

All migrants from Western Europe had similar dress codes to those in London, although some men had to adapt to the particular expectations of shirt and tie:

Chapter 6: Learning to be a Teacher of Mathematics

It felt more authoritative, more strong, that you have a tie. It felt good. But it felt strange. But it did feel strange in the morning to get dressed.

(Gilles)

Although these practices of dress varied from school to school, Gilles' reference to feeling authoritative underlines their importance. For those from outside Europe, and especially for women, a change in dress sometimes required more significant change as a result of the anticipated requirements of a school. For Semye, who changed her appearance by cutting her hair and buying new clothes, this was part of repositioning herself in terms of the normalising discourses, a process she saw as 'fitting in':

I can change my dress and hair care. I tried all sorts of things to get along with the kids, so that the kids can, you know, recognise me and they can approve me as their teacher so that they will come and approach as well.

(Semye)

The difficulties of this process could be complicated by memories of practices and the powerful dispositions of the habitus, as was shown clearly in discussions about managing the behaviour of pupils. Demircan experienced a considerable mismatch between the disciplinary habitus he had developed and the one he found in London schools:

I was very surprised. The disciplines are very big, massive issue in the UK schools. Maybe, it's not right to generalise the thing. Maybe some other schools outside London do not have the same problems, but the schools that I have been to inside London, one in south east London and one in north London [...] I had the same or similar actual problems inside the disciplines of massive issues. So, you can't [...] I was very struggling at the beginning to control the class.

(Demircan)

Early experience of schooling was often durable. For example, Giana commented that:

[I]t felt to me like the teachers haven't got really many tools to enforce the discipline apart from detention, sending someone out of the door, or making note on their planner, there's really not enough they can do.

(Giana)

Although Giana referred to her experience in Italy, particularly to what she perceived as the powerful practice of '*rebagiato*', of keeping pupils behind a year if they do not make satisfactory progress, it is interesting to note how this fits with discourses of poor behaviour amongst English pupils, and this enabled her to reposition herself more

Chapter 6: Learning to be a Teacher of Mathematics

easily in the context of being a teacher in the UK.

Although they shared some concerns with those who had always been resident in the UK, student teachers in this sample faced particular challenges related to the discourses and educational traditions, and their knowledge of the routines and doxa of UK schools. The responses of individuals, and the way in which they began to adapt their resources, were varied, and the possible demands were forcefully expressed by Christophe:

My learn to unlearn in particular was to do with how I learned mathematics. I had to like forget or put away the way mathematics was taught to me, how I learned to become a mathematician, how I learned what I did learn, and learn a new way [...] a new modern way of how to teach children.

(Christophe)

Christophe's expression represents the particular power of dispositions sedimented in Africa, and the difference he noted in English schools. This experience was one that was, to a greater or lesser extent, shared by many as they entered mathematics classrooms for the first time as a teacher, equipped with the new pedagogical capitals they had acquired at the university. Whether or not they were able to discuss this with colleagues, or immediately adapt their own resources and capitals, the period of observation that the 'Building a School Profile' offered was important for the student teachers as a starting point for their subsequent improvisations as a teacher:

Actually I had to observe the teachers in action, that's what I had to do. To observe and take like the things that will work with them and try to implement them in my classroom.

(Idman)

The completion of 'Building a School Profile' was important for all student teachers but this study has shown how student teachers of migrant heritage felt powerless and isolated (even if like Gilles they had lived in England for 10 years) in the face of the small detail of the normalised practices of UK schools. The interaction of their mathematical habitus was another dimension of this process.

6.2.3 COMPARISON WITH THEIR OWN MATHEMATICAL HABITUS AND EDUCATIONAL RESOURCES

Among older migrants who had lived in the UK for some time, there was an awareness that their memories of their own education were bound to be different from the current practices in the UK, as Osasune explained:

Well, it was 30 [...] well, 25 years ago. Our tradition has changed a lot and I know it has. But 25 years ago, the teacher would come, explain to us in two rows. They would put 20 in two rows on the board with the chalk, and we would sit down and quickly do as many as we could and after we check. That's the traditional way of doing really.

(Osasune)

Osasune acknowledges here that the differences she has observed in the UK are differences she might expect to see in Spain, and which her family in Spain has told her about. This, combined with her experience of living and working in the UK, prepared her for these differences. Her knowledge of changes in Spain enabled her to contextualise the differences and position herself in such a way that the experiences did not impact upon her any more than they would on anyone of a similar age on the course.

Other respondents, who were younger, or had been in the country for less time, commented only on the differences compared with their own education, which were particularly pronounced if this education had been in countries that were either poorer than the UK or struggling to implement post-colonial national educational policies. Imane, for example, remembered the difficulties Algeria had experienced in developing a teaching force. Also from Africa, and with experience of colonialism, Christophe expressed his pleasure in being on the PGCE, in order to 'learn a new way [...] a new modern way of how to teach children.' (Christophe). Here, the discourse of modernity privileges the practice of the centre, in a way that maintains the same centre as the colonial period, and which Bonnett (2005) identified as a strategy for the durability of whiteness established in that era. Semye, having been a head of

Chapter 6: Learning to be a Teacher of Mathematics

mathematics in a school in Chennai, was able to be more specific: ‘I was there for 13 years; I was teaching for 13 years, I didn’t know the word dyslexic’. Semye’s comment gives specific insight into the way in which different national policy assemblages and priorities affect how experienced teachers understand and perform their roles. Her observations during her placements helped Semye to reflect on her own professional capitals and hence be able to specifically identify, and develop, UK practices for dyslexic pupils that she had not previously used.

6.3 DOING MATHEMATICS IN THE CLASSROOM

Doing mathematics in the classroom engaged student teachers in a complex performance, which involved both their mathematics habitus and their recently acquired pedagogical capitals from the university course. This section discusses how they used mathematical visualisations to develop a multimodal communicative repertoire, and the difficulties that arose as their own mathematical habitus engaged with the practices of teaching and learning in English classrooms.

6.3.1 DOING MATHEMATICS IN SCHOOLS: FIRST LESSONS

Before teaching, all student teachers are required to make plans, using university documentation, that refer to mathematics learning and pedagogical strategies such as differentiation and formative assessment. The match between university pedagogic discourses of learning and their own experience could be an initial source of confusion because:

[t]he way was taught was like the teacher will introduce the lesson and try to get some [...] it will be question-answer actually but it’s completely different. I found it difficult to do actually. I had a very good mentor who was a Brazilian. And I used to talk to him what do you need, what do you want me to do? Because I really didn’t know what I have to do in the lesson. How do I have to tackle it?

(Imane)

In this quote, there is a clear sense of the emotional anxiety that Imane felt in

anticipation of being a class teacher, which many experienced as they prepared their first classes.

As well as the pedagogical challenges, these early lessons made student teachers aware of the specific challenges of speaking when teaching mathematics. They could be quickly challenged by local synonyms for mathematical operations, or by the difficulties associated with the translation of word problems into numerical form:

I found out they did not know what addition is, what a subtraction is, what multiplication is, because people, or most of the teachers, communicate saying 'Do 'take away' rather than saying 'subtraction'. Because I was taught in the traditional way of saying 'subtraction, addition, multiplication' take away and all that, it's new to me. So that's the reason I asked you, do you have to use proper maths language or just colloquial language.

(Aharya)

This juxtaposition of 'traditional' and 'proper' is a reminder of the hierarchy of mathematics registers (Chapman, 1993), and shows how Aharya's own mathematical vocabulary, learned at an elite English-speaking school in Chennai, positions her with respect to her pupils. She recognises that developing knowledge of local vocabulary of mathematical registers, as opposed to the symbolically powerful generalised register of mathematics, is an important part of developing a communicative repertoire for teaching the subject. ICT was important in expanding this repertoire, and also gave the student teachers an opportunity to develop, or demonstrate, their epistemic authority.

6.3.2 DOING MATHEMATICS IN SCHOOLS: USING INTERACTIVE WHITEBOARDS

Interactive whiteboards (IWBs) were used on the first full day at the university, to present a number of mathematics activities. Although the use of ICT often challenged the dispositions of the student teachers' mathematical habitus, it also began the development of pedagogical capitals that could be of immediate use in schools.

Demircan described this:

[I]t's [...] like watching TV or cartoons actually on the TV. These clicking and dragging or some moving objects on the board. Obviously, it is giving the

Chapter 6: Learning to be a Teacher of Mathematics

opportunity to visualise the mathematical problem for the kids and I am enjoying as well a lot.

(Demircan)

Visualisation provided another mode of communication, and this could be supplemented by action and gesture in a dynamic way that was familiar to pupils and complimented the difficulties of vocabulary discussed by Aharya. For example, Imane used a straight line on the IWB to represent the continuous set of real numbers to support what was, for her, a challenging verbal description of rounding numbers:

[It] took me more than five minutes first to explain it without the number line but as soon as you draw that magic, I wish I had a number line because it's quite magic. It just made them understood it and just gave me the answer quick.

(Imane)

As well as developing teacher explanation through the use of multimodal semiotics, IWB software introduced the trainees to pedagogies that challenged assumptions about the position and role of pupils by engaging them publicly in doing mathematics, for example, by matching problems with their solutions. Instead of explaining a solution, as Imane had done with the number line, this enabled the teachers to extend their communicative repertoire, by asking for an explanation from pupils as they dragged objects on the board to match the answer with the question. Although this change of power dynamic exposed the teachers to risks, such as not being able to understand a pupil's response, teachers were able, as they became more used to working in classrooms, to employ ICT to manage what they perceived as the weakness of their own linguistic habitus, as Pilvi observed:

I can make the students explain the topic and I don't need to do it because probably the student can make it better than me or something like that

(Pilvi)

By successfully managing the change in the participation framework (Goffman, 1981) through giving the floor to the pupil, Pilvi was able to develop her own pedagogical capital, improve learning for individuals in the class, and use practices with which pupils were familiar from other parts of the school. This not only added to her communicative repertoire, but also developed her authority, by indexing practices that were used by other teachers in the school. The importance of the IWB, as a context for

Chapter 6: Learning to be a Teacher of Mathematics

providing a framework within which student teachers developed mathematical discussion and questioning, is emphasised by the use of the mathematical vocabulary, as well as the questioning techniques, used by Idman in her second placement:

When we did the transformation of the graphs and they actually came to the board and then sort of [...] let's see what would happen in this function if you have this function and $f(x) + 1$, what would happen? They all start drawing on the [mini-white] board so they draw all on the [mini-white] board and I said, 'Okay. Now, let's check'. And then when they are finish, they say, 'Oh, miss. I'm wrong'. 'What? Okay. What did happen?' Shift to that. Shift to this and okay. Now, what do you think happens?' and they sort of [...] I said, 'Now, discuss with the person next to you', and then they sort of done it.

(Idman)

Such a report of mathematical conversation is rare in the data I collected, reliant as it was on interviews rather than classroom observation. It illustrates how the IWB changed the participation framework in the course of mathematical discussions. Rather than Idman exercising her own symbolic power through an explanation listened to by the whole class, she chose to open the floor to pupils. The pupils were asked to draw their prediction of the shape of a graph (function) and then learned by comparing it with the graph (function) generated by the IWB software and explaining any differences. There is a clear sense of the speed and change of vocabulary within the interaction. Idman moves from using the formal mathematics register in her discussion of functions to a demanding use of practical authority reflected in, 'What? Okay. What did happen?' It is important to note that five years previously Idman had been completing her A-levels in Nairobi, which allowed her, subsequently, to apply to study mathematics at the University of London. Traces of this experience, and the influence of her school-age siblings, are clear within the language of this excerpt. It emphasises the importance of biographical trajectory in superdiversity (and the different trajectories that may exist within the same family), as well as how quickly complex communicative repertoires can be developed and put to use in schools to develop an authoritative voice.

Other student teachers used the possibility of multimodal semiotics to manage both the risk associated with their explanations and challenges to their epistemic and practical authority that might arise from the audience. For example:

Chapter 6: Learning to be a Teacher of Mathematics

I know my disadvantage, my accent and all these things, so instead of [...] wherever possible I make PowerPoints so that they give you [...] they should understand what I am saying and go along with [...] so that they can see. If they don't understand what I am saying they can see and understand.

(Semye)

Although the IWB was a useful semiotic device in itself, it did not necessarily persuade the audience to listen, nor could it replace the need to develop an oral repertoire as Pilvi, who had been in the UK for only a matter of weeks before the course, commented:

I have the most beautiful presentation on the interactive board but I felt that I failed in my ability to explain the topic [...] Because I couldn't explain it so well as a native-speaker teacher. So it was like a hard feeling and even if I have the board and I have everything really great, visual material, but then my explanation is bad.

(Pilvi)

For Pilvi, the use of IWBs matched a personal disposition, 'to find different ways that I can experiment in my classroom', and an ability to make unusually sophisticated use of a classroom resource that was recognised by teachers who were collaborating with and observing her. Yet she positioned herself with reference to the idealised category of the native speaker (L1 speaker), through the priority she gave to spoken explanation in mathematics to demonstrate her epistemic authority. Even though the board might materially enhance her authority from the point of view of the audience, these comparisons with L1 speakers were clearly disempowering in terms of their emotional effect, and in comparison with the explanations she had recently been able to give in Finland.

Dieter commented explicitly how the use of ICT could, in itself, become a mark of distinction amongst colleagues as well as with pupils:

What I found is that my colleagues always were quite interested in the things that I did kind of like in terms of ICT, so they always looked through the glass doors and then asked me later 'What did you do there? How does it work? Was it good? Did it [...] did the students like it?' and so on, so it always started off discussions with colleagues.

(Dieter)

Dieter's comment emphasises the importance of the IWB as an element of the communicative repertoire of teachers, and how they might thereby develop epistemic

Chapter 6: Learning to be a Teacher of Mathematics

authority, not only for their immediate audience of pupils, but also in comparison with the work of other teachers. This new and creative way of developing authority was in contrast to the normalised expectations of recording and calculation, which had been powerfully inscribed as dispositions in the mathematical habitus of both student teachers and their pupils.

6.3.3 DOING MATHEMATICS IN SCHOOLS: CALCULATIONS

Calculations, with their binary of right and wrong, have a particular power and relevance in the performance of mathematics teaching. Many of the participants had learned the elementary calculations of addition, subtraction, multiplication and division in the early years of their formal education, in a language other than English. They drew directly on these much-practised dispositions as mathematics teachers in the UK. For example, Giana reported her experience of doing mental arithmetic in front of pupils:

I've got this seven times eight, yes, 56. So that's my challenge. Even when I'm doing some exercises at the board, I've got to think of numbers in Italian and I work them out, and then I just translate the answer in English. That's what I do mentally.

(Giana)

Giana had lived in the UK for 10 years before starting the PGCE course, and the inevitability of her phrase 'got to think of the numbers in Italian' shows the durability of this aspect of her mathematical habitus. Although she recognised the potential difficulties of getting simple calculations wrong as her 'challenge', it was one that had become, at the end of her first placement, 'just' part of her routine. Giana's discussion of the potential difficulties of mental calculation suggests that it is an important issue, although it was not mentioned by anyone else except Pilvi who, despite her recent arrival in the UK, only used the phrase 'feeling of discomfort' to qualify it.

These translations whilst doing mental arithmetic, although running the risk of error were, in any case, private and invisible. By way of contrast, written algorithms, either on the board or as part of individual instruction to pupils, were shared. The difficulties

Chapter 6: Learning to be a Teacher of Mathematics

of adapting to the local ways of calculation, some of which were completely new, with the concomitant chance of getting the calculation itself wrong, were considerable and well described by Imane:

Division, it took me ages just to remember how to do the division. Because the dividend will be in [...] we do the French way actually, the dividend is [...] in the left-hand side and the divisor is in the, divisor is in the right-hand side. In English here it's the opposite.

(Imane)

This could result in student teachers having to deal with such difficulties privately and, sometimes, in the moment of performance, as described by Giana when she recalled the unanticipated difficulties of using the accepted English symbolism for division (\div):

Okay, you just do 12 divided by 3 and I just put the dots (:). But in England, you put the line in between as well. I didn't know that. It never came across. I know on the calculator, you've got that but I thought it was just from the calculator. I never thought about that. And the kids said, 'Hey miss, shouldn't you put the line in between?' And I said, 'Oh really?' I just put it in because I thought oh maybe I'm going wrong [...] So that's what I'm saying. That's what I need to be careful, really. That I need to [...] and there's nobody there telling me or helping me out.

(Giana)

The colon that Giana used on the board is the symbolism for division used in Italy, and this vignette illustrates the difficulties of adapting some mathematical resources, even when the teacher is, in some contexts, aware of the issue. The pupils' response, of 'shouldn't you put the line in between?' suggests that Giana's epistemic authority had been achieved by other performances and her audience considers this a mistake rather than a mark of difference. Yet it is clear how, in improvising her response, there was a sense of isolation and a possibility for error in the split second of performance.

All the student teachers in the sample had satisfied the mathematics criterion to be offered a place on the course and, to a greater or lesser extent, were aware of differences in school mathematics through their completion of audits of their mathematical knowledge. This had been usefully supplemented by the pedagogical strategies at the university, which helped them to develop a multimodal communicative repertoire and to begin to accumulate capitals, which in turn contributed to their developing authentic performances as maths teachers during their

Chapter 6: Learning to be a Teacher of Mathematics

school placements. Despite this, it is clear from this section that their epistemic authority and symbolic power as mathematics teachers could be compromised by the many small differences, or sometimes larger ones, of their mathematical habitus. This section has demonstrated the importance at such moments for the student teachers in this study that Philips (2004) claims for reflexivity, flexibility and creativity in the performance of authoritative speech.

6.4 BEING LISTENED TO: FOR THE AUDIENCE IT IS NOT ALL ABOUT MATHS

Although authoritative speech is a necessary condition for being listened to, it is not sufficient, as Bourdieu recognised:

The competence adequate to produce sentences that are likely to be understood may be quite inadequate to produce sentences that are likely to be listened to
(Bourdieu, 1994:55)

In classrooms, the student teacher is involved in an ever-changing range of interactions, from addressing the whole group to involvement with small groups and individuals and, even if they are not involved, members of the audience have an opportunity to observe the teacher's performance at all times. All of this emphasises Goffman's observation: 'Audiences hear in a way special to them' (Goffman, 1981:137). This section discusses this idea in terms of how the student teachers are recognised by pupils in their classes.

6.4.1 ACCENT

When facing the prospect of speaking to an audience of pupils many, like Imane, were afraid they would not be understood:

The thing with teaching at the beginning was very difficult for me [...] I was scared that the children won't understand me because of my accent maybe.
(Imane)

Her focus on understanding suggests that accent is simply an impediment, a result of her being a 'talking machine, a body engaged in acoustic activity' (Goffman, 1981:141). Yet the use of the word 'accent' immediately implies a comparison and

Chapter 6: Learning to be a Teacher of Mathematics

that a judgement has been made of audible difference (Miller, 2003) in comparison with standard practices:

All linguistic practices are measured against the legitimate practices, i.e. the practices of those who are dominant

(Bourdieu, 1994:53)

During their everyday lives in superdiverse communities, school pupils, and teaching staff, communicate successfully in many different accents. The symbolic power of standard English in schools, and the role of teachers in its ‘regulation and imposition’ (Bourdieu, 1994:45), does not take into account the fact that pupils, in their everyday lives both in and outside school, may be used to communicating with a range of audible differences. Being attuned to such a range is an important communicative resource that even L1 pupils might bring to understanding language in a multilingual classroom. The use of this resource by pupils can be overlooked by those observing classes, especially if they are from outside the local area. Christophe reported an outside observer as saying in feedback:

They [the pupils] could understand you before you even say it all; you really have a very good way of interacting with them – because they understood you. But I couldn’t understand some of the words, or what you really meant in some of the things you were saying. To be very honest with you the children just understood you, everything you said they just got it right. [...] I know he was talking about my accent.

(Christophe)

This excerpt shows how, to the surprise of the observer from outside the area, the pupils were listening to, and understanding, Christophe who, although brought up in an Anglophone community in the Republic of Cameroon, had been required to speak French in the wake of state language policies post-independence in 1961, and, as a result, spoke English with a French accent. In this context, we see the way in which accent can be used to simply mark difference and to expect difficulties of communication, without reference to the complications of the communicative repertoires and audible resources that pupils bring to mathematics classrooms. Consequently, without an analytic framework, it is difficult to discuss matters of

Chapter 6: Learning to be a Teacher of Mathematics

accent in classrooms and, as a result, as Christophe acknowledges, they are silenced, as it were, by the symbolic sounds and power of Standard English.

In the context of his explanation of mathematics, when exercising his epistemic authority, Christophe's accent was not salient in effective communication. In other contexts, where his practical authority was at stake, for example when carrying out the ordinary routine of calling a register, this could change dramatically and lead to challenges by pupils:

'Sir my name is not Hedder, please. Stop calling my name Hedder!' You're like 'Excuse me, what is your name?' 'Sir'. [...] and I got her to sit in front of me and try to teach me how, because every other student got involved. 'Sir it's not Hedder sir, stop calling her that' her friends got involved then you lose it then big time. Then I said 'What is your name please?' She said 'Can you pronounce Weather?' I say 'Yeah, weather', said 'Take away the W and pronounce the rest of the word'. When I took away the 'W' I said 'Heather'. Everybody got [...] 'Sir, that is it!' everybody got laughing in classroom. Getting their names right. I take a very short time to know all their names, but it is pronouncing it right. If you don't get it right you lose them most of the time also. [...] you antagonise them, that's the word.

(Christophe)

This episode shows how the pronunciation of English names is important in the context of polite address which, combined with the symbolic power of monolingualism, allowed pupils to demand correct pronunciation in a way that Christophe was unable, for example, to demand for his African surname. In the way in which 'her friends got involved', we can see how the participation framework of the encounter quickly changed, as bystanders, those originally watching, joined in and Christophe's authority was dissipated. Suddenly he became a learner being taught, and corrected, by pupils, and their laughter further diminished his ability to use the practical authority delegated to him by the school, to the point where he lost control. This form of belittling, being treated as a child, is a form of racism (Puwar, 2004), engendered by difficulties that pronunciation can bring. Although it can have debilitating consequences for speech animated by black bodies, it points more generally to how, if you have 'the wrong accent, non-standard pronunciation, or faulty syntax [...] you may also lack credibility' (Miller, 2003:36), leading to an unexpected

Chapter 6: Learning to be a Teacher of Mathematics

loss of practical authority, which may in turn have repercussions for the student teacher's epistemic authority.

After having left the PGCE course, Semye, one of the few teachers from outside the UK working in a school on the outskirts of the city, recalled how, in the midst of a mathematics lesson, her epistemic authority as a maths teacher was challenged because of her pronunciation:

each and every word I am saying they are just kind of 'Miss this is not how to pronounce [...] you pronounce like 'this' and I was telling 'But you know what I'm saying about, for example square, for example area of the square' and 'Miss you can't pronounce like this, you can say [...]' 'Of course I understand, my apologies, but you know what I am telling'.

(Semye)

Semye's apology is a reflection of her powerlessness to end an otherwise difficult dialogue. Despite her being sure that 'you know what I'm saying about', the pupils (the audience), continued to amuse themselves, and refused to listen. The fact that Semye was in an all-white school increased her vulnerability to the same strategy of belittling experienced by Christophe, and this shows again how the symbolic power of Standard English and accent can threaten both the epistemic and practical authority of speech animated by black bodies, with the possibility of its intimidating them in other performances throughout the school.

All the respondents had learned, and used, English outside the UK. Some, like Pilvi and Dieter, had learned English as a second language at school, and in order to pursue further study and for leisure purposes. Others, for example Aharya and Semye, had learned English in school but had developed other repertoires whilst working in London. Yet Osasune, even with the experience of having worked and studied in London for 10 years, felt that she had not given enough attention to the 'cultural aspect' of working in schools before joining the PGCE. Pilvi, who had been in London for only a short period before starting the course, found the sounds of local English difficult to understand:

In the beginning, it was so difficult I just felt that I don't understand what this [...]

Chapter 6: Learning to be a Teacher of Mathematics

I can't communicate in the classroom because anything that the student says, I don't understand. But I think, maybe I got a little bit better in the second training.

(Pilvi)

Her reference to understanding illustrates the complexity of communicating as a teacher: the challenge of hearing the accents of local English and the act of speaking in the context of local practices and orders of indexicality were all summarised by Pilvi's admission that she expected something more in response to the question 'How are you?' than 'Fine, thank you.' Despite considering English a global language, having learned and used it in other countries, others also found that they lost voice in England because of different orders of indexicality.

Christophe's use of English was more than just indexicality; it was a demonstration of symbolic power:

[T]he imperial language is a sign of a black person's ability to rise to some of the heights of white civilisation [...]

(Puwar, 2004:108)

This is illustrated by his pride about and attachment to the 'Queen's language':

My English at the start of it I thought it was here 'The Queen's language' I was just speaking the English as the English, what my student would call the 'dictionary English'. They tell me that 'Sir that's dictionary English' and I will tell them 'No it's the Queen's language'. I say 'It's not Cockney' and they will start laughing. I said 'I don't speak Cockney, I speak the Queen's language'. They say like 'Yes Sir, because your language is too direct, too straight, it just [...] you don't say anything that's not in the dictionary'.

(Christophe)

Christophe assumed that the 'Queen's language' would fit his status as a

schoolteacher, perhaps even more so in London, the centre of Empire, than where he had grown up in the Cameroons. Instead, he found that the symbolic power of his language was lost, and that his indexing of this prestige, with a reference to what he perceived as a lower form, Cockney, was a source of amusement amongst his pupils. Nonetheless, the advice he was given regarding achieving a more acceptable form was different from the earlier efforts to correct his pronunciation. In contrast to correction, this advice resulted in Christophe reflecting upon, and adapting, his linguistic habitus:

I never thought I would say to somebody 'Are you all right?' 'Yes it's all right, why are you asking? Are you all right?' It's like 'Good afternoon' 'Good

Chapter 6: Learning to be a Teacher of Mathematics

evening’, ‘Good afternoon, how are you?’ It’s not like ‘Are you all right?’ ‘Yeah I’m all right’. I had to learn that from them ‘Are you all right?’ ‘Yes’, coming down ‘Are you all right?’ ‘I’m all right, thank you’.

(Christophe)

Christophe’s use of ‘never thought’ shows the durability of aspects of the linguistic habitus, powerfully reinforced by practices of politeness and colonialism. His continued reference to the propriety of ‘Good afternoon, how are you?’ in contrast to ‘Are you all right?’ clearly shows how the process of adaptation works more slowly at some levels of language than others. It is a process that is not completed alone, and in acknowledging that he ‘had to learn it from [the pupils]’ Christophe showed the importance of others in making this change. This echoes Doina, who invited pupils to pronounce words with which she had difficulties:

I don’t feel vulnerable, I feel as if I’m telling them ‘Look, I don’t know everything myself and I’m happy to share this with you. You don’t know everything so, you know, how about we kind of helping each other, we’re all in the same boat’. So trapezoidal, I’m still struggling with this word.

(Doina)

By acknowledging the different strengths that she, and the pupils, bring to the lesson, Doina emphasises a collaborative participation framework in the classroom, in which ‘we kind of helping each other’ and the different accents and languages of heteroglossia and superdiversity are:

[N]ot a space where different identities, values, and practices co-exist, but [one where they] combine together to generate new identities, values, and practices.

(Wei, 2011:1223)

6.4.2 RECOGNITION

As well as comparisons with the legitimate language of Standard English, audible difference (including pauses, intonation patterns, and grammatical patterns that are discernible upon a close reading of the interview excerpts in this study) combined with other embodied practices, or ‘decorum’ (Goffman, 1990), may also prompt pupils to ask ‘Where are you from?’ or, perhaps, hazard a guess. Such recognitions, in terms of categories and discourses of the UK, resulted in the student teachers being positioned in a range of different ways.

Chapter 6: Learning to be a Teacher of Mathematics

Giana commented that in an all-white school where she did not meet any other foreigners the recognition of her Italian accent led to talk about:

football teams, about Lamborghini, about Ferrari. This sort of questions I was getting which I was happy to answer. Or they were asking how say in Italian such and such. They were fine. They find it fascinating that I can speak any foreign language.

(Giana)

This indexing with current icons of Italian culture was pleasantly complimentary for Giana, and the pupils' fascination with speaking Italian is suggestive of symbolic power accrued by the country of her birth. Pupils were also fascinated when Dieter spoke in German to a pupil but he, in contrast, experienced a more challenging historical positioning each time he started to teach a new class:

'Are you German, do you know Hitler?' That's really [...] that's really classic [...] and I say 'Well I don't know Hitler in person but I know how he looked like. If the question is, 'Do you like Hitler?' then I say 'No I don't like Hitler' and I say 'I think it's a very hard thing to like Hitler because he did all these awful things you probably learned about in history' [...] So I try to be as kind of like calmly and nicely about it as possible.

(Dieter)

Although it is impossible to surmise the purpose of such questions, Dieter's use of the phrase 'really classic' suggests that they are, for him, frequently asked. He was able to use his own interpretation of German history to answer these questions in a manner that challenged British stereotypes of Germans. For other student teachers, pupils' awareness of the geography, let alone the history, of other countries, was much vaguer:

The first time when you say 'Algeria' they say, 'Oh, Nigeria.' I said, 'No, no, no. It's not Nigeria, it's Algeria, and it is a country between Morocco and Tunisia. I know you know Morocco and you know Tunisia. But Algeria is in the middle.'

(Imane)

Here, ignorance about the geography of Africa was a source of amusement for Imane, and by referencing holiday destinations that she hoped would be familiar to pupils, she reflected Dieter's sophisticated responses. Instead of laughing at pupils, she was able to take the opportunity to extend their understanding. Unsurprisingly then, in the context of superdiversity, many of the countries of the student teachers were unknown to British students. Pilvi, recognised as an East European, embraced the relative invisibility offered by this and expressed her relief at the lack of questions about

Chapter 6: Learning to be a Teacher of Mathematics

Finland, whilst Doina, from Romania, chose not to challenge her frequent recognition as an Italian. Unburdened by recognition, Pilvi and Doina had the choice to reveal their migration trajectories or simply to be themselves.

These examples show how possibly destabilising questions about national identity could be a source of the accrual of teacher authority. Giana and Doina compartmentalised such questions to the end of the lessons, with phrases like ‘you pack five minutes earlier and while you are packing, you can ask me questions’ (Giana), and, in the urgency of leaving, the opportunity was often not taken. These strategies of fitting in, or ‘muddling through’ (Wessendorf, 2013:18) with superdiversity, were not successful for Semye:

Oh just my colour, I can’t change my colour, but I can change my dress and hair care. I tried all sorts of things to get along with the kids, so that the kids can, you know, recognise me and they can approve me as their teacher so that they will come and approach as well.

(Semye)

Here, the importance of the discourse of skin colour is clear, as are the discourse, and the assumptions, of racism in the making of difference for Semye. By implication, the invisible (to white people) power of whiteness (Rollock and Gillborn, 2011) was an integral part of the practices of all freely moving EU migrants except Christophe, Idman and Imane. Semye’s attempts to fit in represent a strategy involving the tensions, and humour, of self-erasure, whereby a self-confessed cricket fan can provide any suitable answer to a question about her footballing allegiances:

‘Miss, which team you support?’ Before that I was supporting Man U and now I’m supporting Arsenal. I don’t know. Just I was [...] like I’ve watched them play.

(Semye)

The emotional labour (Blix and Wettergren, 2015) of managing the tension of visibility and invisibility was part of the experience of all participants in this study. Nobody described using available formal procedures to challenge racism, reflecting what Puwar describes as:

The high degree of sensitivity associated with issues to do with race [which] makes it extremely difficult to speak out about the matter, even if it is on an

Chapter 6: Learning to be a Teacher of Mathematics

anonymous basis.

(Puwar, 2004:133)

Yet in his classroom, Christophe, ‘a proud African’, chose to challenge the discourses in use about Africa:

You accept your identity as an African; let the kids accept you also for being an African teacher in your classroom.

(Christophe)

Although he did this by responding to questions in the classroom about where he was from, as did Giana and Dieter, he also exploited the way in which humour enabled him to become agentive:

It started coming out as a joke. Telling them my own side of the jokes also, like ‘When you don’t have a pen, how can you go hunting with a bow and an arrow?’ They would [...] stay back, think about my joke. I said ‘Ah-hah, did you get my joke?’ they said ‘No sir’. I said ‘That is why I didn’t get your joke also yesterday where you’d [...] say[ing] something’. They started [...] the fun about it was we started creating an environment whereby we knew we were different. I made them understand that I’m different.

(Christophe)

Humour enabled Christophe to perform a difference between himself and his audience, and thereby to challenge the categories by which he was recognised, rather than just give information in terms of the categories provided by UK discourses and perspectives that might simply serve to reinforce stereotypes. This transgression led to new practices that went beyond processes of fitting in, and on this basis Christophe was able to talk frankly about his experience of growing up:

‘When I was your age at this time in my life I had no shoes on. I didn’t own a pair of shoes’. ‘How come Sir?’ I say ‘Yeah, I didn’t have any pair of shoes. I walked to school barefoot.’

(Christophe)

This comment, by apparently reinforcing the imperial discourses of an uncivilised Africa, was full of risk and was one that other black trainee teachers, even after observing the relational space of Christophe’s classroom, were reluctant to take:

‘Sir how do you do that? I even thought it was funny, I thought it was good. It got them really listening to you. The impact was absolutely fantastic’. I turn around and ask them ‘Will you make that type of a joke you also?’ ‘No.’ I said ‘Why?’ ‘Why will I be telling them about me that way?’ I said ‘Because you ought to be proud of what you have faced, because you are here as an African teacher. If you don’t make them see you like that, you want them to see you like what?’

(Christophe)

Chapter 6: Learning to be a Teacher of Mathematics

Christophe's jokes affected the way in which his audience of pupils listened to him, thereby allowing him to focus on the learning and progress that were important to him:

I found myself at times that they come back and tell me that 'Sir, you're funny'. I don't dwell on that. I say that 'Did you learn something today?' 'Yes Sir'. I say 'What did you learn? Hope you didn't learn that was just funny'. 'No, no, no Sir, we learned this, we learned that, we learned this'. And that's what makes it different to me.

(Christophe)

Christophe's focus on learning shows how pedagogical capitals, developed in training at the university, and which introduced student teachers to activity-based learning, provided a participation framework that complemented the discussions about difference in which Christophe engaged.

Other student teachers became conscious of aspects of their own dispositions and expectations through the pastoral practices of their school placements. For example, teachers from countries modelled on the French system were faced with pastoral responsibilities for pupils outside the mathematics system, including managing tutor groups and sometimes following disciplinary matters up by phone calls to parents:

It makes, I think, the teaching job, the teaching career more interesting if you are also involved in the pastoral role of the kids, trying to have a relationship with them, and trying to understand the kids. They have family background first so it's good.

(Giana)

For some, in the course of their PGCE, these new expectations contributed to a reassessment of teaching priorities and strategies. Doina described how learning to put pupils first, before mathematics, allowed her to, 'kind of build a communication bridge between myself and the students'. Building bridges in this way could affect the possibilities for interaction in classrooms, and also professional interests, in ways similar to those seen in Christophe's experience. Instead of using jokes to challenge the categories of perception of their classroom audiences, other teachers employed their communicative repertoires to enhance their practical authority.

Osasune, who had both worked and studied for a Master's degree in the UK, was able

Chapter 6: Learning to be a Teacher of Mathematics

to draw confidently on the communicative repertoires she had learned through the years of convivial mixing at work as she faced direct challenges in classrooms, ‘when identities really matter’ (Blommaert, 2012:12):

He was misbehaving again direct [...] and again I asked him to be quiet and he said, ‘What? What?’ He confronted me but, ‘I can’t understand you’, and he told me that and ‘I know, can’t you understand me? We are not having a conversation out here now? I won’t argue with you anymore. I won’t mess with you anymore. We’ll just have one-to-one conversation in front of everybody and I faced him up and I don’t get [...] he never went on with that.

(Osasune)

Here, Osasune did not avoid, in front of the whole class, the direct reference to her accent. Instead, her direct challenge not only showed that the pupil was able to understand her when he wished to, but also drew on the local English phrase ‘I won’t mess with you’ to assert an authoritative local voice, which itself challenged, or made momentarily uncertain, assumptions about her Spanish accent. Others were not able to draw upon such repertoires in stressful, non-routine situations of challenge and misbehaviour, but they used their observations of the language used by other teachers around the school. Doina described using a form of speech she had learned from colleagues during her first job immediately after passing her PGCE:

Well actually it’s not OK, is it? Because you’re coming here to learn and I’m coming here to teach. That’s what I get paid for, and that’s your interest to learn.

(Doina)

Although this did not have the fluent use of local vernacular that Osasune demonstrated, through her use of a phrase employed by colleagues in the school, the pupils were hearing something they had heard teachers say before. Doina’s performance of a teacher’s ‘occupational script’ (Puwar, 2004:79) that pupils were able to recognise, enabled her to accumulate practical authority during moments of challenge in the school.

The ongoing processes of recognition, and awareness of the interaction of habitus and field, are evident in Doina’s description:

Sometimes I do blame the behaviour, like compare [...] I go in the staffroom with the other teachers and I say ‘Oh you know in my country this doesn’t happen’ and I joke about it. [...] So maybe I complain because in my country they’re different,

Chapter 6: Learning to be a Teacher of Mathematics

but someone else complains because ‘When I was in school it was different’ and someone else is because ‘Oh London is different because of this and that’. So I think, yeah, sometimes I do go ‘Oh [...] they’ve done this. If they were in my country that wouldn’t happened’ but yeah, then I just get over it.

(Doina)

By acknowledging the complicated structure of difference, which could be claimed by many, including those always resident in the UK, Doina was able to find a way of living with her own difference, as reflected in the phrase ‘get over it’. This phrase also suggests the emotional labour that is required in adapting to recognitions, which has been evidenced throughout this section.

6.5 CONCLUSION

Student teachers of migrant heritage, like other student teachers, drew on both the pedagogical capitals from the university and teacher occupational scripts to achieve an authoritative voice. They could, nonetheless, be surprised as the dispositions of their habitus, engaged with the field of schools and mathematics classrooms. These were surprises that affected all members of this study, including Giana and Osasune, who had lived and worked in the UK for a long time. Multimodal resources, including the IWB, developed their pedagogical practices and were important in their accumulation of epistemic authority. Yet the change in and composition of professional capitals did not entirely account for the classroom positioning of the student teachers.

Pupils were able to observe at leisure the decorum of their teachers, and recognitions could hail teachers into positions that challenged both their epistemic and practical authority. White bodies benefited from the power of whiteness but black bodies could experience significant loss of authority. Semye’s experience showed the limitations that skin colour could place on the strategy of fitting in. Christophe demonstrated the difficulties of transgressing these categories, despite ultimately developing particular classroom practices:

We started creating an environment whereby we knew we were different. I made

Chapter 6: Learning to be a Teacher of Mathematics

them understand that I'm different, that I [...] just like them, because I shared their expectation.

(Christophe)

This chapter has shown how, even in a superdiverse group of student teachers from around the world, there are common themes that characterise their experience of learning to be mathematics teachers. Humour and improvisation have been shown to be important in developing epistemic and practical authority. The technologies of self, represented by evaluation and reflexivity, both of which are essential to the processes of further adaptation, are part of the mentoring practices that are the focus of the next chapter.

7.1 INTRODUCTION

Although the performance of teacher identities in mathematics classrooms was a clear focus for all the student teachers, individuals also performed them throughout the school, with a variety of colleagues and pupils who they may or may not have known. This chapter, by considering the school as an interconnected network of spaces, discusses how the student teachers developed professional capitals throughout the school. In so doing, it distinguishes the main backstage nodes of staffrooms and resource/reproduction areas from the classrooms and other parts of the school where they performed their identities in front of pupils. It makes use of the concept of relational spaces ‘created by social interaction’ (McGregor, 2003:357) to discuss how student teachers ‘navigate the professional space’ (Kostogriz and Peeler, 2004:3) of staffrooms and the interconnected network of their placement school, both during their everyday routines and in order to pursue opportunities for professional learning and development during the PGCE year.

7.2 PROFESSIONAL LEARNING IN STAFFROOMS

All placement schools had a space called the staffroom that all staff were able to enter, and which was used, to a greater or lesser extent, depending upon the practices of the particular school. The staffroom emphasised the continuing importance that is placed upon staff having the opportunity to meet each other and, by being somewhere from which pupils were excluded except by request, it highlighted the school hierarchy and the authority of staff. It provided a back region that offered a degree of relaxation because here, unlike in other parts of the school, the behaviour of the student teachers was not scrutinised by pupils, although it could be monitored by those members of staff who had direct responsibility for their professional learning.

Chapter 7: Around and About the School Site

For many, entrances into the staffroom were a new experience. Regular administrative briefings, at which the attendance of all school teaching staff was required, provided an opportunity to see all the staff, and presented some surprises:

[A]nd the diversity of London actually and schools is very important. [...] It's something I never thought about. Because in Algeria, you have Algerians and that's it, yeah. When I came here I was amazed actually about the diversity of London especially within the schools. We are in Europe. I expect that most of teacher will be Asian [...] you know that's the way I expect. But [...] when I look in the staffroom for example we have this briefing. Wow! The schoolteachers' different culture.

(Imane)

Imane's evaluative use of the word 'Wow!' expresses her surprise to me, the interviewer, at the same time as referring back to the contrast between staff in London schools and those in Algerian schools, where she had worked for a year before coming to London. Despite having lived in London, she has a clear sense of surprise at the superdiversity of the teaching workforce, which not only shows how this experience can be a surprise but also means that in such company teachers like Imane are not a 'body out of place' (Puwar, 2004). Yet, despite having legitimately satisfied all the requirements for entry to the PGCE course, it was still possible to experience doubts about authenticity (Kramsch, 2012). Such doubts were clearly expressed by Pilvi who said, 'I am a foreigner too so how can I be expected to be an example to the pupils?'. These initial self-doubts, similar to those expressed by Imane, were compounded by not knowing 'the tacit rules of the game' (Bourdieu and Wacquant, 2007:99) about the spatial organisation of staffrooms. For example, Doina commented upon the confusion around knowing which seat to take, and the embarrassment of having to ask for advice about this. The many trajectories that criss-crossed these superdiverse staffrooms also led to encounters that resulted in student teachers being hailed into positions that could lead to further embarrassment and compromise.

Demircan, who described himself as an atheist, chose to conceal (Goffman, 1990) personal information at the start of his first school placement, in response to being misrecognised:

Chapter 7: Around and About the School Site

I was very, very diplomatic to [...] other staff. I do remember one Pakistani woman. Actually, she just asked me [...] We met from the first day. 'You are from Turkey. Are you Muslim brother?' It was first day, first minute and I said, 'Yes'.

(Demircan)

The fact that this was one of Demircan's very first meetings in the staffroom indicates the 'chance of space [that] may set us down next to the unexpected neighbour' (Massey, 2012:151). His use of the phrase 'very, very diplomatic' suggests that he was familiar with issues of recognition and identity and had the communicative resources to deal with them 'during a split second in the interaction' (Goffman, 1990:40). His decision to conceal his non-Muslim identity was part of a strategy of avoiding potential conflict in the early stages of the placement, and an indication of the ways in which misrecognitions can occur amongst a superdiverse workforce. In contrast, Osasune, despite her previous successful, and lengthy, work experience as an industrial chemist, was surprised at the difference between her previous workplace and schools:

I didn't went into all the details of the culture differences and, you know, the perception of people about me as a foreigner. I was pretty confident always because I've been working in the pharmaceutical sector for many years.

(Osasune)

This perception as a foreigner could occur quickly. For example, during a casual conversation with a colleague, who introduced the news that she was going to Biarritz on holiday, Osasune replied:

Oh, Biarritz! Lovely. It's my home town really. It's very close'. 'Really, but I didn't know you were French. I thought you were Spanish'. You know. I realised, 'Ah! But she's French, very close to French', and I realised in her expression that is of 'Ah!' But the expression has changed. I don't know exactly what they went in their mind particularly in this woman I can see expression.

(Osasune)

Osasune was brought up in the Basque country of Spain, and it is possible to see here the confusions of recognition, and how the difficulties of resolving them may lead to offence and disappointment, communicated for Osasune by the expression on someone's face. Her being a foreigner was defined by the dominant narrative of tourism by which UK staff experienced Spain and which they did not use to refine

Chapter 7: Around and About the School Site

their understanding:

They don't know really. They will go there on holidays. What is the popular holiday destination? Whatever it is? Valencia. Oh Spain! Malaga. 'Oh fine. Thank you'. I will say yes. I know when I start giving out a lecture of geographies.

(Osasune)

Here, stereotypes, on both sides, define the conversation. After the optimism of her earlier conversation about Biarritz, Osasune has chosen to conceal the position of her home town, San Sebastian in northern Spain, and avoid confusion and disappointment, by simply referring to the cities of the southern coast that are familiar to British holiday makers.

Demircan and Osasune used strategies of concealment in the chance, yet direct, conversations they had with colleagues, in order to help them to adapt to the staffroom environment. As they moved around the staffroom, the student teachers could also become bystanders to other conversations that might give them access to discourses that revealed the tacit structure of the field of the staffroom. Pilvi reported that her very gregarious Muslim friend and fellow trainee, was:

[F]acing more racism because she is a Muslim and she's heard some comments about her religion. Some people don't like her religion and she has faced that kind of problems and I don't have that.

(Pilvi)

This shows how student teachers can become aware of aspects of the school culture that position them in ways which, for example, overlain by discourses of Islamophobia, are more offensive than the geographical ignorance reported by Osasune. It draws attention to how the particular difficulties concerning racism are made all the more difficult because incidents might be fleeting and unattributable. The particular compromises and confusions of this positioning are illustrated by Semye's experience as a supply teacher outside London in the year after completing the PGCE course:

Not directly they are telling me, but the way they behave and, you know, they approach you. [...] number one I'm a different colour, and number two I'm a supply teacher, I'm not a permanent teacher [...] I was waiting in the staffroom like more than the time she said that I was supposed to sit. [...] and I couldn't able

Chapter 7: Around and About the School Site

to find anyone, and I was like ‘Um what she is telling and [...]’ you know ‘It’s not happening’. [...] that kind of stuff what I can say.

(Semye)

This experience in a new school shows the different ways in which actions may be interpreted but significantly, for Semye, the colour of her skin is a possible reason for her differential treatment. Upon returning to work in London, Semye did not experience these confusions although, in her reflections upon her experience outside the city, there remained in her comment ‘maybe it’s my fault’ a sense of guilt about not being able to fit in, which further compounded the difficulties of making a complaint.

Over time, student teachers learn to navigate their way through the relational spaces of the staffroom and to develop acquaintances and friendship groups. Gilles came to regularly share lunch with the special educational needs co-ordinator. By the end of his first placement, Demircan was drinking alcohol at the staff social and was able to explain his original decision to hide his atheism to a colleague. Idman and Imane were both observant Muslims who wore religious dress and had been in the UK for some time. The presence of other young Muslims, to whom they could turn for advice, was initially helpful in learning the rules of the game in the staffroom, and, amongst a superdiverse staff, they were subsequently able to widen their network of friends and acquaintances:

When we started, it actually started very slowly. We were not talking much to a lot of people, but after a couple of weeks, I’ve been talking to, from every department, from MFL [modern foreign languages], and actually, we got a gift from their languages, from librarians. So we got cards from all other departments [...] so yeah, we mingled well, very well.

(Idman)

The word ‘mingled’ here is very suggestive of the ease with which Idman and Imane were able to navigate the relational space of the staffroom in a way that enabled them to position themselves with ever-increasing professional confidence. This is an accomplishment that also reflects upon the communicative repertoires they had

Chapter 7: Around and About the School Site

developed during several years of living in London and their use of the practices of commonplace diversity (Wessendorf, 2011).

By way of contrast, Pilvi, reliant on the communicative repertoires she had learned in English classes in Finland, found the daily courtesies of professional greetings unsettling:

And we have told in our English classes, people have told us too that they are not expecting you to tell really how you are, you just have to say something, 'I'm fine.' [...] in Finland if you ask 'How are you?' you are expecting a little bit more profound analysis.

(Pilvi)

This is a useful insight into the difficulties of engaging in the smallest encounters throughout the day, and their disabling emotional effects, which Pilvi described as 'frustrating of course like [...] a stupid feeling'. For her, this led to a sentiment of isolation and, as with Semye, this was associated with a sense of personal responsibility and guilt:

I think everybody was really friendly. I found really many friendly people who would've liked to welcome me more or getting more involved but I was the one who didn't do it.

(Pilvi)

A sense of isolation could also arise because of age. Christophe, who had been brought up in an English-speaking family in the Cameroons, commented, after two years of working in a school:

[W]hen coming here at the age of 35, I'm now getting to my 40 years old, the younger teachers of 25, 26, 27 [...] they have their own like set of young people they discuss with. Then you have like older teachers who are like my age, who are like British, who were born here like British, or they have been in the teaching profession for a long time. They have their own share of fun; they have their own friends that they like.

(Christophe)

Not finding a sense of pleasure or professional engagement in the staffroom, Christophe chose to spend his time in the areas of the school reserved for mathematics staff:

because at times you easily get frustrated, it's keeping yourself away from getting frustrated, getting involved with certain aspects of the [...] the logic of certain

administrative decisions.

(Christophe)

7.2.1 STAFFROOMS RESERVED FOR MATHEMATICS TEACHERS

All mathematics departments in the placement schools had staffrooms where mathematics teachers could meet and where materials were stored. The power and importance of this space for school management, and in the daily work of the student teachers, was usually emphasised by its having easy access to the rooms allocated solely to mathematics teaching. The organisational geography and practices of different schools affected the frequency with which student teachers used the maths staffroom, but it could become a space that rivalled the general staffroom:

I haven't got much experience at the staffroom because in my school at the Math Department, we need to stick together. We had a room, a big room just for ourselves and we would spend their lunches, breaks, which was great because you always knew what was going on because the teachers would talk about different pupils, different classroom, and different topics.

(Giana)

A sense of isolation limited Giana's engagement with other members of staff, yet her acknowledgement of 'sticking together' suggests a strong shared identity based on being a mathematics teacher. The departmental staffroom offered the possibility of the continuous sharing of professional information, which could be used to develop an authoritative voice in other spaces, notably when teaching mathematics. This was especially useful for trainees in developing their professional capitals and was a practice that many of them fostered, by demonstrating their enthusiasm about their training, their 'investment in the game' (Bourdieu and Wacquant, 2007:98) over and above the requirements of their PGCE training. Pilvi used her ICT skills to design a card with mathematical symbols, which became the card that the department sent home to pupils to praise them for their work in mathematics, and Demircan took on extra administrative duties to help the mathematics staff at moments of high workload, for example during examinations.

Regular meetings with the same colleagues could also form the basis of personal

Chapter 7: Around and About the School Site

confidences. This facilitated the building of trust and, with it, knowledge of superdiversity. Imane described how she shared such confidences with her colleague in the maths department:

I was Muslim, strong Muslim, and she was strong Christian, it didn't make any difference. The barriers weren't there. Were absent, there was no barrier between us. We used to talk for one hour and a half and the meeting should be like 15 minutes with her.

(Imane)

This development of understanding and information, which emerged from regular routine contact in the maths department, was in contrast to the challenges of fleeting contact that could occur in the staffroom. In such an atmosphere of conviviality, trainees could also develop communicative resources that they could use elsewhere. This was something Semye reported, when she described how she discovered, in the company of trusted colleagues, how to once again be someone who made jokes – a reputation she had enjoyed in India but was initially unable to display in England. Humour could be used to address colleagues' tacit assumptions and how the student teachers were positioned by them, as Christophe and Dieter recalled. Dieter comfortably discussed German history with an Irishman, who became his friend in the department, and Christophe continued to challenge assumptions about Africa, as he did in classrooms. Christophe described a chance meeting around the photocopier with the head of the mathematics department, in which:

[H]e would tell me that 'Oh there are a lot of trees you know'. I say 'Excuse me, Sir, these trees come from Africa, what's your problem about it? These trees they come from Africa, I'm the one who ought to be worried about it, not you', so I've kind of like brought it out in the open that 'Hey, I'm a proud African'.

(Christophe)

In this episode, Christophe was able not only to draw attention to the fact that he is an African but, emphatically, that he is a proud African. It is important to note that this act of visibility of 'naming oneself as embodied is not made easily' (Puwar, 2004:132) and it was a challenge to which the head of maths, who was white, might have found it difficult to make a riposte. This act was made particularly difficult by the fact that

Chapter 7: Around and About the School Site

Christophe's African colleagues did not want to make friendships founded upon African identity, and where the doxa of the school and the normalised assumptions of a mainly white staff did not facilitate the sort of challenge to discursive categorisations that was entailed in his humour.

Head of the mathematics department was a role that existed in all placement schools and entailed responsibility for the teaching and learning of mathematics as well as the management of all the mathematics teachers. It was a role that was not familiar, however, to many of the trainees whose experience was of school systems that were not influenced by the English tradition. For Pilvi, who, as a teacher in Finland, had worked independently without specific organisational links with other mathematics teachers, this represented a significantly different working practice. The way in which individual heads of department chose to exercise the power that was delegated to them differed between schools, and this could affect both opportunities for training and the way in which trainees engaged with their colleagues in the mathematics department. In one school, Imane and Idman were invited to share resources at the regular departmental meetings, and this participative culture:

[H]elped me a lot because there was like [...] actually, the maths department was really good and, you know, all the teachers were very approachable and we could, you know, talk to them about our experience.

(Imane)

In direct contrast to this, the head of department at Demircan's placement exercised his power so that trainees did not witness organisational and staff difficulties:

[B]ecause of the argument between head of math and one staff actually with another mathematics teacher, he said [...] 'Oh, you don't have to come to mathematics department meeting because of the argument. I don't want you to see these kind of arguments', and we were [...] shocked.

(Demircan)

This exclusion was in direct contrast to Imane and Idman's experience. It highlights the differences between schools, and therefore the differences to which individual

student teachers might have had to respond as they moved between schools in their two placements.

7.3 SCHOOL PRACTICES OF PROFESSIONAL LEARNING THROUGH MENTORING AND USE OF THE TEACHERS' STANDARDS

Alongside this incidental professional learning, through meeting with colleagues and participating in school practices, a training partnership was also organised to provide such learning and to judge the progress of student teachers in the context of the Teachers' Standards. In the school, the professional co-ordinating mentor had overall responsibility for all PGCE trainees, and in the mathematics department a mathematics teacher was responsible for matters concerning the teaching and learning of the subject. The university tutor co-ordinated the work of these parties to assure the quality of the provision.

The course handbook, produced by the university, included advice and guidance on the various formal practices that were used to implement professional learning: regular weekly meetings with the mentor; weekly lesson observations that were recorded on a written form; and guidance about how final judgements would be made, with reference to the Teachers' Standards. These activities provided trainees with an introduction to the processes of performative judgement and the categories commonly used in schools (Ball, 2003), in which:

[W]e learn that we can become more than we were and be better than others – we can be 'outstanding', 'successful', 'above average'.

(Ball, 2003:219)

Framed for all UK teachers, the implementation of the Teachers' Standards and the processes of target setting presented particular challenges for student teachers of migrant heritage, as explored in this section.

7.3.1 WEEKLY MEETINGS WITH MENTORS

There was no specific guidance for mentors on working with student teachers from outside the UK and the close proximity within the meetings meant that it was sometimes not easy to conceal opinions. Osasune, for example, noticed this:

I really felt that I was sort of told by my mentor in my first placement, sort of between lines that my accent and it not being my first language would affect some learners and some pupils and I'm affected somehow that I'm not under the same league or I'm not in the same position as a British teacher.

(Osasune)

This shows Osasune's vulnerability, as her own fears seemed to be confirmed by her mentor in a way that challenged her sense of authenticity and ambition as a student teacher. This was a vulnerability that was shared. Perhaps anticipating such comparisons because of having lived and worked in the UK for 10 years, Giana chose to avoid any discussion of difference in her desire to be recognised as a legitimate UK teacher, like any PGCE student teacher from the UK:

I think it is fair, you know, because I am going into a British school and they're expecting me to know as much as a British PGCE student would know so it's absolutely fair. I guess, for me, I have lots of questions in my mind that they wouldn't be [...] I am the one. I have lived the Italian experience and the British experience having to ask the question [...] So I am just stumbling across things and noticing the difference because there isn't anybody there having my two perspectives. You know what I mean?

(Giana)

Although her Italian accent makes her migrant trajectory highly visible, Giana's model of professional equity, based upon the symbolic power and legitimacy of nationality, does not make this a relevant difference for differentiated support. Giana was working in an outer London school and this, again, highlights the difficulties of addressing issues involving race or ethnicity and how 'it is much easier to hush things up' (Puwar, 2004:139). Like Osasune, Giana had to bear the tension of visibility and invisibility: she was reduced to 'stumbling across things' in classrooms rather than being able to discuss her migrant trajectory with her mentor.

For others, with no experience of working in the UK, the shock of engaging with the field of a school could be overwhelming. Focusing uniquely upon the professional

Chapter 7: Around and About the School Site

development of becoming a mathematics teacher, Pilvi's mentor, despite her own migrant heritage, did not consider a discussion of Pilvi's difficulties as being part of her role or, indeed, relevant:

There are many teachers who are teaching in the second language. You just have to get over it. [laughter]

(Pilvi)

In contrast, when Imane shared her own anxieties about language, and particularly about accent, with her mentor, she was listened to attentively and then, drawing on his own experience, he suggested to her that it was not an insurmountable obstacle to her becoming a teacher:

I asked him, 'What do you think about my English?' And he said, 'Your speech is clear. Were you worried about your accent?' I said yes. He said, 'Oh, your accent is much better than mine. Mine is very strong'. And that gave me the confidence actually. Because he is in [...] he was in the same situation like me.

(Imane)

There is a clear sense of the mentor monitoring Imane's performance through comparison with his own and, by admitting to his own relative weakness, he reverses the power role of the expert mentor, thereby encouraging opportunities for further exploratory discussion about difference. This was combined with other actions that created a relational space that was conducive to ongoing openness:

Respect, that respect was amazing, the way he used to have respect. That's the way he was. Even be relaxing with his music, as soon as I will walk in the class just switch off. 'Oh sorry, sorry, I know you don't listen to music'

(Imane)

This meant that, in contrast to Giana, Imane was able to express directly, and without any sense of dissemblance, the difficulties that preoccupied her when facing a situation she felt required substantial change:

It's quite difficult to change like 180 degrees from the way you were taught and the way you should teach. And I used to talk to him, 'Okay, what do I have to do?' Then he said, I said, 'I don't know what I have to do. Which way I have to do it?' And he used to tell me, 'Oh, it has to be a start of 10 minutes'.

(Imane)

Imane was able to express her confusion without fear of being judged inadequate at

Chapter 7: Around and About the School Site

the early stage of the first placement. Her mentor was able to reassure her, not by exploratory talk, but through a piece of prescriptive advice drawn from his own experience, which built upon the advice being given in the university mathematics sessions. This was the beginning of target setting, in which the performance of student teachers was scaffolded on the basis of an evaluation of the previous week's performance.

In contrast to this, when Pilvi discussed the difficulties she had with classroom behaviour management during mentor meetings, she was given the target of sending a pupil out of class:

So, I knew that I have to do that one lesson. I have to send the student out. I have to tell them to be quiet. It's something concrete that I could do but how to improve my presence and explanation, that is something that I'm trying my best but I couldn't really know how to improve in that.

(Pilvi)

The target, requiring Pilvi to execute an action designed to demonstrably improve her behaviour management in class and to implement the school policy, was observable and achievable and met guidance on target setting issued by the university. Yet it is clear from this excerpt that Pilvi did not feel that other important issues, related to her prior experiences in Finland as well as her current practice, were being addressed. The more general questions of presence and explanation were not explored, although this might have been done in the context of exploratory talk.

Imane's experience, shows how, if acknowledged, questions that arose as the habitus of student teachers engaged with the field of the school and classroom might be addressed through mentoring. In contrast, both Pilvi, through the mediation of the university tutor, and others, relied on mentoring from outside the school. Their experience illustrates the limitations of target setting based on the performance of actions without a mentoring conversation. Such conversations, by encouraging student teachers to evaluate and explore links with previous knowledge, were an important

Chapter 7: Around and About the School Site

part of the process of adaptation as, through them, the trainees could make their concerns public instead of having to bear the tensions of invisibility alone. The trust this process engendered encouraged the acquisition of specific professional knowledge of superdiversity in contrast to the ‘muddling along’ (Wessendorf, 2013) that characterises the everyday practises of superdiversity.

7.3.2 CLASSROOM OBSERVATIONS

The partnership agreement entitled the student teacher to a weekly classroom observation that was recorded on university documentation and formed part of the final PGCE assessment. These observations could be linked to the weekly targets set at mentor meetings, and they allowed student teachers to receive feedback on practices and materials they chose to use, as well as to demonstrate achievement against the Teachers’ Standards.

In observations when [...] something people want to see [...] effective use of ICT, so if you can do that then, well yeah, then you are maybe seen as kind of like special, or someone with a special extra bonus.

(Dieter)

Dieter had developed the capitals of ICT use as part of the university PGCE course, and in this excerpt shows clearly how he combined this with his knowledge of the doxa of the school and included these priorities to achieve the right mix (Blommaert and Varis, 2011) in his performance during lesson observations. The process of judgement was not always so successful, and could leave trainees confused:

In a lot of other areas [...] you feel like when the feedback is being given, it’s being given in the sense as if you don’t really fit the picture of what they expect you to be doing. In the sense like they were acknowledging nearly everything that is good about you [...]. But he stopped short of telling me like ‘So that’s why I give you a three’. I say ‘Can you explain to me Sir why it is a three?’ You would get them just hesitating, not telling you like ‘It was’.

(Christophe)

The discourse of professional standards implies an objective and meritocratic system

Chapter 7: Around and About the School Site

of improvement (Ball, 2003), yet Christophe's experience suggests that, despite intense attention to detail during his observation, which Puwar (2004:61) refers to as 'super-surveillance', the process itself is framed 'as if you don't really fit the picture'. Faced with similar uncertainty about grades at the end of her second placement, Aharya commented, 'I can't accept their explanation but I just left it'. Puwar usefully describes these accounts as representing the burden of doubt:

Although they endure all the trials and tribulations involved in becoming a professional they are still not automatically assumed to have the required competencies. There is a niggling suspicion that they are not quite proper and can't quite cut it.

(Puwar, 2004:59)

Although Puwar is making the point for black bodies, it could be extended to many of the experiences involving judgement. Like Christophe, Pilvi found the setting of targets that she failed to understand a source of tension, which in her case almost led to a decision to leave the course:

I had to improve my classroom presence and my explanations on the things and I felt that like I am not making any progress because these are the areas that I know that they are difficult and she made me to notice that even more. I felt so much pressure that I felt that I did not make any advance at all in any [...] not in my body language, in anything else.

(Pilvi)

Pilvi highlights the emotional labour invested in the process of making the necessary adaptations and the difficulties of ill-defined targets which, rather than promoting improvement, had the opposite effect. In addition to difficulties associated with target setting, the excerpts in this section indicate that in order to get the 'right mix' (Blommaert and Varis, 2011) the burden of doubt requires migrant student teachers 'to work, as is often noted, twice as hard to be accepted' (Puwar, 2004:145). The Teachers' Standards also had the symbolic power of legitimising aspects of a teacher's knowledge and performance, which student teachers found useful in the process both of adaptation and of constituting the professional habitus of a teacher in

England.

7.3.3 PROFESSIONAL LEARNING USING THE TEACHERS' STANDARDS

The standards, representing a rationalisation of expected performance, in contrast to the confusions experienced by the student teachers, were initially difficult to understand and use:

At the beginning actually, I didn't know what was it about. [Laughter] Then I started actually at the back of the PDJ [professional development journal] you have them. I used to read them so many times just to know what they are about. Just to get familiar with them. Actually they were very helpful at the end.

(Imane)

Imane's laughter at her initial ignorance of the standards is both ironic, in respect of their later significance, and suggests how, for her, they were less important and less useful than the personal contact with her mentor that has already been discussed (see Section 7.3.2). The way in which she developed a familiarity with them demonstrated their performative power:

Q1 and Q2, high expectation. Every observation, that's the way I learned actually when they used to observe me and put those Q standard [...] I used to read from observation sheet all the time just to [...]

(Imane)

Imane's use of the word 'learned' suggests that she was actively engaged in a process of constituting her professional identity; a process that involved a constant shuttling between the judgements from her observations, her own dispositions, and the framework of standards that characterises the processes of care of self. This usefully exemplifies the discipline that is required to adapt: 'Filled with exercises, practical exercises. Taking care of oneself is not a rest cure' (Foucault, 1990:51). Doina continued this into her first year of teaching:

I still go back to my standards and I still go through the things that I've done, and whenever I get a letter, even though I've got the standards there, everything, the file is sorted, if I get a letter from a parent I think 'Right, this would go with C18' or [...] you know? So I'm still thinking in terms of standards.

(Doina)

The shuttling back and forth in which Doina was engaged was not required, but it is a

Chapter 7: Around and About the School Site

practice that has ‘use-value’ (Skeggs, 2004:11) in giving her confidence. By matching her actions to the standards, Doina indicated both the standards’ performative power and, as she strove to fit their requirements, their symbolic power in defining the role of a teacher in England and, in so doing, in contributing to the project of ‘fitting in’ shared by many of the student teachers.

Other trainees expressed opposition to the discourses embedded in the standards, and the processes involved in their use, in ways that reflected their own trajectories and other authorising centres. Dieter, who described himself as a ‘left-wing, middle-class German guy’, criticised the standards as ‘a bit “jumping through hoops” exercise’, although in this case, the use of the colloquialism ‘jumping through hoops’ suggests that he was also drawing upon other discourses of opposition that he had encountered in his first two years of teaching. Pilvi, who had been in the UK for less than a year, drew directly upon national discourses of trust from Finland (Sahlberg, 2007) in voicing a more uncompromising opposition to the principles of the standards themselves and the associated surveillance:

In Finnish schools, the teacher has a lot more independence and if you’re the teacher, nobody comes to observe you. Everybody is like relying that you are doing your best. There is no need for anyone else to come and observe or putting main targets that you need to improve.

(Pilvi)

Pilvi articulated an opposition that was clearer than Dieter’s and which reflected her previous experience as a teacher in Finland. This critical attitude positioned them both in terms of their own transnational lives. In contrast to Doina and Imane, who were using the standards to become London teachers, both Pilvi and Dieter suggested an at least professional attachment to the practices of teaching in places other than London. This demonstrates how the boundaries of professional learning and positioning were not those of the school itself and were more complex for migrant teachers than for those from the UK.

The site boundaries of the school were important in marking professional

performances, but the boundaries of professional learning were different for each student teacher during their placement, and included regular opportunities to meet at the university. This sometimes also reached home, both in terms of discussions with partners and in the family roles they undertook. On the way to and from school, the trainees could meet teaching colleagues, which enabled them to discuss school matters, and sometimes they met members of staff they might not interact with as part of their daily routines in the school.

7.3.4 PROFESSIONAL LEARNING OUTSIDE SCHOOL

The ‘chance of space’ (Massey, 2012:151) meant that meetings student teachers might have in, or near, the school provided occasions on which they could be recognised as a colleague or a member of school staff as opposed to a student teacher. Though fleeting, these recognitions could be significant, as Imane described when she met the headteacher, who was also a mathematics teacher, outside the school:

I met her outside and there was like [...] I was just walking down the street, and she passed me and she said, ‘Oh, bye-bye Imane. Have a good holiday!’ I didn’t expect that, yeah, expected that she will know my name or something, but she was really friendly and when I look at her, it was her. And it was really [...] you feel very good when someone knows your name, I think.

(Imane)

Recognition as a colleague was marked for Imane by the use of her name by the head teacher. This contrasted not only with her expectations of anonymity, but also with her own different practices of address. For example, she could not refer to her former MEC tutor by his name because ‘for me he was my teacher. I call him by Sir. Different culture, different ways’ (Imane). Her pleasure at being recognised outside the school was a sign of unsettling expected hierarchies, and of using practices of politeness that emphasised professional recognition, which could be of benefit when Imane crossed the boundary of the school site.

By way of contrast to such fortuitous meetings, Pilvi walked, at the end of each day, to

Chapter 7: Around and About the School Site

the station with another PGCE trainee who became her friend, which gave them an opportunity to talk about ‘how we feel about being outsiders’ (Pilvi). This feeling of confidentiality in the public space of the street led to discussion about difficult moments they had experienced during the school day:

For example, I had a discussion with a teacher and I didn’t really understand why did she do that and why did she went out, why did we have a conflict, then I told her and we analysed it together like, ‘You know, I have noticed about British people, they are like this’.

(Pilvi)

Both Pilvi and her friend had been in the UK for a short period, and their discussion shows how they could elaborate their understanding of professional practices and of how these were linked, more broadly, with cultural practices, in a way that echoes Imane’s reference to ‘Different culture, different ways’. This emphasises the importance of such discussions and, should there be difficulties in having them within the confines of the school placement, the importance of university sessions as a forum. The university provided training sessions for the trainees before each school placement, and set and assessed the academic assignments that were an integral part of the PGCE course. These training sessions offered a setting in which trainees could have discussions that focused upon issues directly related to mathematics teaching, as well as more wide-ranging discussions related to educational issues and their own training and personal trajectories.

University tutorials, with me, were an opportunity to monitor performance in schools and on university assignments as well as to discuss, by way of mentoring conversations, issues related to the personal trajectories of students, which could often, as has been already discussed, be silenced in the context of school mentoring. In this way, I discussed with Dieter the ongoing significance of the Second World War in Anglo-German relations:

When we spoke [...] in university about those things, [...] it opened up for me the prospect of running into kind of like funny situations or not that nice situations as

well. [...] I was a bit naive I guess about that to start with.

(Dieter)

This illustrates how exploratory talk enabled me to discuss issues that might be relevant to student teachers, as well as providing them with the opportunity to share aspects of their own trajectories and national histories, of which I might otherwise have been ignorant.

In providing a place for exploratory discussion and personal reflective writing throughout the course, the university gave the student teachers an opportunity to discuss their own trajectories and their processes of adaptation in becoming a teacher in England. Furthermore, through interaction formally with me and informally with other members of the PGCE cohort, the university enabled the discussion of categories and histories that challenged, and clarified, some of the constructions that the trainees made of ‘British people’, for example Pilvi, in her efforts to rationalise confusions that arose in her school placement as she walked to the underground with her friend.

7.4 PUPILS, AND PUBLIC SPACES, IN THE SCHOOL

Teaching timetables framed the rhythm of the day and distinguished between times when student teachers were in the classroom and time they were able to spend in other areas of the school, usually in preparation for teaching. They also affected the routine journeys, often amongst a suite of rooms designated for maths teaching, which teachers would make around the school. The student teachers did not usually remain in the same classroom for any longer than a teaching period of about one hour, which meant that, after an organised dismissal that underlined their authority in the mathematics classroom, they had to move into the corridors, which were the school’s main networks of communication.

The routine movement of pupils and teaching staff between classes in English schools could be surprising:

Other thing was these big groups of students moving around between lessons.

Chapter 7: Around and About the School Site

That was not the case at my school because students would stay in their classroom and it is only the teachers moving around in between lessons.

(Giana)

Close to the maths classrooms, student teachers would meet colleagues from the maths department, and carry with them the authority they had accumulated in the surrounding classrooms. Elsewhere in corridors and playgrounds, in contrast to amongst the organisation of desks in classrooms, this authority could be difficult to negotiate: they were without familiar members of staff, and there was always the possibility of chance encounters with unfamiliar pupils, and situations that might require disciplinary intervention. Although the student teachers were expected by the school to carry out this role, Giana, with her reference to ‘big groups of students’, suggests the concerns that some might have in doing so.

This situation might be made easier by knowing other staff from mingling in the staffroom, or by knowing other pupils, either through participating in pastoral duties, such as being responsible for tutor groups, or by being involved in extra-curricular activities. Participation in such activities, which are a valued feature of English schools, does not necessarily match the expectations of schools and teachers in other countries, where the main duty of a teacher is to teach groups of pupils (Pepin, 1999). This way of demonstrating ‘investment in the game’ (Bourdieu and Wacquant, 2007:98) was often made more difficult by the way in which these activities might represent local and national traditions, meaning that student teachers might not be able to use their own leisure interests and capital: for example Pilvi, a good handball player, did not have the opportunity to play the sport in English schools.

On the other hand, for some, in certain schools, religious observance offered opportunities to participate. Imane attended, in a religiously appropriate manner, the weekly congregational prayer, the *Jumu'ah*, and this observance and her own religious dress led to her being recognised, and greeted, in the corridors by pupils:

They were very respectful because it was almost like 70% Muslims and even the classes that I didn't teach, when I will be walking in the corridor, they will say, you know, they'll greet the Islamic greeting to me, ‘*Salaam Aleikum*, Miss’. That means ‘peace be upon you’. And I was surprised because they weren't the

Chapter 7: Around and About the School Site

children I used to teach. And they used to tell me that. It shows that they are very respectful.

(Imane)

Imane had taught briefly in Algeria, and her surprise at being greeted by pupils she did not teach underlines the different priorities and responses of teachers from outside the UK to which I referred earlier. It is interesting to note how the respect she found so remarkable was paid to her not only as a Muslim but also a teacher, in the way in which the traditional Muslim greeting was immediately followed by the titular of Miss, commonly used for women schoolteachers in English schools. Imane did not report that the Islamic greeting was used in her class, and its use in corridors demonstrates the possibilities for and the importance of different practices and relations between staff and pupils that are afforded by public spaces throughout the school.

Imane's contact with Muslim pupils was similar to the contact that some student teachers had with pupils who had migrated from their own countries, whether or not they taught them. For example, Doina said of a Romanian pupil, that:

[I]f he would do badly then I would tell him off straight away and say he should be embarrassed. At least maths, because it's not the language so much. Maths is more international, so yeah it's good to have high expectations.

(Doina)

Here we see that Doina has a sense of responsibility for the boy from Romania, and would use her own knowledge and experience of Romanian mathematics education to reprimand him immediately for poor performance in mathematics. Doina expressed a translocal positioning by using the phrase 'high expectations'. She simultaneously employed a term that is in common usage in the discourse of raising standards in English schools and acknowledged the high standards of mathematics in Romania, of which she herself was a product.

This strategy of double voicing was also used by Christophe when he was contacted by a mother who had migrated from Africa and was having difficulties with her son at home:

Chapter 7: Around and About the School Site

[T]he mother called me and said ‘Only you can talk to him. He will listen to you. He won’t even listen to me’. I call him, I tell him that ‘If I hear your mother complain to me again about your behaviour, trust me young man, you’re not going to get it easy, I’m going to step my foot down on you, all what you’re doing wrong’ and when I speak to them from that perspective they see.

(Christophe)

Here, in the syntax of ‘I’m going to step my foot down on you’ there is an ambiguous use of English, inflected by forms from Africa, that might be inappropriate in the rest of Christophe’s professional performance. Like the use of the greeting ‘*Salaam Aleikum*’ for Imane, it draws its power because it is juxtaposed with other, more familiar, forms of local English. It indexes both the home and school life of the pupil, and, combined with his performance as a man, allows Christophe to draw upon authority from ‘that perspective’ outside the school. Imane also spoke from this other perspective after prayers:

They were like [...] when I [...] actually I was the only teacher praying with them and when I come out, they will look at me and they will be, ‘Miss, are you praying? Did you pray?’ And I used to use that, you know, with the boys if they were like misbehaving and I said, ‘Did you pray *Jumu’ah* and you’re acting like that?’ ‘Oh, how did you know, Miss?’ ‘I was with you. I prayed, and that’s what the Imam said [...]

(Imane)

Here, Imane appeals to the disciplinary discourses and practices of the Muslim religion, although relatively unacknowledged in a state school, to support her practical authority in maintaining school expectations for the behaviour of pupils. This usefully draws attention to the ethical question of which translocal practices teachers may use in their performance as teachers in English schools.

In all these examples, the teachers were able to exercise power in their encounters with pupils, in a way that throws a useful light on to the processes of being a role model, something often cited as a reason for diversifying the teaching workforce. In spite of the difficulties of recognition and performance that all the student teachers in this sample experienced in classrooms, these examples indicate the part they can play in improving communication with the superdiverse communities served by London schools.

7.5 CONCLUSION

This chapter has shown how the design and layout of the school premises contributes to how staff and pupils meet and interact as they work and move around the school site during the school day. Sometimes this results in configurations of space and time in which there are chance meetings and fleeting identities. On other occasions, for example in areas where mathematics is taught, an order and a routine are established by the assumptions and requirements of the school timetable, and these offer, in the development of repeat performances, the reassurance of familiarity and habit. Spatialising the school premises has allowed the study to acknowledge the complications of these different performances and how the boundaries of classroom, staffroom and departmental area are maintained through the assumptions, and practices, of power.

This chapter has shown how trainees can be positioned differently according to the power of institutional practices and chance encounters with colleagues and pupils. Although the student teachers are sometimes initially surprised by the positions into which they are hailed by false recognitions, and perhaps, find it difficult to respond depending on their prior expectations or communicative repertoires, the metaphor of navigating these spaces (Kostogriz and Peeler, 2004) gives a good sense of the agency they developed. It distinguishes between the fleeting identities they might perform in staffrooms and corridors and the possibilities of habitual performances in spaces where they spend time with colleagues or pupils. The conversations they have in this respect contribute to their professional learning and their understanding both of how they are perceived by others and of themselves as teachers who are part of a superdiverse workforce.

Although the subject of their own positioning and migration trajectory is of ongoing

importance to all the student teachers, the struggles they experience in engaging their habitus with the field are frequently invisible. There are several ways in which this invisibility can be acknowledged and shared, ranging from the professional acquaintances and friendships they develop to the more formal arrangements for mentoring provided by the PGCE training, either at the university or via the subject mentor. Mentoring conversations have provided a useful way of analysing the processes of these relationships. Exploratory talk, in which the mentor builds ‘acquaintance and comfort by means of moves consisting of discussion and eliciting comments’ (Tillema and van der Westhuizen, 2013:1309), has been shown to be useful at all stages, and especially early on, to allow the trainee to express the confusion they experience as their habitus engages with the fields throughout the school in which they perform their professional identities. This is of particular importance for the student teachers in this study, in that it gives them the opportunity to discuss their own migration trajectory as opposed to being isolated by it on the more or less unlikely assumption, that, in a superdiverse population, colleagues in the school are untouched by, and unaware of, the processes of migration. An analysis of these conversations has built upon Erel’s (2010) discussion of migrant adaptation, by documenting both the development of confidence and the development of the processes of target setting as a result of an experienced mentor giving prescriptive advice and engaging in a process of evaluation that helps student to become aware of the process of professional adaptation. This is a process to which the Teachers’ Standards can contribute by providing a framework for comparison and reference throughout the school placements and into the early years of teaching. Using the standards for judgement, however, especially without the confidences of exploratory conversations, brings difficulties of confidence associated with what Puwar (2004)

Chapter 7: Around and About the School Site

refers to as ‘super-surveillance’ and the ‘burden of doubt’, both of which can result in uncertainties among trainees about their authenticity and their suspicions that ‘they are not quite proper’ (Puwar, 2004:59). In this context, mentoring conversations that allow the student teachers to articulate their experience without fear of being judged inadequate, and to share their own emerging positionings through exploratory talk, are an essential element of the PGCE training for student teachers of migrant heritage.

Chapter 8: Conclusion

8.1 INTRODUCTION

The analysis of the data in the previous three chapters has addressed the research questions I identified in the introduction:

- 1) How do student teachers sustain themselves through their social networks, both within London and transnationally, throughout the PGCE?
- 2) What are the challenges and processes of change and adaptation during a PGCE course in the context of student teachers' own biographies and migration trajectories?
- 3) How do migrant teachers develop authentic performances as mathematics teachers in the context of the expectations of the English school system, and through their interactions with pupils and staff?

Specifically, Chapter 5 considered the first question and the others were considered in Chapters 6 and 7. In doing so, the study has built upon the work of scholars in both migration studies (Erel, 2010; Nowicka, 2015) and mathematics initial teacher education (Nolan, 2012; Walshaw, 2010) to produce an account of the professional learning, and performance, of a superdiverse group of student teachers. Although it has shown that there are particular issues that concern the training of migrant teachers, it has also pointed to how their experience of the course is shared by all PGCE students. This latter theme will be part of this conclusion, along with the implications of the study for policy and practices in the initial training of migrant teachers and, more broadly, for the ongoing development of a superdiverse teacher workforce in English schools.

8.2 CONTRIBUTIONS TO KNOWLEDGE

A distinctive feature of this study, seen in the way in which superdiversity has been foregrounded, has been how it has combined the narratives of many different

Chapter 8: Conclusion

migration trajectories with experiences of initial teacher training (ITT). Although this new form of diversity is especially linked with London, a global city, the contributions to knowledge, which I discuss in this section, will have implications wherever there is a diverse student body or workforce.

8.2.1 POLICY AND PRACTICES OF INITIAL TEACHER EDUCATION

The supply and training of teachers has been the subject of increasing government scrutiny and intervention throughout the UK, with England taking a path that has led to the renaming of initial teacher education (ITE) as initial teacher training (ITT), and student teachers, as trainee teachers. This reform strategy of ‘establishing central control of teacher education’ (Murray, 2008:20) has affected the organisation and the curriculum of the PGCE, introduced in England a number of different school-based routes, including School Initial Teacher Training, and established compliance procedures through Ofsted (Office for Standards in Education, Children’s Services and Skills) inspections, which monitor the implementation of attempts to micro-manage the system. These neo-liberal reforms, couched in discourses of modernisation by New Labour, emphasised market forces and choice (informed by outcomes measured by examination results) as drivers of improvement. Despite the acknowledged success by Ofsted of the PGCE courses run by higher education institutes (HEI) (MacBeath, 2011), neo-liberalism, especially since the advent of the Coalition Government in 2010, has led to the fostering of school-based ITT routes such as Schools Direct, which reflects the Government’s apprenticeship model of teaching (Gove, 2010), in open competition to HEI-led PGCE routes to the award of Qualified Teacher Status (QTS).

This fragmentation (and it is worth noting that academies are able to appoint teachers who do not have QTS) has compounded the difficulties of gaining access to teacher training courses that Semye, for example, experienced. Interviewing tutors may not

Chapter 8: Conclusion

have the necessary experience to contextualise the complexities of superdiverse migrant trajectories or the difficulties that occasionally arise in the interpretation of international qualifications, which are not always validated by UK NARIC. During interviews, written language tests and oral presentations may lead to misjudgement of the abilities of multilingual audiences to adapt to accent, as in the example of the inspector in this study, who found, to his surprise, that the pupils understood perfectly Christophe's English despite his own difficulties. Furthermore, the requirement of 10 school experience days prior to the interview may be difficult to fulfil. Some, like Aharya, were able to achieve this (albeit in the wrong sector) by being teaching assistants in primary schools where their language and mathematics capitals were useful, whilst both Semye and Christophe reported difficulties in gaining access to schools. The study has also shown how would-be teachers, like Doina (with her own assumptions about teacher training from Romania), were reliant upon information gleaned by chance from local networks, which are likely to be a less well-informed source in the face of the complexities of such fragmentation. Although the universities' response to marketisation has resulted in publicity drives, in particular via social media, this difficulty remains, as is evidenced by newspaper articles entitled, for example, 'Why are well qualified teachers working as cleaners?' (Lacey, 2013). Such recruitment practices, which do not acknowledge multilingual practices, can result in barriers for migrant teachers whilst not encouraging them to demonstrate other useful capitals for a career in education, including, for example, their own experience of migration, something that is central to the experience of many pupils in English schools.

This study has included new migrations and forced displacement, and practices of space-time compression represented, for example, by mobile communication

Chapter 8: Conclusion

technologies that enable local contact within the UK as well as contact throughout the world. Especially when couched in the political language of modernisation, this has resulted in a seemingly inevitable discourse of globalisation that has been fuelled, in education policy, by competition generated through international comparisons, such as the four-yearly PISA (Programme for International Student Assessment) rankings which, despite criticism, have led to education being:

Repositioned as a vital tool for creating and maintaining economic prosperity and for returning a competitive edge in world markets

(Maguire, 2010:59)

Such comparisons have resulted in international policy borrowings, especially in mathematics. For example, after further evidence that Britain was slipping increasingly down the PISA tables in mathematics, a UK delegation visited the table-topping Shanghai schools in 2014, which led to the institution in England of the Mathematics Mastery programme and teacher exchanges with China. Yet, such policy borrowings are always subject to local interpretations and adaptations, exemplified in this study by the varying differences in national mathematics curricula and pedagogies experienced by migrant teachers. Entry requirements for the PGCE course mean that student teachers have studied mathematics at degree level, but this might not mean a mathematics degree and, to address issues of subject knowledge, UK nationals and EU members (11 in this sample) were offered generous tax-free bursaries and payment to attend a subject knowledge enhancement course (the MEC). This could be seen as unnecessary and condescending (shown by Imane's curt response of 'My math is good enough') and as reflecting Erel's (2010) contention that migrants often find that their qualifications are downgraded.

The Migration Advisory Committee has regularly identified a mathematics teacher shortage, making migrant mathematics teachers eligible for a preferential Tier 2

Chapter 8: Conclusion

migration status. The forerunner of this scheme, the Highly Skilled Migrant Programme, did not necessarily guarantee a job in the UK (as Semye discovered) and, echoing Christophe's comment, 'I would say that anyone should do the MEC', this study has shown the importance of extending the bursaries to all migrant teachers (including those from outside the EU) as part of their preparation to teach in UK schools. A better appreciation of their needs (and their decision-making processes in becoming teachers) is given by the phrase 'highly qualified migrants' (Cairns et al, 2017; Ryan and Kurdi, 2014).

Partnerships between schools and HEI providers were first required in England by circulars published in 1992 and 1993, as an acknowledgement that schools and HEI providers (in the case of this study, a university) work together in the provision of the PGCE. During the time of the research, this partnership required 120 working days in schools, with the remaining time (50 days) completed at the university and on a school-based research project. This time division emphasises the importance of school-based training within the PGCE course. Despite the intentions of a partnership committee, consisting of representatives from schools and HEI, and the quality assurance procedures of university tutors, including both visits and joint classroom observations with school staff, it remains the case, that there are difficult issues.

The first of these issues is the difficulty of gaining and sustaining school placements in the wake of the marketisation of ITT (and, for instance, the different amounts of money that different HEI providers are willing to pay schools for a placement), and the fact that mentors do not receive any incentive, other than that of professional development, to provide mentoring to student teachers. Despite the development of some expertise in and familiarity with the system, this instability meant that, in this study, it was often not possible to carefully match the student teachers to established

Chapter 8: Conclusion

partnership schools for their school placements.

This emphasised the importance of the university sessions, which drew upon the experience in schools of university staff, in preparing student teachers for school placements. Student teachers were introduced to mathematical resources that they might (following Bourdieu) use as capitals during their school placements, and were also given the opportunity to watch relevant English pedagogical and language practices that could challenge their expectations of how mathematics might be taught. This study provides evidence that this approach helped students to develop epistemic authority, through Imane's praise of the 'magic number line' (a pedagogical device for the teaching of fractions), and practical authority, by becoming familiar with routines (for example for lateness, as reported by Idman) to organise and manage classrooms. Further to this, Osasune remarked upon the pleasure of witnessing superdiversity at first hand when she visited, from the suburbs, the university in central London, suggesting an environment in which students were able to explore their experiences throughout the course in ways that emphasised that:

The practice of teaching, because it is concocted from relations with others and occurs in structures that are not of one's own making is, first and foremost, an uncertain experience that one must learn to interpret and make significant
(Britzman, 2003:3)

Such uncertainties were the focus of tutorial discussions at the university, which led, for example, to Dieter being prepared for awkward questions about the Second World War in ways he had not anticipated (or had considered irrelevant). The university supported processes of interpretation through a series of written assignments. Tutorials also enabled students to reflect on the significance of apparently insignificant, but highly symbolic, experiences, such as that described by Gilles of regularly wearing a tie to work. The study has also noted how Gilles, who was married to an English dentist, found his lack of familiarity with the simple vocabulary of English school

Chapter 8: Conclusion

systems belittling. During tutorials, all the student teachers could discuss the significance of such incidents (which were not limited to Gilles' experience) without the embarrassment often experienced in school. For some of them, the difficulties were more substantial. Pilvi, who felt that the Finnish system trusted teachers in contrast to the regular monitoring experienced in English schools, struggled with the differing national notions of professionalism. This indicates a further source of difficulty for migrant teachers who are offered jobs in England as part of a policy of addressing shortages in mathematics. These experiences highlight the importance of reflective practice, which was central to the university's PGCE provision, in ensuring the success of such policies.

Structures to support the development of reflective practice were especially significant in the context of the variable quality of mentoring. Imane was able, in her first placement, to speak freely to colleagues in the maths department in ways that addressed the difficulties she was experiencing, and her mentor both specifically advised on professional matters concerning teaching and lesson planning and showed an understanding (for example, by turning off the music he was listening to) of her religious practices in ways she felt showed her respect. This recognition and action concerning issues of difference and mathematics teaching were the foundation of a strong and effective mentoring relationship, something that was absent for Pilvi, whose mentor refused to recognise or discuss the ongoing implications of her migrant experiences for her mathematics teaching. Using Puwar's (2004) work, this study has shown how interactions can be constrained by somatic norms and the assumptions of whiteness, leading to emotional intensities for migrant teachers concerning a 'burden of doubt' and 'super-surveillance'. These concepts usefully extend the understanding of the construction of difference as deficit (Yosso, 2005) and indicate a key area for

Chapter 8: Conclusion

future action: to implement a programme to address claims for social justice amongst a superdiverse teaching workforce.

Nonetheless, student teachers developed practices that helped them not only to pass the PGCE course with its promise of future employment but also to develop a teacher identity that resulted in a sense of belonging in England (and the possibility of remaining in the profession), which I go on to explore in the next section.

8.2.2 REMAINING A TEACHER IN LONDON AND DEVELOPING A SENSE OF BELONGING

The complexities of the transnational attachments generated by the migrant trajectories of student teachers in this study are usefully caught by the imaginary of how individuals might be anchored (and unanchored) (Grzymala-Kazłowska, 2016) in particular locales, which provides a framework for discussing the processes, and possible tensions, of belonging:

People can belong in many different ways and to many different objects of attachment. [...] Even in its most stable ‘primordial’ forms, however, belonging is always a dynamic process, not a reified fixity – the latter is only a naturalized construction of a particular hegemonic form of power relations.

(Yuval Davies, 2011:12)

I examine these processes by considering translocalism: both the way in which belonging is generated between different transnational locales, and its generation in the local–local interactions of ‘grounded transnationalism’ (Brickell and Datta, 2011) in London. At the same time, it is important to acknowledge, as I did in the previous section, that UK Government policies affect migration in respect of ‘the politics of belonging’ (Yuval Davies, 2011:10). This section reflects on how this study has shown that highly qualified migrants can be both successfully trained, and subsequently retained, as mathematics teachers in the UK, by developing anchors and attachments that contribute to a sense of belonging that is:

Chapter 8: Conclusion

[A]bout feeling 'at home', feeling 'safe', and if not necessarily feeling in control, at least feeling able enough generally to predict expectations and rules of behaviour.

(Yuval Davies, 2011:35)

In order to illustrate these processes of belonging, this section draws upon evidence from different spatial scales (Brickell and Datta, 2011) in the study and uses sociolinguistic scales to illustrate how power circulated in the meaningful encounters the student teachers had during their school placements.

Translocal tensions were illustrated by the way in which boundaries of the home were contested, and became more permeable. For Pilvi, although Finnish remained the main language used at home, she used English to describe incidents and events that took place during the PGCE course. In contrast, Semye's husband attempted to secure the boundaries of the household (and assert his own power as a man) by jumping national scales and pointing out that Semye no longer did the domestic routines as she had when she was a teacher in India. Semye reasserted the local English scale (and her professional ambitions) by stressing the importance of her preparation for working as a teacher, which was, in turn, important financially to the family. The experiences of Semye and Pilvi draw attention to the different ways in which local-to-local domestic encounters can be gendered, with specific implications for women that need to be acknowledged in the process of mentoring throughout the PGCE course.

The power of translocal discourses could be particularly strong during visits by relatives and friends to London which could, ultimately, play a part in later decisions for return or onward migration. Demircan was uncomfortable at the prospect of the arrival of his partner's parents from Turkey and Pilvi was questioned, on her return to Finland for skiing trips, about why she should not, like her peers, make her home in Finland. Both Pilvi and Dieter returned to Finland and Germany respectively (where their partners were from), countries that offered opportunities and a way of life that

Chapter 8: Conclusion

were comparable to those in England. It is worth noting that the capitals they had acquired through the PGCE and teaching in England were considered, upon their return, as a strength: in Finland, Pilvi gained promotion to a post in which she was responsible for ICT and Dieter worked on a new initiative at a school where German pupils were taught maths in German. This emphasises how the capitals of mathematics teaching and English language developed on a PGCE course can offer the prospect of onward or return migration, should it become part of an individual's or a family's future plans, and can open up the possibility (as Dieter had hoped) of a mobilised global career for teachers.

For those student teachers who had family, and especially for those who had children, like Ivona or Aharya, there was a clear sense that anchoring in the UK had become a sense of belonging, 'an emotional [...] attachment about feeling at home' (Yuval Davies, 2011:10). For others, the PGCE course could be a crucial part of the project of belonging, of gaining a sense of agency. For Demircan, this meant 'finally I live in London', interacting with a superdiverse population rather than with just people of Turkish descent. Older student teachers, like Christophe and Imane, were hoping to regain positions they had once enjoyed, whilst young people, like Doina, were embarking for the first time on the career of their choice. The next section looks at the part that the local-local encounters of becoming a teacher played in such projects of belonging.

The study has shown how, in schools, the student teachers were always vulnerable to challenges of symbolic power (with its implications for the management of pupils in class), through pupils jumping scales to the position of 'native speakers' or by using the authority of national English discourses to position and constrain the student teachers. Some, like Semye, accepted the normativity of such discourses by adopting a

Chapter 8: Conclusion

strategy of fitting in. In contrast, other student teachers, like Dieter and Christophe, themselves jumped scales by referring, for example, to transnational humour or histories that successfully challenged the symbolic power of national English discourses. Christophe's discussion of Africa as representing his own upbringing and his use of African references in a gently mocking sense of humour both represented an unusual postcolonial critique from the global South. The possibility of racism (also reported by Semye in some schools) and the intimidating symbolic power of whiteness (in not wanting to acknowledge the part colonialism played in the construction of its own modernity) meant that Christophe was unable to share his African identity with other African staff. Nonetheless, both he and Doina (see Chapter 6 Section 6.6.2) showed in their classroom performances as mathematics teachers how:

[T]hey see communication as a 'two-way' process of mutual negotiation of language differences [...] If such an accommodation happens in both directions it is possible that both parties will come out of their own varieties and co-construct new intersubjective norms for these translocal encounters.

(Canagarajah, 2016: 51)

The details of classroom interaction provided by this study show how the meaningful encounters of student teachers could create new norms in classrooms, where all pupils learned about the dynamics of identity and the processes of identification and belonging during their mathematics classes.

Although these benefits are possible, this study has highlighted the ongoing possibility of micro-aggressions and ensuing destabilisation that are a regular, though often unacknowledged, experience for migrant teachers. Evidence from this study shows that this needs to be addressed during the PGCE in the practices of mentoring and recognised in the development of policies for a superdiverse workforce, all of which are part of the politics of belonging and involve:

not only constructions of boundaries but also the inclusion or exclusion of particular people, social categories and groupings within these boundaries by

those who have the power to do this.

(Yuval-Davis, 2011:18)

The challenge of categorisation is, in part, in recognising how new migrations, especially from Eastern Europe, require a review of existing equalities policies, so that they acknowledge micro-aggressions and provide strategies by which these can be addressed. Christophe's voice from the global South emphasises the limitations of categories, if framed entirely in the Western tradition. The greater challenge of the politics of belonging is to provide ways in which migrant teachers, not silenced by the power of whiteness or national English discourses, can express themselves in local-to-local encounters in ways that acknowledge globalisation and which this study has shown contribute to the education of all.

8.2.3 SUPERDIVERSITY AND THE TEACHER EDUCATOR

Throughout the period of the research, policy changes affected the organisation of ITE and, with it, the practices of the PGCE. The pace of change accelerated after the election of the Coalition Government in 2010, when Michael Gove opined: 'Teaching is a craft and it is best learnt as an apprentice observing a master craftsman or woman' (Gove, 2010). This emphasis on the apprenticeship model of learning is a reiteration of the importance of practice in contrast to theory, to the detriment of the latter. Although school experience (which may in time become increasingly remote for some teacher educators) remains an important point of reference, and illustration, this study has shown that teacher educators require other skills.

Being able to discuss, and listen to, issues of differences, which all the student teachers in the sample experienced, was of particular importance. The confusion felt by Imane in her first placement and the belittlement Gilles experienced demonstrated the ongoing importance of 'one's biography, present circumstances, deep

Chapter 8: Conclusion

commitments, affective investments, social context, and conflicting discourses' (Britzman, 2003:31) and the importance of learning conversations that go beyond apprenticeship or sets of tips. It is important for teacher educators to address, or begin a conversation about, sensitive issues that may seem tangential: Dieter reflected how discussions at the university about Germany and the Second World War had helped him to address such issues which they arose suddenly in his mathematics classroom. In order to be able to anticipate how biographies can affect students, there is a need to be aware of larger themes of global history. Particularly important, in view of the many student teachers from outside Europe, is an understanding of the reliance of Western modernity on the profound and violent ruptures of colonialism and settler societies (Connell, 2016) and the way in which this has been sustained into the present. The kind of conflict that may be generated is shown in this study by Christophe's regret in changing his 'Queen's language' in contrast to how his pride in being African led him to challenge the ongoing stereotypes of Africa. Although entirely more comfortable, Gianna's experience of Italian stereotypes resulted in an essentialised identity that left her feeling isolated because nobody else had had her Italian experience. The importance of these contrasting cases is that they show the complexities of identities and, without the time during a PGCE to address theories of identity, how they need to be embedded in mentoring conversations that are not bounded by the performativities of target setting and do not suffer the limitations of written assignments that many mathematics students experience regardless of issues of multilingualism. A key issue in superdiversity is the importance of the unknown (Blommaert and Rampton, 2011), which means being able to generate the trust to empower students to share in sometimes difficult conversations, which are well described by the interactions that are an essential part of critical cosmopolitanism:

Chapter 8: Conclusion

Cosmopolitanism [...] refers to a condition in which cultures undergo transformation in light of the encounter with the Other.

(Delanty, 2009:251)

Although the power of Eurocentric or Western views in the construction of the Other is always a difficulty of cosmopolitanism, it provides a useful perspective from which to address learning conversations with migrant student teachers. In the face of the ongoing repercussions of the colonial project and of neo-liberal globalisation, it also demonstrates that their lives and experience are important enough for a university lecturer to take an interest, and it may, therefore, be the case that future colleagues do so as well. Importantly, such conversations challenge the construction of difference as deficit (Yosso, 2005), which has been an ongoing theme of this study, and allow migrant teachers to demonstrate capitals that might not be imagined and which, before such a conversation, they themselves might not think of as relevant.

Throughout this study, the discussion of heteroglossia and discourse has demonstrated the significance of power in all encounters and it is important that tutors, at the same time as showing a cosmopolitan awareness as discussed in the previous paragraph, are aware of their own identities as raced subjects, empowered, like the institution of the university itself, by the power of whiteness:

Whiteness is the concept which exposes how structural inequalities are built into processes and practices. It is an invisible component of how policy makers, policy interpreters and recipients work in both complicit and unknowing ways to advantage one group whilst disadvantaging others, namely those from BME [black and minority ethnic] groups.

(Lander, 2014:100)

Lander's research has shown how whiteness allows some ITE tutors to deny the importance of diversity education in ITE, especially in white areas, whilst this study suggests that the invisibilities that affect BME students affect all teachers of migrant heritage, whether or not they find themselves in superdiverse cohorts, as failure to recognise (and offer an analysis of) these issues can lead to a sense of isolation and

Chapter 8: Conclusion

inconsistencies in addressing their needs. The reconsideration of the normative power of whiteness applies to the university and the practices of teacher educators perhaps even more now that any wording referring to diversity has been removed from the latest version of the Teachers' Standards (DfE,2011). As well as in learning conversations, which have been discussed, the practices and curriculum content of the PGCE course should acknowledge the superdiversity of the students. This may include references through films and texts to the history of mathematics and people of colour, ensuring that training is offered to mentors to alert them to the particular needs of migrant teachers and ways of addressing these, as reported in this study and, perhaps most importantly, whilst acknowledging the potential difficulties of recognition, encouraging teachers of migrant heritage to use their capitals in their mathematics teaching through actions as simple as using non-UK currency in percentage calculations, and train timetables to and from destinations outside the UK when studying time. These actions result in making difference an everyday resource for teaching and they invest in routine meaningful encounters a sense of commonplace diversity, in which difference is an accepted norm rather than hidden by the power of whiteness or behind the assumed ahistorical universalities of mathematics.

Migrant student teachers come to the PGCE without having spent their secondary education watching teachers in England teach mathematics, and having completed a school curriculum the content and practices of which were both different (see Chapter 2) and taught, for the most part, in a language other than English. For many, the course is an introduction to the teaching of mathematics in England and an introduction to the English curriculum, underlining that for the teacher educator 'the how of teaching is at least as important as the what of teaching' (Loughran, 2011:288). Instead of the binary of theory and practice, this acknowledgement suggests their simultaneous importance,

Chapter 8: Conclusion

in what Freire (1996) refers to as the theory of praxis, as a framework for providing mathematics curriculum sessions. These are designed to focus on mathematical activity in key areas of the curriculum and provide immediate opportunities for discussion of pedagogy and planning. For the student teachers, this approach also has the advantage of providing them with capitals they can use during their school placements to alleviate the burden of doubt that this study has shown many are subject to at these times. The teacher educator is able to begin the process of critical awareness and reflection by including a commentary both on decisions made during the mathematical activity and on various aspects of organisation and management of the group, to the benefit of all its members (including those who have been educated in English schools). This approach inspired Pilvi, who had never seen ICT used as it was during the early university sessions, and introduced Dieter to the possibilities of learning in groups in contrast to his experience of working alone through mathematical exercises set by teachers, in what has been described as the ‘exercise paradigm’ (Skovsmose, 2008) and which was familiar to many in the study from their school mathematics. Praxis offers the teacher educator opportunities to engage in and promote critical cosmopolitan discussion (providing a context for the more personal learning conversations discussed above) as well as personal reflection, which is part of the change of the mathematical habitus during the year. It is the beginning of the model of the ‘reflexive practitioner’ (Schon, 1984), which develops agency for the student teacher by providing opportunities to:

[I]nterrogate processes of schooling as part of finding their own way with productive pedagogic relationships

(Yandell, 2010:25)

In fostering those opportunities, the course provides opportunities for the discussion of all aspects of superdiversity, ranging from discourses of globalisation to

Chapter 8: Conclusion

multilingualism and, in so doing, models practices that are of direct relevance to the diverse pupil populations that student teachers meet in their school placements. The theory of praxis has also revealed the reductionist assumptions of the apprenticeship model, and I now consider the wider implications of this process for teacher educators. This study has demonstrated the importance for all teacher educators (whether or not the student body is superdiverse) of the social justice agenda in terms of the micro-aggressions experienced by the student teachers in their placement schools. This is important, and justifies both the professional need to disrupt and challenge such micro-aggressions and the development of policies that recognise that they exist for all migrant teachers, instead of relying on ethnicities, which do not adequately reflect the complexities of superdiversity. Some trainees, like Christophe, Dieter and Doina, have shown how local-to-local encounters as teachers can successfully challenge the stereotypes held by pupils in their classes, thereby finding a place of belonging for them that eschews the compromises of assimilation. These are changes that move beyond (yet are supported by) the micro-interactions of cosmopolitan learning exchanges and provide a basis for addressing micro-aggressions. Yet the study has also shown how the opportunity for further substantial change in school has been lost by failures to engage with these possibilities and to discuss in more detail the experiences of teachers of migrant heritage and thereby identify the opportunities that exist in mathematics classes and elsewhere for cosmopolitan learning:

[P]edagogic tasks that help students explore the criss-crossing of transnational circuits of communication, the flows of global capital and the cross-cutting of local, translocal, and transnational social practices.

(Rizvi, 2009: 265)

Although one should not be so naive as to ignore racist discourse and the ongoing effects of the violence of colonialism, cosmopolitan learning does offer a coherent and reflexive response to the complexities of superdiversity, going beyond simple

Chapter 8: Conclusion

celebrations of diversity, which can too easily turn to complacency. As such, it offers an imaginary for action through which teacher educators can respond to the apparent fragmentation of superdiversity and encourage migrant teachers to use all their capitals for the education of English pupils, thereby expanding and enriching the meaningful encounters they have each day as teachers in English schools.

8.3 DEVELOPMENT AS A RESEARCHER

The interviews in this study generated a large quantity of data for analysis. I was able to support the data transcriptions by repeatedly listening to the interviews. This was, in many ways, like listening to a radio performance: it helped to make the data memorable, as well as to draw my attention to aspects of the performance that were not noticeable in the written text. Although this nuanced the final text interpretations, the organisation of the latter evolved from a thematic survey, and arguments emerged in the to and fro of this process, which was itself improved by my growing familiarity with digital technology throughout the period of the research. Although I attempted to use the NVivo software package, the development of this was at an early stage and, rather than think about exploratory use, I developed very detailed categories too early. This meant that I was unable to see the wood for the trees and did not have the confidence to carry on (I did not, for example, know about using You Tube to improve my use of NVivo). Thus, I reverted to a thematic analysis using traditional methods. The analysis of so much data remained challenging, and could have been more systematic with the use of NVivo, and, for example, ideas drawn from corpus linguistics (Baker, 2010). Looking for the use of the key words ‘happy’, ‘fit’ and ‘home’ could have allowed for comparisons that I was unable to make.

My interview style was developed in terms of an awareness of my own role as maths PGCE course leader and of the way in which this power might affect my own

Chapter 8: Conclusion

performance and that of the interviewees. I have described in Chapter 4 the performances I employed to ameliorate the situation, and one of these was to allow myself to cover all the questions in the interview schedule but not to insist upon a particular order, and also to introduce follow-up questions. This conversational style contributed to the establishment of trust, by showing that I was listening carefully to the person, and it provided a rich set of data, but it also complicated the analysis, which took a long time. On reflection, following an interview schedule with a suggested time allocation for each question would have been useful and would not have significantly compromised the quality of the data collected, given the range of successful strategies I employed to develop trust and make clear my role as researcher as opposed to course leader.

8.4 FURTHER LINES OF ENQUIRY

This is a wide-ranging study, which has contributed to the ways in which the performance of a teacher's identity has been shown to include professional capitals, and the recognitions and assumptions of pupils and school staff. In so doing, it has demonstrated that there are experiences and situations that are common amongst all PGCE student teachers, and that, sometimes surprisingly for those who have long been resident in the UK; there are specific issues that arise in relation to those of migrant heritage. Further research should seek to find out how teacher education has adapted to the issues of superdiversity as opposed to having a more restricted view of diversity linked to the migration patterns of British colonialism. In so doing, it should not only seek out the processes of becoming an insider, 'a "fish in water": [which] does not feel the weight of the water' (Bourdieu and Wacquant, 2007:127), which in various ways affect all student teachers, but also address the tensions of the visibility–invisibility

Chapter 8: Conclusion

continuum that affect student teachers of migrant heritage. The strategies of professional conversations discussed by Leonard (2012) and Tillema and van der Westhuizen (2013), and particularly the effectiveness of exploratory talk that has been indicated by their research, offer a way to address the many issues of adaptation and professional learning, which, as this study has shown, affect all student teachers of migrant heritage.

The development of an authoritative voice in classrooms and throughout the school is important for all student teachers, and the framework used in this study, of epistemic and practical authority, could form the basis of a study of such a wider group. This might throw light on how communicative strategies developed outside the school are used, and the changes that are made by all student teachers in developing organisational scripts. These might range from multimodal semiotics, designed to generate epistemic authority in mathematics classrooms, to the double voicing of communicative strategies learned in everyday superdiversity, to accrue practical authority in classrooms and in other sites throughout the school.

A study of the development of an authoritative voice would throw light more generally on the strategy of getting the right mix (Blommaert and Varis, 2011) in performing a professional identity. In addressing the intersectionality of various identity positions, the research would be able to draw on the links and similarities that migrant teachers experience: for example, the experience of racism, which this study has shown migrants of colour to experience, has been well researched in terms of the experience of black teachers (Ross, 2003; Bhopal, 2015) during their PGCE year.

In contrast, the study has shown how white student teachers from Eastern Europe can become either anonymous or misrecognised, and it would be useful to specifically focus on the experiences of this group, which is increasingly represented in PGCE

Chapter 8: Conclusion

cohorts as a result of recent migration, yet relatively under-researched. Further to this are the specific issues of L2 teachers, related to accent and register. The study has shown the complications of accent that it would be useful to explore further, especially by comparing in detail differences between inner London and the outer boroughs.

As well as deepening the understanding of practices and processes of ITE, the study also raises questions relating to the national teaching workforce. Further research is needed to track how many teachers of migrant heritage remain in the teaching workforce after they have passed their probationary year in schools, and whether the experiences that have been discussed in this study are replicated in other ITE courses in England. Highly qualified migrants are often regarded as having a special place in the future of the English teaching labour force, as reflected in the tiered migration system introduced in 2008. Despite the Brexit vote having changed the future of the free migration of EU citizens within Europe, there seems to be a clear recognition that skilled labour will continue to be required, and it is interesting to note that more than half of the free movers could have used family migration channels. These proposals for further research are, therefore, likely to resonate in the development of the English teaching workforce, in both the immediate and the long-term future.

List of References

- Ahmed, S. (2000) *Strange Encounters: Embodied Others in Post-Coloniality*. London: Routledge.
- Ahmed, S. and Stacey, J. (eds) (2001) *Thinking Through the Skin*. New York, NY: Routledge.
- Ahrens, J., Kelly, M. and van Liempt, I. (2016) 'Free movement? The onward migration of EU citizens born in Somalia, Iran, and Nigeria', *Population, Space and Place*, 22(1), pp. 84–98. Available at: doi: 10.1002/psp.1869.
- Andrews, P. (2007) 'The curricular importance of mathematics: a comparison of English and Hungarian teachers' espoused beliefs', *Journal of Curriculum Studies*, 39(3), pp. 317–338.
- Anthias, F. (2007) 'Ethnic ties: social capital and the question of mobilisability', *The Sociological Review*, 55(4), pp. 788–805.
- Anthias, F. (2008) 'Thinking through the lens of translocational positionality: an intersectionality frame for understanding identity and belonging', *Translocations, Migration and Change*, 4(1), pp. 5–20.
- Baker, P. (2010) *Sociolinguistics and Corpus Linguistics*. Edinburgh: Edinburgh University Press.
- Ball, S. (2003) 'The teacher's soul and the terrors of performativity', *Journal of Education Policy*, 18(2), pp. 215–228.
- Barwell, R. (2009) 'Multilingualism in mathematics classrooms: an introductory discussion'. In: R. Barwell (ed.) *Multilingualism in Mathematics Classrooms: Global Perspectives*. Bristol: Multilingual Matters. pp. 1–13.
- Beauchamp, C. and Thomas, L. (2009) 'Understanding teacher identity: an overview of issues in the literature and implications for teacher education', *Cambridge Journal of Education*, 39(2), pp. 175–189.
- Bhopal, K. (2015) 'Race, identity and support in initial teacher training', *British Journal of Educational Studies*, 63(2), pp. 197–211.
- Blackledge, A. and Creese, A. (2010) *Multilingualism: A Critical Perspective*. London: Continuum.
- Blix, S. B. and Wettergren, Å. (2015) 'The emotional labour of gaining and maintaining access to the field', *Qualitative Research*, 15(6), pp. 688–704.
- Blommaert, J. (2005) *Discourse: A Critical Introduction*. Cambridge, UK: Cambridge University Press.
- Blommaert, J. (2010) *The Sociolinguistics of Globalization*. Cambridge, UK: Cambridge University Press.

List of References

- Blommaert, J. (2012) *Complexity, Accent and Conviviality: Concluding Comments*. Tilburg: Tilburg University. Available at: https://www.tilburguniversity.edu/upload/e616b261-9170-4579-b326-cac354b8678d_tpcs%20paper26.pdf (Accessed: 2 August 2016).
- Blommaert, J. and Backus, A. (2011) *WP67 Repertoires Revisited: 'Knowing Language' in Superdiversity*. Working Papers in Urban Language and Literacies. Kings College London Available at: <https://www.kcl.ac.uk/sspp/departments/education/research/Research-Centres/ldc/publications/workingpapers/abstracts/WP067-Repertoires-revisited-Knowing-language-in-superdiversity.aspx>.
- Blommaert, J. and Jie, D. (2010) *Ethnographic Fieldwork: A Beginner's Guide*. Clevedon, UK: Multilingual Matters.
- Blommaert, J. and Rampton, B. (2011) 'Language and superdiversity', *Diversities*, 13(2), pp. 1–21.
- Blommaert, J. and Varis, P. (2011) 'Enough is enough: the heuristics of authenticity in superdiversity', working paper 76. Kings College London. Available at: https://www.academia.edu/6356532/WP76_Blommaert_and_Varis_2011_Enough_is_enough_The_heuristics_of_authenticity_in_superdiversity (Accessed: 1 August 2016).
- Bonnett, A. (2005) 'Whiteness'. In: D. Atkinson, P. Jackson, D. Sibley and N. Washbourne (eds) *Cultural Geography: A Critical Dictionary of Key Concepts*. London: I.B.Tauris. pp. 109–114.
- Bourdieu, P. (1994) *Language and Symbolic Power*. Edited by J. Thompson. Cambridge, UK: Polity Press.
- Bourdieu, P. (1997) 'The forms of capital'. In: A. H. Halsey, H. Lauder, P. Brown and A. Start Wells (eds) *Education, Culture, Economy, and Society*. Oxford: Oxford University Press. pp. 46-58.
- Bourdieu, P. and Wacquant, L. (2007) *An Invitation to Reflexive Sociology*. Cambridge, UK: Polity Press.
- Braun, V. and Clarke, V. (2006) 'Using thematic analysis in psychology', *Qualitative Research in Psychology*, 3(2), pp. 77–101.
- Braun, V. and Clarke, V. (2013) *Successful Qualitative Research: A Practical Guide for Beginners*. [Online]. London, England: SAGE Publications Inc. Available at: <https://us.sagepub.com/en-us/nam/successful-qualitative-research/book233059> (Accessed: 7 November 2017).
- Brickell, K. and Datta, A. (2011) 'Introduction'. In: K. Brickell and A. Datta (eds) *Translocal Geographies: Spaces, Places, Connections*. Burlington: Ashgate. pp. 3–22.

List of References

- Briggs, C. L. (1986) *Learning How to Ask: A Sociolinguistic Appraisal of the Role of the Interview in Social Science Research*. Cambridge, UK: Cambridge University Press.
- British Sociological Association (2017) 'Statement of ethical practice'. Available at: https://www.britisoc.co.uk/media/24310/bsa_statement_of_ethical_practice.pdf (Accessed: 23 November 2017).
- Britzman, D. P. (2003) *Practice Makes Practice: A Critical Study of Learning to Teach*. Revised edition. Albany: State University of New York Press.
- Bron, A. (1999) 'The price of immigration: life stories of two Poles in Sweden', *International Journal of Contemporary Sociology*, 36(2), pp. 191–203.
- Cairns, D., Cuzzocrea, V., Briggs, D. and Veloso, L. (2017) *The Consequences of Mobility: Reflexivity, Social Inequality and the Reproduction of Precariousness in Highly Qualified Migration*. Cham: Palgrave MacMillan.
- Cajori, F. (1925) *A History of Mathematical Notations*. London: The Open Court Company.
- Canagarajah, S. (2016) 'Shuttling between scales in the workplace: re-examining policies and pedagogies for migrant professionals', *Linguistics and Education* [Online] 34 (Supplement C), pp. 47–57. Available at: doi:10.1016/j.linged.2015.08.002.
- Carling, J., Erdal, M. B. and Ezzati, R. (2014) 'Beyond the insider–outsider divide in migration research', *Migration Studies*, 2(1), pp. 36–54.
- Centre on Dynamics of Ethnicity (CoDE) (2013) *What Makes Ethnic Group Populations Grow? Age Structures and Immigration*. Manchester, UK: Manchester University.
- Chadderton, C. (2012) 'Problematising the role of the white researcher in social justice research', *Ethnography and Education*, 7(3), pp. 363–380.
- Chadderton, C. (2013) 'Towards a research framework for race in education: critical race theory and Judith Butler', *International Journal of Qualitative Studies in Education*, 26(1), pp. 39–55.
- Chapman, A. (1993) 'Language and learning in school mathematics: a social semiotic perspective', *Issues in Educational Research*, 3(1), pp. 35–46.
- Cho, C. (2010) "'Qualifying" as teacher: immigrant teacher candidates' counter-stories', *Canadian Journal of Educational Administration and Policy: Special Issue Educational Policy and Internationally Educated Teachers* [Online] (100). pp. 1-22 Available at: <https://journalhosting.ucalgary.ca/index.php/cjeap/article/view/42780/30640>.
- Chronaki, A. (2004) 'Researching the school mathematics culture of "others"'. In: Valero, P. and Zevenbergen, R. (eds) *Researching the Socio-Political Dimensions of Mathematics Education*. Dordrecht: Springer. pp. 145-165.

List of References

- Civil Aviation Authority (2014) 'Civil Aviation Authority passenger survey report 2014'. Available at:
https://www.caa.co.uk/uploadedFiles/CAA/Content/Standard_Content/Data_and_analysis/Datasets/Passenger_survey/CAA%20Passenger%20Survey%20Report%202014.pdf (Accessed: 1 August 2016).
- Clarke, D. (2010) 'Speaking in and about mathematics classrooms internationally: the technical vocabulary of students and teachers'. Available at:
http://research.acer.edu.au/cgi/viewcontent.cgi?article=1064&context=research_conference (Accessed: 1 August 2016).
- Collier, D. R., Moffatt, L. and Perry, M. (2015) 'Talking, wrestling, and recycling: an investigation of three analytic approaches to qualitative data in education research', *Qualitative Research*, 15(3), pp. 389–404.
- Connell, R. W. (2016) *Southern Theory: Social Science and the Global Dynamics of Knowledge*. Cambridge: Polity.
- Conradson, D. and Latham, A. (2005a) 'Escalator London? A case study of New Zealand tertiary educated migrants in a global city', *Journal of Contemporary European Studies*, 13(2), pp. 159–172.
- Conradson, D. and Latham, A. (2005b) 'Friendship, networks and transnationality in a world city: antipodean transmigrants in London', *Journal of Ethnic and Migration Studies*, 31(2), pp. 287–305.
- Conradson, D. and Latham, A. (2005c) 'Transnational urbanism: attending to everyday practices and mobilities', *Journal of Ethnic and Migration Studies*, 31(2), pp. 227–233.
- Cooper, H. (2013) 'Bodies and voices: reflections on "Collisions, coalitions and riotous subjects: the riots one year on"'. *Sociological Research Online*, 18(4), p. 4. Available at: doi:10.5153/sro.3150.
- Csedo, K. (2008) 'Negotiating skills in the global city: Hungarian and Romanian professionals and graduates in London', *Journal of Ethnic and Migration Studies*, 34(5), pp. 803–823.
- De Freitas, E. and Sinclair, N. (2012) 'Diagram, gesture, agency: theorizing embodiment in the mathematics classroom', *Educational Studies in Mathematics*, 80(1/2), pp. 133–152.
- Delanty, G. (2009) *The Cosmopolitan Imagination: The Renewal of Critical Social Theory*. [Online]. Cambridge: Cambridge University Press. Available at: doi:10.1017/CBO9780511642227.
- Department for Education (2011) *Teachers' Standards*. London: DfE. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/283566/Teachers_standard_information.pdf (Accessed: 1 August 2016).

List of References

- Department for Education (2013a) *School Workforce in England*. London: DfE
Available at:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/335413/sfr_11_2014_updated_july.pdf (Accessed: 31 July 2016).
- Department for Education (2013b) *Schools, Pupils, and their Characteristics*. DfE.
Available at: <https://www.gov.uk/government/statistics/schools-pupils-and-their-characteristics-january-2013> (Accessed: 21 August 2016).
- Department for Education (2017) *Initial Teacher Training Criteria and Supporting Advice*. London: DfE. Available at:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/508303/initial-teacher-training-criteria-supporting-advice.pdf (Accessed: 3 December 2017).
- Deumert, A. (2014) 'Digital superdiversity: a commentary', *Discourse, Context & Media*, 4–5 (Digital language practices in superdiversity), pp. 116–120.
- Eade, J., Drinkwater, S. and Garapich, M. (2006) *Class and Ethnicity: Polish Migrants in London*. Centre for Research on Nationalism, Ethnicity and Multiculturalism. Guildford: University of Surrey.
- English, F. and Marr, T. (2015) *Why Do Linguistics?* London: Bloomsbury Academic.
- Erel, U. (2010) 'Migrating cultural capital: Bourdieu in migration studies', *Sociology*, 44(4), pp. 642–660.
- Ernest, P. (1989) 'The impact of beliefs on the teaching of mathematics'. In: Ernest, P. (ed.) *Mathematics Teaching: The State of the Art*. London: Falmer Press.
- Eurydice network (2011) *Mathematics Education in Europe: Common Challenges and National Policies*. Brussels: Education, Audiovisual and Culture Executive Agency. Available at:
http://eacea.ec.europa.eu/education/eurydice/documents/thematic_reports/132EN.pdf (Accessed: 1 August 2016).
- Evans, L. (2015) *Professionalism and Professional Development: What These Research Fields Look Like Today – and What Tomorrow Should Bring*. University of Leeds: Hillary Place Papers. Available at:
<http://hpp.education.leeds.ac.uk/files/2013/11/HPP2015-2-Evans.pdf> (Accessed: 23 November 2017).
- Fanon, F. (1986) *Black Skin, White Masks*. London: Pluto Press.
- Fielding, T. (1992) 'Migration and social mobility: south east England as an escalator region', *Regional Studies*, 26(1), pp. 1–15.
- Foucault, M. (1990) *The History of Sexuality, Vol. 3: The Care of the Self*. London: Penguin Books.
- Freire, P. (1996) *Pedagogy of the Oppressed*. 2nd revised edition. London: Penguin.

List of References

Gilroy, P. (2004) *After Empire: Melancholia or Convivial Culture?* Abingdon, Oxon: Routledge.

Glick Schiller, N. (2009) 'A global perspective on transnational migration: theorizing migration without methodological nationalism', Working Paper No. 67, Centre on Migration, Policy and Society, Oxford: University of Oxford (Accessed: 1 August 2016) Available at: https://www.compas.ox.ac.uk/media/WP-2009-067-Schiller_Methodological_Nationalism_Migration.pdf (Accessed: 2 December 2017).

Goffman, E. (1972) *Encounters: Two Studies in the Sociology of Interaction*. Harmondsworth: Penguin Books.

Goffman, E. (1981) *Forms of Talk*. Oxford: Basil Blackwell Publisher.

Goffman, E. (1990) *The Presentation of Self in Everyday Life*. London: Penguin Books.

Goldsworthy, V. (2005) *Chernobyl Strawberries: A Memoir*. London: Atlantic Books.

Goodson, I. F. and Sikes, P. (2001) *Life History Research in Educational Settings: Learning from Lives*. Buckingham, UK: Open University Press.

Gove, M. (2010) Speech to the National College Annual Conference, Birmingham. Available from: <https://www.gov.uk/government/speeches/michael-gove-to-the-national-college-annual-conference-birmingham> (Accessed: 23 November 2017).

Grzymala-Kazlowska, A. (2016) 'Social anchoring: immigrant identity, security and integration reconnected?' *Sociology* [Online], 50(6), pp. 1123–1139. Available at: doi:10.1177/0038038515594091.

Guillemin, M. and Gillam, L. (2004) 'Ethics, reflexivity, and "ethically important moments" in research', *Qualitative Inquiry*, 10(2), pp. 261–280.

Hacking, I. (2004) 'Between Michel Foucault and Erving Goffman: between discourse in the abstract and face-to-face interaction', *Economy and Society*, 33(3), pp. 277–302.

Haggarty, L. and Pepin, B. (2002) 'An investigation of mathematics textbooks and their use in English, French and German classrooms: who gets an opportunity to learn what?', *British Educational Research Journal*, 28(4), pp. 567–590.

Hall, S. (1992) 'The question of cultural identity'. In: T. McGrew, S. Hall and D. Held (eds) *Modernity and its Futures: Understanding Modern Societies, Book IV*. Cambridge: Polity. pp. 273-326.

Hall, S. (1997) 'The spectacle of the other'. In: S. Hall (ed.) *Representation: Cultural Presentations and Signifying Practices*. London: Sage Publications Ltd. pp. 223:290.

List of References

- Halliday, M. A. K. (1978) *Language as a Social Semiotic: Social Interpretation of Language and Meaning*. London: Hodder Arnold.
- Hickman, M., Crowley, H. and Mai, N. (2008) *Immigration and Social Cohesion in the UK. The Rhythms and Realities of Everyday Life*. York: Joseph Rowntree Foundation.
- Ho, E. L. E. (2011) 'Migration trajectories of "highly skilled" middling transnationals: Singaporean transmigrants in London', *Population, Space and Place*, 17(1), pp. 116–129.
- Hobsbawn, E. (2007) *Globalisation, Democracy and Terrorism*. London: Little, Brown.
- Hobson, A. J., Ashby, P., Malderez, A. and Tomlinson, P. D. (2009) 'Mentoring beginning teachers: what we know and what we don't', *Teaching and Teacher Education*, 25(1), pp. 207–216.
- Holland, D., Lachicotte, W. J., Skinner, D. and Cain, C. (1998) *Identity and Agency in Cultural Worlds*. Cambridge, Massachusetts: Harvard University Press. Available at:
http://www.philosophy.ox.ac.uk/data/assets/mp3_file/0019/37126/Lecture_1.mp3
(Accessed: 3 August 2016).
- Hydén, M. (2008) 'Narrating sensitive topics'. In: M. Andrews, C. Squire and M. Tamboukou (eds) *Doing Narrative Research*. London: Sage Publications Ltd. pp. 121-136.
- Janusch, S. (2015) 'Voices unheard: stories of immigrant teachers in Alberta', *Journal of International Migration and Integration*, 16(2), pp. 299–315.
- Kaiser, G. (2002) 'Educational philosophies and their influence on mathematics education: An ethnographic study in English and German mathematics classrooms', *Zentralblatt für Didaktik der Mathematik*, 34(6), pp. 241–257. Available at: doi: 10.1007/BF02655723.
- Kofman, E. (2012) 'Gender and skilled migration in Europe', *Cuadernos de Relaciones Laborales*, 30(1), pp. 63–89.
- Kostogriz, A. and Peeler, E. (2004) 'Professional identity and pedagogical space: negotiating difference in teacher workplaces', *AARE Conference 2004*, University of Melbourne. Available at:
<http://www.aare.edu.au/data/publications/2004/pee04580.pdf> (Accessed: 1 August 2016).
- Kozachenko, I. (2013) *Horizon Scanning Report: ICT and Migration*. Available at:
<http://2plqyp1e0nbi44cllfr7pbor.wpengine.netdna-cdn.com/files/2013/01/ICT-and-Migration-Kozachenko.pdf> (Accessed: 20 August 2016).
- Kramsch, C. (2012) 'Imposture: a late modern notion in poststructuralist SLA research', *Applied Linguistics*, 33(5), pp. 483–502.

List of References

- Kubanyiova, M. (2008) 'Rethinking research ethics in contemporary applied linguistics: the tension between macroethical and microethical perspectives in situated research', *The Modern Language Journal*, 92(4), pp. 503–518.
- Lacey, H. (2013) 'Why are well qualified teachers working as cleaners?', *The Guardian*, 2 September [online]. Available at: <https://www.theguardian.com/education/2013/sep/02/overseas-trained-teachers-jobs-shortage> (Accessed: 23 November 2017).
- Lander, V. (2014) 'Initial teacher education: the practice of whiteness'. In: R. Race and V. Lander (eds) *Advancing Race and Ethnicity in Education* [Online]. London: Palgrave Macmillan. pp. 93–110. Available at: doi:10.1007/978-1-137-27476-2_7 (Accessed: 8 November 2017).
- Langton, R. (2015) *Accommodating Authority* [Podcast]. 29 April (John Locke Memorial Lectures Lecture 1). Available at: http://media.philosophy.ox.ac.uk/assets/mp3_file/0019/37126/Lecture_1.mp3 (Accessed: 2 December 2017).
- Leonard, S. (2012) 'Professional conversations: mentor teachers' theories-in-use using the Australian national professional standards for teachers', *Australian Journal of Teacher Education*, 37(12), pp. 46–62. Available at: <http://dx.doi.org/10.14221/ajte.2012v37n12.7> (Accessed: 2 December 2017).
- London Metropolitan University (2014) 'Research ethics policy and procedures'. Available at: <http://student.londonmet.ac.uk/media/london-metropolitan-university/london-met-documents/professional-service-departments/research-office/handbooks/Research-Ethics-Policy-and-Procedures-rev2014.pdf> (Accessed: 23 November 2017).
- Loughran, J. (2011) 'On becoming a teacher educator', *Journal of Education for Teaching* [Online], 37(3), pp. 279–291. Available at: doi:10.1080/02607476.2011.588016.
- MacBeath, J. (2011) 'Education of teachers: the English experience', *Journal of Education for Teaching* [Online], 37(4), pp. 377–386. Available at: doi:10.1080/02607476.2011.610988.
- MacLure, M. (2003) *Discourse in Educational and Social Research*. Buckingham: Open University Press.
- Maguire, M. (2010) 'Towards a sociology of the global teacher'. In: M. W. Apple, S. Ball and L. A. Gandin (eds) *The Routledge International Handbook of the Sociology of Education*. Routledge International Handbooks. London: Routledge. pp. 58–68.
- Mason, J. (2002) *Qualitative Researching*. London: Sage Publications Ltd.
- Massey, D. (2012) *For Space*. London: Sage Publications Ltd.
- McDowell, L. (2005) *Hard Labour: The Forgotten Voices of Latvian Migrant Volunteer Workers*. London: UCL Press.

List of References

- McGregor, J. (2003) 'Making spaces: teacher workplace topologies', *Pedagogy, Culture & Society*, 11(3), pp. 353–377.
- McGregor, J. (2004) 'Spatiality and the place of the material in schools', *Pedagogy, Culture & Society*, 12(3), pp. 347–372.
- McLeod, J. and Thomson, R. (2009) *Researching Social Change: Qualitative Approaches*. London: Sage Publications Ltd.
- Mercer, J. (2007) 'The challenges of insider research in educational institutions: wielding a double-edged sword and resolving delicate dilemmas', *Oxford Review of Education* [Online], 33(1), pp. 1–17. Available at: doi:10.1080/03054980601094651.
- Merrill, B. and West, L. (2009) *Using Biographical Methods in Social Research*. London: Sage Publications Ltd.
- Miller, J. (2003) *Audible Difference: ESL and Social Identity in Schools*. Clevedon, UK: Multilingual Matters.
- Milner IV, H. R. (2008) 'Critical race theory and interest convergence as analytic tools in teacher education policies and practices', *Journal of Teacher Education*, 59(4), pp. 332–346.
- Milner IV, H. R. and Howard, T. C. (2013) 'Counter-narrative as method: race, policy and research for teacher education', *Race Ethnicity and Education*, 16(4), pp. 536–561.
- Morris, P. (ed.) (2003) *The Bakhtin Reader: Selected Writings of Bakhtin, Medvedev, Voloshinov*. London: Bloomsbury Academic.
- Murray, J. (2008) 'Towards the re-articulation of the work of teacher educators in higher education institutions in England', *European Journal of Teacher Education* [Online], 31(1), pp. 17–34. Available at: doi:10.1080/02619760701845073.
- Myers, G. and Lampropoulou, S. (2016) 'Laughter, non-seriousness and transitions in social research interview transcripts', *Qualitative Research*, 16(1), pp. 78–94.
- Nespor, J. (1997) *Tangled Up in School: Politics, Space, Bodies, and Signs in the Educational Process*. New York, London: Routledge.
- Ngware, M. W., Ciera, J., Musyoka, P. K. and Oketch, M. (2015) 'Quality of teaching mathematics and learning achievement gains: evidence from primary schools in Kenya', *Educational Studies in Mathematics*, 89(1), pp. 111–131.
- Noble, G. (2009) 'Everyday cosmopolitanism and the labour of intercultural community. In: A. Wise and S. Velayutham (eds) *Everyday Multiculturalism*. London: Palgrave Macmillan UK. pp. 46–65.
- Nolan, K. (2012) 'Dispositions in the field: viewing mathematics teacher education through the lens of Bourdieu's social field theory', *Educational Studies in Mathematics*, 80(1/2), pp. 201–215.

List of References

- Nowicka, M. (2012) 'Deskilling in migration in transnational perspective. The case of recent Polish migration to the UK', Bielefeld: COMCAD. Available at: http://www.uni-bielefeld.de/tdrc/ag_comcad/downloads/WP_112.pdf (Accessed: 3 December 2017).
- Nowicka, M. (2015) 'Bourdieu's theory of practice in the study of cultural encounters and transnational transfers in migration', working paper. Available at: http://www.mmg.mpg.de/fileadmin/user_upload/documents/wp/WP_15-01_Nowicka_Bourdieu-theory.pdf (Accessed: 31 July 2016).
- Office for National Statistics (2013a) *Immigration Patterns of Non-UK Born Populations in England and Wales in 2011*. London: ONS. Available at: http://webarchive.nationalarchives.gov.uk/20160105160709/http://www.ons.gov.uk/ons/d_cp171776_346219.pdf (Accessed: 20 August 2016).
- Office for National Statistics (2013b) *Population by Country of Birth and Nationality Report*. Available at: http://webarchive.nationalarchives.gov.uk/20160105160709/http://www.ons.gov.uk/ons/dcp171776_324663.pdf (Accessed: 20 August 2016).
- Ofsted (2008) *Mathematics: Understanding the Score*. London: Ofsted
- Organisation for Economic Co-operation and Development (2012) *Education At A Glance 2012: Highlights*. OECD Publishing. Available at: <https://www.oecd.org/edu/highlights.pdf> (Accessed: 1 August 2016).
- Osgood, J. (2010) 'Narrative methods in the nursery: (re)-considering claims to give voice through processes of decision-making', *Reconceptualizing Educational Research Methodology*, 1(1), pp.14-28. Available at: <https://journals.hioa.no/index.php/rerm/article/view/168> (Accessed: 2 August 2016).
- Pepin, B. (1999) 'The influence of national cultural traditions on pedagogy: classroom practices in England, France and Germany'. In: J. Leach and B. Moon (eds) *Learners and Pedagogy*. London: Sage Publications Ltd. pp. 124-136.
- Philips, S. U. (2004) 'Language and social inequality'. In: A. Duranti (ed.) *A Companion to Linguistic Anthropology*. Oxford: Blackwell Publishing. pp. 474-495 Available at: https://www.researchgate.net/profile/Paul_Kroskirty/publication/227992192_Language_Ideologies/links/00b7d53ad8ebb9c3c2000000.pdf#page=494 (Accessed: 3 August 2016).
- Pomphrey, C. and Burley, S. (2012) 'Using mentoring and coaching for professional learning in UK secondary schools'. In: S. Fletcher and C. Mullen (eds) *SAGE Handbook of Mentoring and Coaching in Education*. London: Sage Publications Ltd. pp. 295-307.
- Pressick-Kilborn, K. and Sainsbury, E. (2002) 'Research in your own backyard: recognising assumptions and redefining identities', *Annual Conference of the Australian Association for Research in Education*, Brisbane.

List of References

- Puwar, N. (2004) *Space Invaders: Race, Gender and Bodies Out of Place*. Oxford: Berg.
- Reay, D. (2004) 'Gendering Bourdieu's concept of capitals? Emotional capital, women and social class'. In: L. Adkins and B. Skeggs (eds) *Feminism After Bourdieu*. Oxford: Blackwell Publishing. pp. 57-74.
- Riessman, C. (2008) *Narrative Methods for the Human Sciences*. London: Sage Publications.
- Rizvi, F. (2009) 'Towards cosmopolitan learning', *Discourse: Studies in the Cultural Politics of Education*, 30(3), pp. 253–268.
- Rollock, N. and Gillborn, D. (2011) *Critical Race Theory (CRT)*. British Educational Research Association. Available at: <https://www.bera.ac.uk/wp-content/uploads/2014/03/Critical-Race-Theory-CRT-.pdf> (Accessed: 20 August 2016).
- Ross, A. (2003) *Ethnic Minority Teachers in the Teaching Workforce*. Institute of Policy Studies Occasional Paper. London: London Metropolitan University.
- Ruspini, E. (2013) 'Longitudinal research: an emergent method in the social sciences'. In: S. N. Hesse-Biber and P. Leavy (eds) *Handbook of Emergent Methods*. Guilford Publications. pp. 437-460.
- Rutter, J. (2006) *Refugee Children in the UK*. Maidenhead: Open University Press.
- Ryan, J., Pollock, K. and Antonelli, F. (2009) 'Teacher diversity in Canada: leaky pipelines, bottlenecks, and glass ceilings', *Canadian Journal of Education / Revue canadienne de l'éducation*, 32(3), pp. 591–617.
- Ryan, L. and Kurdi, E. (2014) *Young, Highly Qualified Migrants. The Experiences and Expectations of Recently Arrived Irish Teachers in Britain*. London: Middlesex University. Available at: <http://sprc.info/wp-content/uploads/2014/05/FINAL-Young-Highly-Qualified-Migrants-report-May-2014.pdf> (Accessed: 3 August 2016).
- Ryen, A. (2001) 'Cross-cultural interviewing'. In: J. F. Gubrium and J. Holstein (eds) (2001) *Handbook of Interview Research: Context and Method*. Thousand Oaks, Calif: SAGE Publications, Inc. pp. 335-354.
- Rymes, B. (2010) 'Classroom discourse analysis: a focus on communicative repertoires'. In: N. H. Hornberger and S. McKay (eds) *Sociolinguistics and Language Education*. Bristol: Multilingual Matters. pp. 528-548.
- Sahlberg, P. (2007) 'Education policies for raising learning', *Journal of Education Policy*, 22(2), pp. 147–171.
- Salt, J. (1997) *International Movements of the Highly Skilled*. Paris: OECD.
- Santoro, N. (2015) 'The drive to diversify the teaching profession: narrow assumptions, hidden complexities', *Race, Ethnicity and Education*, 18(6), pp. 858–876.

List of References

- Schleppegrell, M. J. (2007) 'The linguistic challenges of mathematics teaching and learning: a research review', *Reading & Writing Quarterly*, 23(2), pp. 139–159.
- Schmidt, C. and Gagne, A. (2015) 'Internationally educated teacher candidates in Canadian faculties of education: when diversity \neq equity. In: T. Falkenberg (ed.) *Handbook of Canadian Research in Initial Teacher Education*. Ottawa: Canadian Association for Teacher Education. pp. 295-311.
- Schmidt, C. (2010) 'Systemic discrimination as a barrier for immigrant teachers', *Diaspora, Indigenous, and Minority Education*, 4(4), pp. 235–252.
- Schon, D. A. (1984) *The Reflective Practitioner: How Professionals Think In Action*. New York: Basic Books.
- Sheller, M. and Urry, J. (2006) 'The new mobilities paradigm', *Environment and Planning A*, 38(2), pp. 207–226.
- Skeggs, B. (2004) *Class, Self, Culture*. London: Routledge.
- Skovsmose, O. (2008) 'Mathematics education in a knowledge market: developing functional and critical competencies'. In: E. de Freitas and K. Nolan (eds.) *Opening the Research Text: Critical Insights and In(ter)ventions into Mathematics Education*. New York, NY, US: Springer. pp. 159-188.
- Smyth, G. and Kum, H. (2010) "'When they don't use it they will lose it": professionals, deprofessionalization and reprofessionalization: the case of refugee teachers in Scotland', *Journal of Refugee Studies*, 23(4), pp. 503–522.
- Sorenson, P. (2012) 'Mentoring and coaching for school teachers' ITE and induction'. In: S. Fletcher and C. Mullen (eds) *SAGE Handbook of Mentoring and Coaching in Education*. London: Sage Publications. pp. 201-214.
- Stake, R. E. (2005) 'Qualitative case studies'. In: N. K. Denzin and Y. S. Lincoln (eds) *The Sage Handbook of Qualitative Research*. London: Sage Publications. pp. 443–466.
- Szewczyk, A. (2014) 'Continuation or switching? Career patterns of Polish graduate migrants in England', *Journal of Ethnic and Migration Studies*, 40(5), pp. 847–864.
- Thompson, J. (1994) 'Introduction'. In: P. Bourdieu, *Language and Symbolic Power*. Cambridge, UK: Polity Press. pp. 1-31.
- Tillema, H. H. and van der Westhuizen, G. J. (2013) 'Mentoring conversations in the professional preparation of teachers', *South African Journal of Higher Education*, 27(5), pp. 1305–1323.
- Tóibín, C. (2009) *Brooklyn*. London: Viking.
- UNESCO Institute for Statistics (2012) *School and Teaching Resources in Sub-Saharan Africa*. Available at: <http://www.uis.unesco.org/Education/Documents/ib9-regional-education-africa-2012-en-v5.pdf> (Accessed: 1 August 2016).

List of References

- Valentine, G. (2008) 'Living with difference: reflections on geographies of encounter', *Progress in Human Geography* [Online], 32(3), pp. 323–337. Available at: doi:10.1177/0309133308089372.
- Vandeyar, S. , Vandeyar, T. and Elufisan, K. (2014) 'Impediments to the successful reconstruction of African immigrant teachers' professional identities in South African schools', *South African Journal of Education*, 34(2), pp. 1–20.
- Vertovec, S. (2004) 'Cheap calls: the social glue of migrant transnationalism', *Global Networks*, 4(2), pp. 219–224.
- Vertovec, S. (2006) 'The emergence of superdiversity in Britain', working paper, Centre on Migration, Policy and Society. Oxford: Oxford University. Available at: https://www.compas.ox.ac.uk/media/WP-2006-025-Vertovec_Super-Diversity_Britain.pdf (Accessed: 1 August 2016).
- Vertovec, S. (2009) *Transnationalism*. Abingdon, Oxon: Routledge.
- Walshaw, M. (2010) 'Learning to teach: powerful practices at work during the practicum'. In: M. Walshaw (ed.) *Unpacking Pedagogy: New Perspectives for Mathematics Classrooms*. Charlotte, NC: Information Age Publishing, Inc. pp. 109-128.
- Wei, L. (2011) 'Moment analysis and translanguaging space: discursive construction of identities by multilingual Chinese youth in Britain', *Journal of Pragmatics*, 43(5), pp. 1222–1235.
- Wessendorf, S. (2011) 'Commonplace diversity and the "ethos of mixing": Perceptions of difference in a London neighbourhood', Working Paper No.91, Centre on Migration, Policy and Society. Oxford: Oxford University. Available at: https://www.compas.ox.ac.uk/media/WP-2011-091-Wessendorf_Diversity_London_Neighbourhood.pdf (Accessed: 1 August 2016).
- Wessendorf, S. (2013) "'Being open, but sometimes closed". Living together in a super-diverse London neighbourhood', MMG Working Paper 13-11. Gottingen: Max Planck Institute for the Study of Religious and Ethnic Diversity. Available at: http://www.mmg.mpg.de/fileadmin/user_upload/documents/wp/WP_13`-11_Wessendorf_Conviviality.pdf (Accessed: 1 August 2016).
- Williams, A. M. and Baláž, V. (2009) 'Low-cost carriers, economies of flows and regional externalities', *Regional Studies*, 43(5), pp. 677–691.
- Williams, A. M., Chaban, N. and Holland, M. (2011) 'The circular international migration of New Zealanders: enfolded mobilities and relational places', *Mobilities*, 6(1), pp. 125–147.
- Wise, A. and Velayutham, S. (eds) (2009) *Everyday Multiculturalism*. London: Palgrave Macmillan.
- Wong, N. Y. (2014) 'Teaching and learning mathematics in Chinese culture'. In: P. Andrews and T. Rowland (eds) *Masterclass in Mathematics Education*. London: Bloomsbury. pp. 191-201.

List of References

Yandell, J. (2010) 'Sites of learning'. In: R. Heilbronn and J. Yandell (eds) *Critical Practice in Teacher Education: Study of Professional Learning*. London: IoE Press. pp. 15-28.

Yosso, T. J. (2005) 'Whose culture has capital? A critical race theory discussion of community cultural wealth', *Race, Ethnicity and Education*, 8(1), pp. 69–91.

Youdell, D. (2006) 'Subjectivation and performative politics: Butler thinking Althusser and Foucault: intelligibility, agency and the raced-nationed-religioned subjects of education', *British Journal of Sociology of Education* [Online], 27(4), pp. 511–528. Available at: doi:10.1080/01425690600803160.

Young, I. M. (1997) *Intersecting Voices*. Princeton: Princeton University Press.

Yuval-Davis, N. (2011) *The Politics of Belonging: Intersectional Contestations*. London: SAGE Publications Ltd.

Appendices and Copies of Key Documents

Appendix I	Email inviting participation in the research
Appendix II	Informed consent form
Appendix III	Interview schedule 1/Life history
Appendix IV	Interview schedule 2/Post SE1
Appendix V	Interview schedule 3/Post SE2
Appendix VI	Page of Finnish mathematics textbook
Appendix VII	Page of Indian mathematics textbook
Appendix VIII	Page of Romanian mathematics textbook

APPENDIX I: EMAIL INVITING PARTICIPATION IN THE RESEARCH

Dear Colleague

I am the Secondary PGCE Course Tutor at London Metropolitan University and for my doctoral thesis am researching the experiences of PGCE Mathematics students who have been educated abroad. This research is currently in the pilot stage. I would like to have the opportunity to interview two of the current students about their experiences in their first teaching practice and afterwards their second practice (with if possible/agreeable an observation during the second practice). These interviews would be arranged at a time and place convenient to participants.

I attach a copy of a letter and consent form which gives more detail of the project as a whole together with details about a range of ethical issues. If you would like to take part in this research please email me. We could then make arrangements for a first interview early in the new year.

Thanks for reading through this email. I hope you enjoy the coming holidays.

Regards

Alan

--

Alan Benson
PGCE Tutor (Mathematics)
London Metropolitan University
Tel: 0207 133 (x)2631

APPENDIX II: INFORMED CONSENT FORM



166-220 Holloway Road

London N7 8DB

9 December 2009

Dear Colleague

I write to invite you to take part in a research study I am pursuing as part of my doctoral studies focussing upon the experiences of students, who have previously studied outside the UK, on a PGCE Mathematics course. The doctoral dissertation is being supervised by Professor Emeritus Alistair Ross and Dr Jayne Osgood, both of the Institute of Policy Studies in Education (IPSE), a nationally recognised research centre based at London Metropolitan University.

The research will be over the period of one year and will consist of 3 interviews. Each will be recorded and will last for a maximum of one hour: one before your first school experience, one immediately after your first school experience and one after your second school experience. In addition, I would like to observe you teach a class during school experience and to video part of the lesson should you wish me to do so. The place and timing of these research activities would be arranged at your convenience.

At all times during the research I will comply with the London Metropolitan University Research Ethics Policy (http://www.londonmet.ac.uk/library/s68694_3.pdf) and the ethical guidelines of the British Educational Research Association (<http://www.bera.ac.uk/files/2008/09/ethica1.pdf>). You do not have to answer any question or take part in the activities if you feel the questions are too personal or if talking about them makes you feel uncomfortable. Should you wish, you may stop participating in the research activities at any time. Prior to interviews I will give you a copy of key questions we will cover and I will inform you of the main focus of a classroom observation. I will provide you with a copy of the audio file immediately after the interview so that you can review your remarks and ask me to change or modify your remarks as you wish. I will immediately anonymise any written transcripts of written data, which you may read should you wish. All paper transcripts will be kept securely at all times and electronic copies held in password-protected folders. Results of the research will be presented to examiners at

London Metropolitan University and I may draw upon them for academic purposes including conferences and presentations but at no time will I include any information that

is likely to identify you or any other participant in the research.

All information that is gathered as part of the research process will be confidential and I will take no part in any assessment procedures for participants not registered at London Metropolitan University. For London Metropolitan students, I will ensure that all assessments of written work are included in the sample that is prepared for internal moderation and, if necessary, for the external examiner. London Metropolitan students will be supervised during school placement by a suitably qualified lecturer and any relevant issues referred to Lee Jerome, Director of the Secondary PGCE programme.

If you have any further questions please do not hesitate to contact me either by phone (020 7133 0000) or email (a.benson@londonmet.ac.uk).

Should you decide that you wish to participate in this research project may I ask you to complete the enclosed consent form and return it to me in the enclosed stamped addressed envelope?

Yours sincerely

Alan Benson

Doctorate of Education (EdD) candidate

Appendices and Copies of Key Documents

CONSENT FORM

I have been invited to participate in research about the experiences of students who have studied outside the UK on a PGCE Mathematics course.

I have read the foregoing information. I am satisfied with the procedures that have been put in place for the assessment of both my written work and the school placement.

I have had the opportunity to ask questions about it and any questions I have asked have been answered to my satisfaction. I consent voluntarily to be a participant in this project.

Name of Participant

Postal Address

Email Address (if available)

Signature of Participant

Date (day/month/year)

Name of Researcher Alan Benson

Postal Address London Metropolitan University 166-220 Holloway Road
London N7 8DB

Email Address a.benson@londonmet.ac.uk

Signature of Researcher

Date (day/month/year)

A copy of this consent form has been provided to the participant.

APPENDIX III: INTERVIEW SCHEDULE 1/ LIFE HISTORY

Learning Maths in Turkey and Germany

Tell me about your favourite maths teacher at secondary school.

How did this teacher compare with the ordinary teachers?

Tell me what a maths classroom in Turkey looks like.

What did it feel like for you to be a member of a class? Tell me about the things you were encouraged to do in learning maths in Turkey.

What about the average and less able pupils? How is provision made for them and for pupils with special educational needs?

Tell me what were the differences between this and when you went on to study more advanced mathematics both in Turkey and Germany.

Coming to England

Tell me about coming to England for the first time.

How long have you been here now?

Tell me about your experiences of learning the language.

Tell me about how you still use your mother tongue.

Tell me about jobs you have had in England.

Migration, and immigration in particular, are often covered in the UK media. How was this reflected in the contacts you have had with people while you have been here?

Starting a PGCE Course

Tell me why you decided to apply for a PGCE course.

What are you hoping for in the PGCE course?

APPENDIX IV: INTERVIEW SCHEDULE 2/ POST SE1

Coming to England and Starting a PGCE Course

Tell me why you decided to apply for a PGCE course in the UK.

Tell me about how you have been settling into England outside contacts you have made through the course.

We will talk about language at many points during this interview. Can you tell me what you anticipated working in another language would be like before you started the course?

First impressions of London schools

What were your first impressions? Can you give me an example that is strikingly similar and something that is strikingly dissimilar to your previous experience in Finland?

Were you surprised by the routine life of a teacher in London? Phoning up parents. Being responsible for pastoral matters?

How did all this match up with your expectations before you started the course?

The university influence

How did the university course help you to act like a teacher during the school placement? Can you give an example from early in the placement and perhaps one from towards the end that showed some progress?

Tell me about how the university course broadened the choices you had for how you might act as a mathematics teacher in classrooms compared to your experience in Finland.

Relationships with colleagues

How did you relate to colleagues in the maths department?

Were your relationships with colleagues from other departments in the staffroom?

Did you form any relationships with colleagues outside the mathematics department and how helpful were they to you?

Were there times when you felt awkward and all at sea?

From your point of view, what was the role of the senior team in making your school experience successful?

Schools often claim that they have a distinctive ethos. What do you understand by this phrase when applied to the school you worked in? Were there any parts of the school ethos that were different from your experience of schools in Finland? Were there any parts with which you felt uncomfortable?

Pupils

Tell me about how you felt about the pupils in front of you. Tell me something about any differences in the classroom environment.

Appendices and Copies of Key Documents

Tell me something of the threats you felt and the strengths with which you felt you could overcome them.

How did you come to terms with these differences during the placement?

You were in a multicultural school. Did you notice differences in the way different groups of pupils reacted to you?

Mathematics

Many trainees suggest that the course of training that the university was expecting takes you out of your comfort zone. Did you feel this? Describe implementing one of the university activities.

Last year you were teaching in Finland. Tell me something about the particular issues you experienced in learning to balance your Finnish teaching practices with those you were asked to adopt in the UK.

Tell me about the progress you have made as a mathematics teacher.

Standards and becoming a teacher evaluation

Tell me about your regular weekly meetings with your mentor and how your mentor worked with you. Did you have the opportunity to discuss how you were linking with your previous experience abroad? How helpful was this/would it have been helpful?

What were your first thoughts when you saw the standards? Did you feel that any parts of them would be difficult to fulfil?

Tell me about your observations. Which was the one that made the biggest difference to you in becoming a teacher?

End

I asked to interview you because from your application form it is clear that your education was substantially outside the UK. Did this feel like an important factor to you during the practice? Are you becoming the teacher you wished to be? What are your hopes for SE2?

Resources (if possible please bring to the interview)

Can you show me an evaluation of a lesson that you made at the start and end of the practice? Take me through a lesson that you evaluated.

Thanks

Alan Benson

APPENDIX V: INTERVIEW SCHEDULE 3/ POST SE2

Maths

When we started the course we read an article by Anne Watson called ‘What I do in my maths classroom?’ Tell me about the maths you encourage pupils to do in your classroom. Perhaps tell me about a success and a failure.

There are a wealth of resources in English classrooms. Tell me about how you have used them. Was it difficult to fit this into your view of maths?

Have you had to complete a subject knowledge audit? Were there particular aspects that you had to work on?

Tell me about how different this teaching is from what you imagined at the start of the course.

What bits are you aware of keeping from your previous experiences?

How the changes came about

At the uni you have done written projects that required reading. Tell me about your experience of this. Did any of it in particular help you to get a perspective on your previous experience?

You have been in two schools now. Tell me about the one in which you felt most able to learn to become a UK teacher?

How did your mentors at the school contribute to this?

You have been observed many times. Tell me about how this contributed to your development?

Did anyone refer to the fact that you are from outside the UK? How useful would this have been to you?

You have had to provide evidence about the standards. How did this help in becoming a UK teacher? Did it give you a broader idea of becoming a teacher?

The classroom interactions

Tell me something about explaining maths to children. How did your explanations improve during the year, to the whole class and to individuals?

You have been introduced to a variety of strategies to help pupils learn. How have your strategies to help pupils learn maths changed?

In terms of behaviour management, a lot of people say that kids are kids. Tell me about your impressions of the UK kids you taught and how this compared to when you were growing up. How did this influence your attitude to, say, behaviour management? Does it play a part in the way you organise learning?

Did any of the children recognise that you have experiences outside the UK? How did this affect you and your relationships in the school?

Wider school issues

In school mathematics there are debates about ability grouping and raising attainment for particular groups. How this has affected you?

What has been the impact of other practices, like SEN/EAL/pastoral care?

Tell me something about your relationships with other staff. Did you find it easy to relate to them on a personal and professional basis?

Hopes for the future

How do you see yourself as a teacher in five years' time?

Will this be in UK?

ABn 220610

APPENDIX VI: PAGE OF FINNISH MATHEMATICS TEXTBOOK

29 Funktio

Syöte	Tuloste
1	11
2	21
3	31
4	



Esimerkki 1

- a) Piirtele funkttiokoneen sääntö.
Mikä on tuloste, kun syöte on
b) 4 c) 15 d) x ?

- a) Funkttiokone kerrtaa syötteen arvolla 10 ja lisää tulosteen luvun 1.
b) $10 \cdot 4 + 1 = 41$
c) $10 \cdot 15 + 1 = 151$
d) $10 \cdot x + 1 = 10x + 1$

Funktio

x	f	$f(x)$
1	►	11
2	►	21
3	►	31

$f(x) = 10x + 1$

Funktio f on sääntö, jonka mukaan jokaisen muuttujan x arvoa vastaa täsmälleen yksi funktion arvo $f(x)$.

Funktio määritellään usein antamalla funktion lauseke $f(x)$, esimerkiksi $f(x) = 10x + 1$, jonka avulla funktion arvot voidaan laskea.

Esimerkki 2



Appeleinit maksavat 1,50 €/kg. Appelienpussin hinta (€) riippii pussin massasta x (kg) eli hinta on massan funktio.

- a) Kuinka paljon maksaa 3 kg appelsiineja?
b) Muodota pussin hintaa kuvaavan funktion lauseke $f(x)$.

► Pussin hinta saadaan kertomalla yksikköhinnasta 1,50 €/kg pussin massalla.

a) $1,50 \cdot 3 = 4,50$

b) Jos pussin massa kilogrammoissa on x , sen hinta euroina on

$f(x) = 1,50 \cdot x = 1,50x$.

Vastaus: a) 4,50 € b) $f(x) = 1,50x$

Esimerkki 3

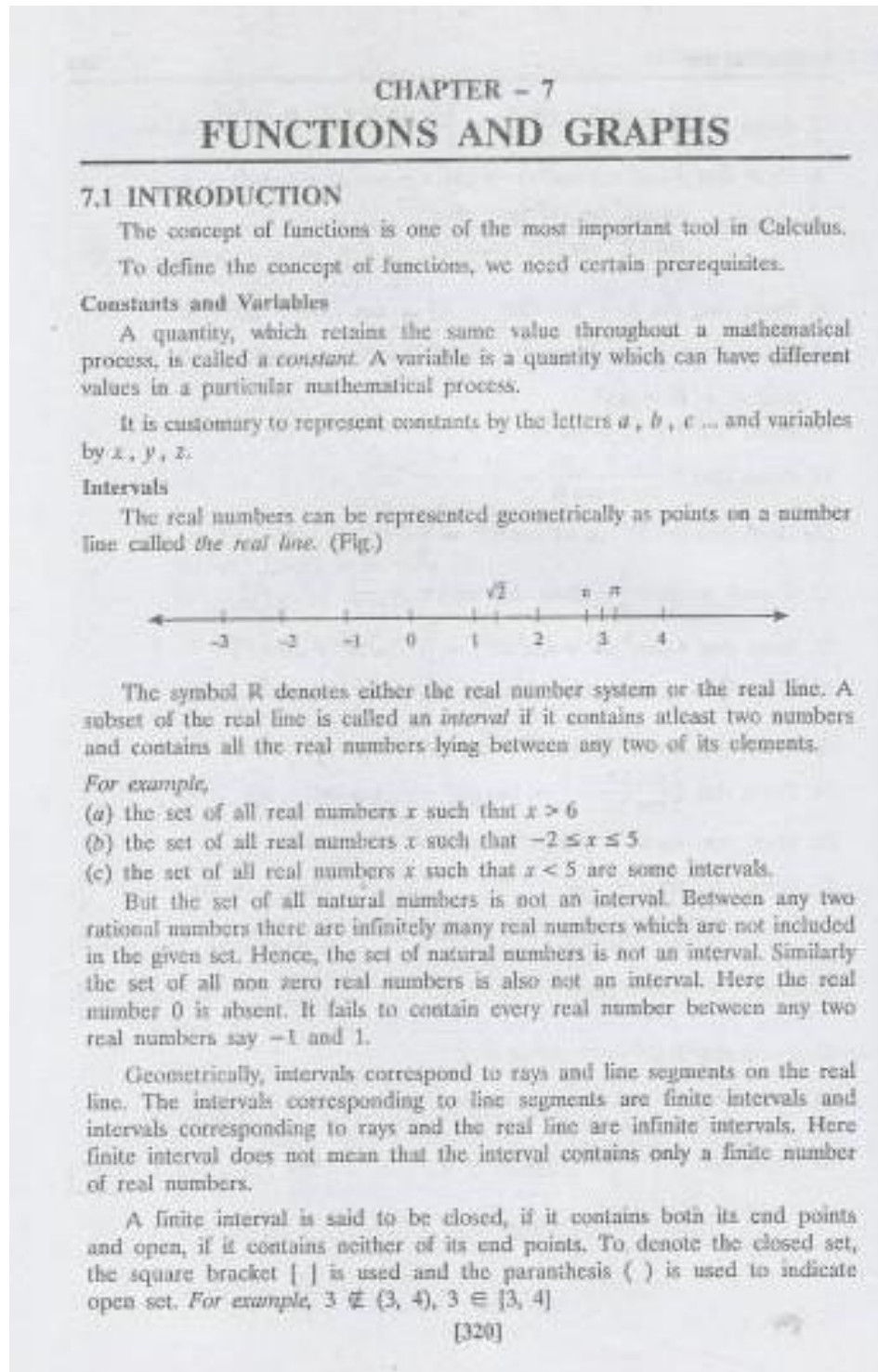


Neljän a) pinta p b) pinta-ala A on sivun pituuden x funktio. Muodota funktion lauseke.

► a) $p(x) = 4 \cdot x = 4x$

b) $A(x) = x \cdot x = x^2$

APPENDIX VII: PAGE OF INDIAN MATHEMATICS TEXTBOOK



APPENDIX VIII: PAGE OF ROMANIAN MATHEMATICS TEXTBOOK

