

“Integrating curricular subjects and language learning in a UK secondary school: Accessing Maths (Curriculum) through a Bilingual Environment (AMBE) project”

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Project Brief

- This project is a socio-linguistic investigation of language use in a bilingual medium in a secondary school in UK.
- The focus is to investigate how a cognitively demanding, context embedded National Curriculum subject (Mathematics) can be made more accessible to students from a particular linguistic group via a bilingual medium.
- The ethno linguistic group concerned is Turkish, one of the four largest linguistics groups in UK.

Some Background information and the Rationale for the project

- To explore strategies that support the learning of children from linguistic communities in inner city school contexts
- A particular concern over the underachievement of Turkish speaking students in UK schools

Multicultural London

- There are 2 Million Londoners born outside of the UK, arriving from 240 countries
- There are more than 300 languages spoken by children in London Schools making the capital the most linguistically diverse city in the world
(www.literacytrust.org.uk)

Department for Education and Skills (DfES) Schools' Survey (2005)

England

- Primary (2004-2005)

From 11.0% to 11.6 %

- Secondary (2004-2005)

From 8.8% to 9.0%

DfES Schools' Survey (2005)

Children with a first language other than English in London

■ Primary Schools

37.4 %

■ Secondary

32.1 %

Turkish Speaking Children in UK schools

Three main groups :

- Turkish Cypriots
- Turkish from mainland Turkey
- Turkish speaking Kurds from mainland Turkey

Turkish Cypriot Children in British Schools (1)

- Turkish is the fifth most widely spoken language in London Schools (15,746 pupils)
- Despite counter claims a significant majority (approx %85) start nursery schools having been exposed to mostly Turkish at home

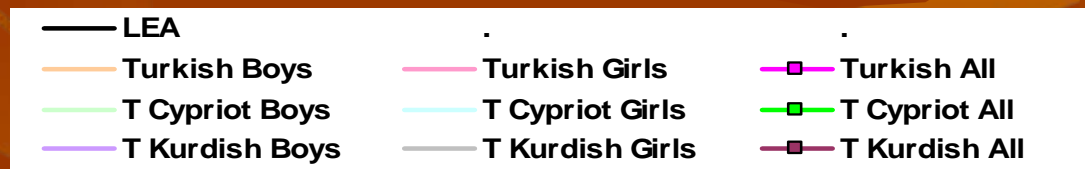
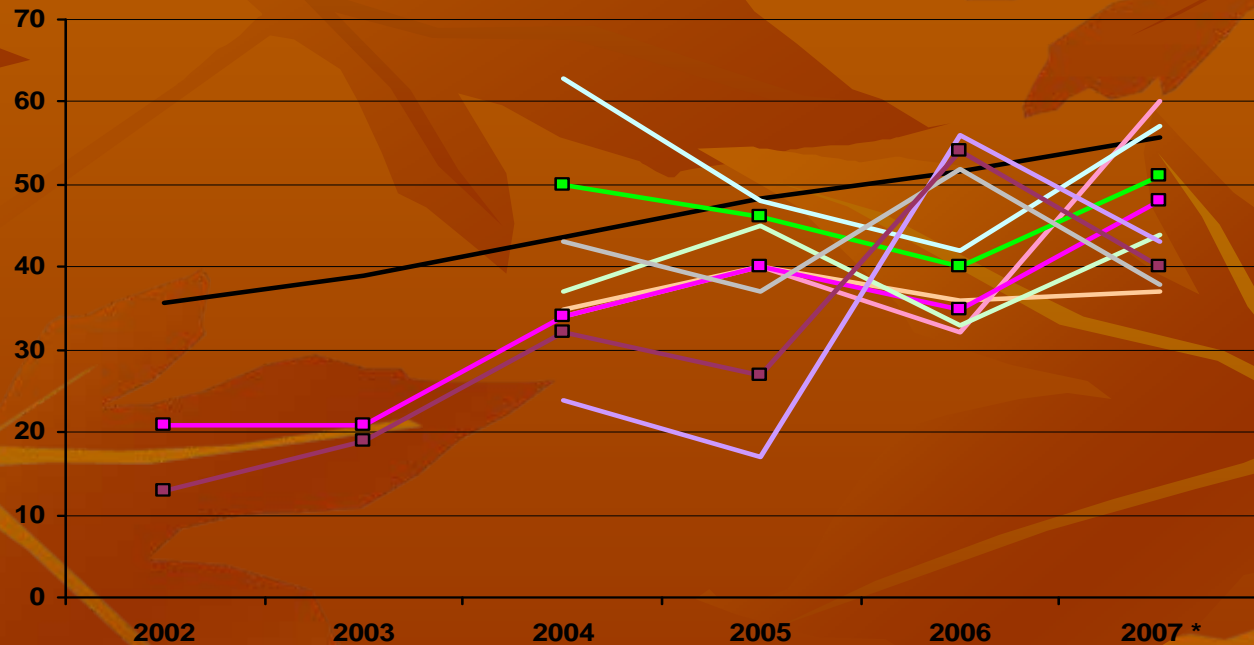
GCSE Results for Islington 2007

GCSE	Pupils	% 5 A*-C
Bangladeshi	115	59%
Black African (ex Somali)	207	64%
Black Caribbean	134	41%
Black Other	40	55%
Chinese	15	80%
Kurdish	23	52%
Mixed	116	52%
Other	89	71%
Other Asian	41	59%
Other White	113	56%
Somali	37	41%
Turkish	99	38%
White British	398	39%
Unknown	19	37%
Total	1469	50%

The National Average: %62.2

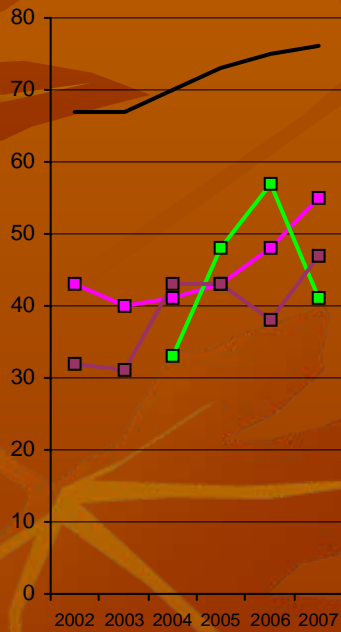
Haringey:

Key Stage 4: Percentage of pupils achieving 5 GCSE results, grade A*-C (2007)

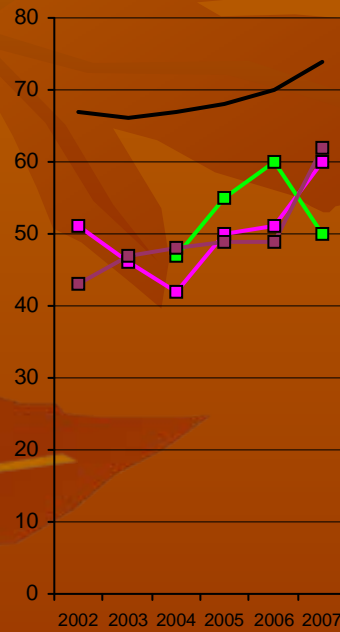


Key Stage 2: Percentage of pupils achieving level 4, by subject (Haringey 2007)

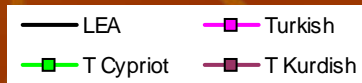
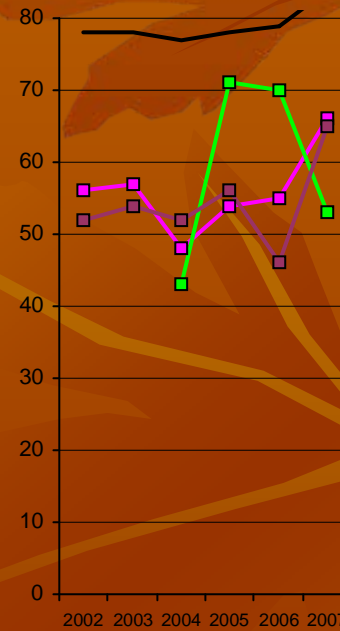
English (N:%80)



Mathematics(N:%77)



Science(N:%88)



London Borough of Haringey



- The largest ethnic minority group within Haringey is Black, this group forms 20% of the total population (43,000 people),
- The borough is home to as many as 40,000 Turkish speakers
- Nearly 15,000 people were born in either Cyprus or Turkey.

The Project School

- This is a larger-than-average mixed comprehensive school. It gained specialist schools status as an arts and language college in 2004. It takes students from a wide economically disadvantaged area of Haringey.
- A very high proportion (nearly nine tenths) of students are from minority ethnic backgrounds and nearly two thirds of all students have English as an additional language. There are well above average proportions of students eligible for free school meals.
- The number of students with learning difficulties and disabilities is above average. The attainment of students on entry to the school is very low and many students join the school with reading ages well below their chronological age.
- There is a high number of students who join or leave the school before Year 11. (OFSTED, 2007)

The aims of the project

- To assess the impact of the National Mathematics Curriculum delivered through a bilingual Turkish/English medium in pupils' level of attainment.
- To analyse students' naturally occurring conversations during classroom activities by investigating possible correlations between patterns of code-switching/borrowing and the acquisition of Mathematical concepts.
- To explore the impact of parental involvement in homework on students' acquisition of mathematical concepts.

Project group: Maths Club

- Total of 15-20 students of Turkish, Turkish Cypriot, Kurdish backgrounds.
- Majority of students are from low socio-economic backgrounds
- Turkish is the dominant language at home.
- Years 10 and 11 (ages 14-16) in the same school.
- Attending the club once a week after school

Methodology

- Two initial trial visits to audio record students' responses as informal discussion groups. This is to be followed by 'SET Sparks' pupil survey to be completed by the students.
- Audio recordings of students' naturally occurring conversations and responses during lessons. Field notes written up as monthly analytic vignettes (Erickson, 1990).
- Spoken interactions analysed through selection of key incidents from transcripts, using ethnographically informed discourse analysis (Gumprez, 1982; Rampton, 1999; Wortham, 2003).
- Weekly bilingual homework tasks administered in two languages. Visits to selected homes were arranged to assess the impact of parental involvement.

SET Sparks*

Pupil Survey for SET Sparks

Name

Male Female (Please Circle)

These questions are to help us work out how successful the project that you are about to start is. It looks at your attitudes to various topics that you will encounter over the course of the project. At the end of the project we will ask you similar questions to see how your attitude may have changed.

Think about your **maths** class:

1. How many people are in your science class
2. Putting the best person at number 1, where do you think you are in that class
3. How much do you enjoy maths lessons? Please tick the statement which most sounds like you.

Maths is my favourite subject	
I really enjoy maths lessons	
I enjoy maths lessons	
Maths lessons are OK.	
I don't enjoy maths lessons	
I really don't enjoy maths lessons	
Maths is my least favourite subject	

4. If you could change the amount of maths you did in school, would you

Have more maths	
Keep it about the same	
Have less maths	

Name:

Gender Male Female (please circle)

School

On the following lists of pairs, circle the star that represents your position. If you totally agree with the position on the left then circle that star. If you do not agree with either statement (N.B. STEM = science, technology, engineering and mathematics):

SETSparks:

Was boring	*	*	*	*	*	*	*	Was interesting
Did not help with my science	*	*	*	*	*	*	*	Helped with my science
Did not help with my maths	*	*	*	*	*	*	*	Helped with my maths
Did not help with my D&T	*	*	*	*	*	*	*	Helped with my D&T
Did not show me how STEM works in the real world	*	*	*	*	*	*	*	Showed me how STEM works in the real world
Did not change my opinion about scientists	*	*	*	*	*	*	*	Changed my opinion about scientists
Did not change my opinion about engineers	*	*	*	*	*	*	*	Changed my opinion about engineers
Had no relevance to the world outside the classroom	*	*	*	*	*	*	*	Helped me apply what I learn in class to the outside world
Made me want to do less science	*	*	*	*	*	*	*	Made me want to do more science
Made me want to do less maths	*	*	*	*	*	*	*	Made me want to do more maths
Made me want to do less engineering	*	*	*	*	*	*	*	Made me want to do more engineering
Made me want to do less DT	*	*	*	*	*	*	*	Made me want to do more DT
Made me realise that ideas are of no value to industry	*	*	*	*	*	*	*	Made me realise that ideas are important to industry
Made me realise that science is not important in the world	*	*	*	*	*	*	*	Made me realise that science is important in the world
Made me realise that maths is not important in the world	*	*	*	*	*	*	*	Made me realise that maths is important in the world
Made me realise that DT is not important in the world	*	*	*	*	*	*	*	Made me realise that DT is important in the world
Made me realise that engineering is not important in the world	*	*	*	*	*	*	*	Made me realise that engineering is important in the world

On teacher attitudes

- “If you cant speak English that’s not my problem”
- “At the end of the day I’m getting paid-it’s up to you if you want to learn”
- “Hey! English, yes?”

On teacher expectations

“Evet ama negatif.. Yani derste birşey olunca ve birşeyi iyi yapamazsak bana ‘birşey değil sen Kıbrıslı Türksün. İngilizce senin ikinci dilindir onun için birşey değil’derler. Bu beni kızdırır çünkü İngilizce benim birinci dilimdir. Yani benden çok birşey beklemez”.

*“Yes but this is negative. If I don’t do some work well I am told ‘that’s ok! You are Turkish Cypriot, English is your second language.’ That makes me angry. English is my first language. In other words he doesn’t expect much from me.”
Aydın (year 10- aged 15)*

On teacher expectations

- “It would be better for you to enter for a lower level Maths (test). Then you would have a better chance of getting a ‘reasonable’ grade”.
(Year 10 Maths teacher)
- “ I was expecting a ‘B’ for my Maths Test and got ‘C’ instead. I was disappointed but Mr. Cunningham told me that was a good result! For me it wasn’t a good result because I know I can do better” (Ayse, year 11- aged 15)

On language choice

- *“Bir dilde bilmediğimi öbür dilde söylüyorum”.*
- *“Türkçemiz ve İngilizcemiz tam olmadığı için hangisi aklımıza gelirse onu kullanıyoruz”.*
- *“We use the words we know. If I don't know a word in Turkish I just say it in English or vice versa”.*
- *“If I don't know how to say it in one (language) I say in the other”.*
- *“Because we are not fluent in either (language) we use whichever one comes to our mind”.*

Maths tasks

- *“Bu derste daha önce bildiklerimi hatırladım”.*
- *“Çok yazılı problem olunca İngilizcede anlamak zor oluyor”.*
- “In this lesson I remember things I have learned in previous lessons”.
- “When the problem is written down in English it is difficult to understand it.”

On ‘other’ teachers

- “*(Diğer) öğretmenler ne bilip ne bilmediğimizi anlamıyorlar*”.
- “The other teachers don’t understand what we know and don’t know”.

On attending the club..

- “This is a supportive environment”.
- “I feel free to explain my thoughts”.
- “*Bilingual derslerde gerekli yardımı alıyoruz*”.

(“we are getting the necessary help in bilingual lessons”).

“In the other (monolingual) class when sir explained things I was certain I knew the Turkish version because I have done it in Turkey also in Saturday school..but could not say it, but here (maths club) miss explains things in Turkish then in English. We have the chance to hear it in two languages. Its cool!”

Ahmet, Year 10 Bilingual Maths Student

Some Emerging patterns

- Some emerging patterns during the first 10 months follows:
- During classroom activities students emphasized that code-switching/borrowing enhances their understanding of Mathematical concepts.
- Students' confidence and competence improved through bilingual interaction (using their previous knowledge, social and cultural background), this affected their acquisition of mathematical concepts positively.
- Positive feedback from parents who received materials in two languages and felt themselves to be much more fully involved in their children's education.

Where from here?

- The impact of the project on mathematics curriculum delivery
- Any relationship between code-switching and acquisition of Mathematical concepts.
- The impact of parental involvement on students' acquisition of mathematical concepts.

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Thank You