

**Scientific terminology teaching
methods: first phase analysis of UK
teaching methods in comparison to
guidance literature**

Zhannetta Bayanbekova
NIS PM in Kostanay
zhanetbayanbekova@gmail.com

Why this work is
important?

Ministry of Education and Science of the
Republic of Kazakhstan, 2010

Difficulties in learning terminology

IMPORTANT

What is scientific terminology?

words that usually derive from Greek and Latin roots and are used in various languages, often with morphological alterations but with the same meaning

Terminology



Literature review

- **Brandwein, 1981** - little attention to the terminology's real understanding or use.
- **Bryan, Atwater, 2002** - focus on language learning and literacy development at the expense of science lessons.
- **Cho, McDonnough, 2009** - working with scientific concepts is difficult for bilingual students.
- **Lee, Luykx, 2007** - achievements of bilingual students, studying in an L2 language are in general lower than the achievements of monolingual students.
- **Larsson, 2011** - perceptions of science terms may influence their understanding of science language and, as a result, their academic performance.
- **Lyon, Bunch, Shaw, 2012** - bilingual students demonstrated lower score than monolingual students in written tests.
- **Zukswert, Barker, McDonnell, 2019** - link between understanding and using 'jargons' and development of conceptual scientific knowledge.



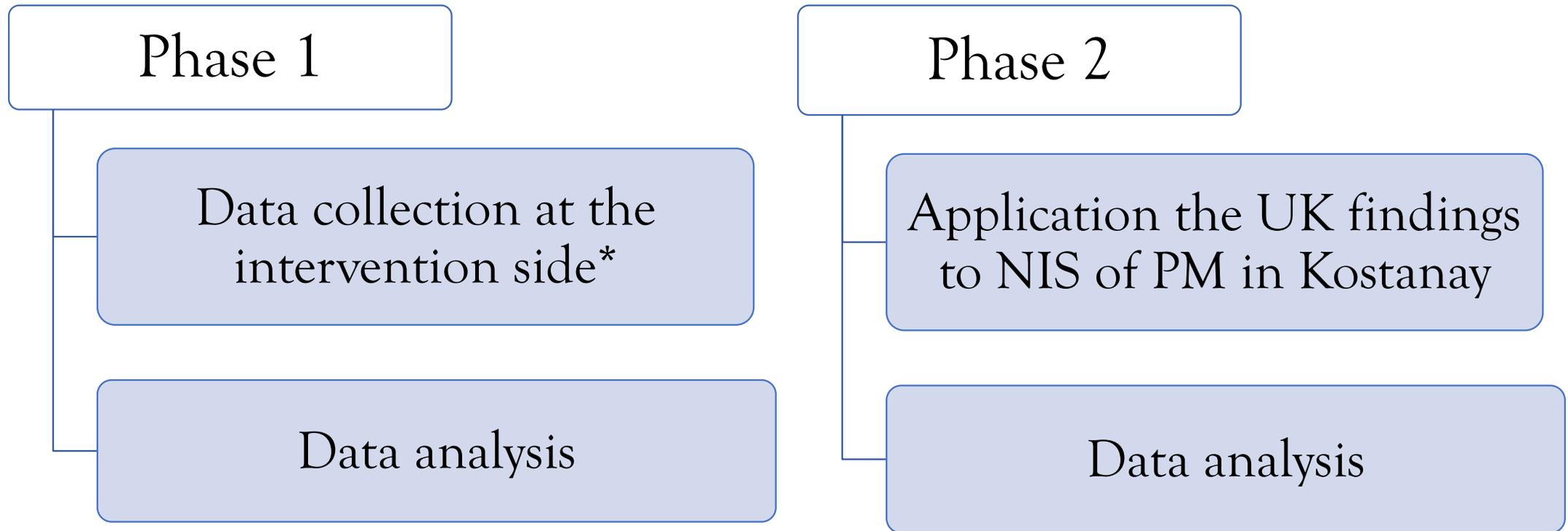
Some statistics

- 41% of Londoners are Black and Minority Ethnic and 36% of Londoners were not born in the UK, which establishes that most of the students do not have English as a first language.
- Academic achievements of Science subjects is between C and A** grades.

Aims of this study

1. Identify what strategies are used to teach terminology and which of them is used more frequently.
2. Find a link, if there any, between frequently used strategies and students' opinion.
3. Find out what students think about teachers way of implementing terminology.
4. Identify the strategies that can be carried out in Kazakh context.

Methods



*the demographic in North London, where placement school is located, says that about 20% (39,400) of residents do not speak English as a main language and compared to London, a larger proportion of this area residents speak African languages, East Asian languages, Spanish, French and other European Languages (<https://www.islington.gov.uk>)

Focus



survey from 30
students of Year 10

13 responses of the
UK science teachers

15 science lessons

survey from students
of Year 8 and 12

responses of NIS
science teachers

Implementation of
findings

Analysis methods: Triangulation

- Understanding of the literature surrounding the topic of mono-and-multi-lingual science teaching methods.
- Comparison findings from this review with the observations made in the UK setting.
- Terminology teaching methods will be applied in NIS of PM in Kostanay to test for their value in the Kazakh context.

Analysis methods: Qualitative content analysis

- To identify and interpret patterns, similarities and differences, as well as frequency of categories; coding.



**Qualitative
research**

Limitations

15 observed lessons

43 participants

1,97 million students at
the secondary schools of that age
intervention school has 973
pupils

results and findings cannot be generalised.

- Still, by considering the number of students in NIS, which is almost the same as first intervention school, we can predict that results might be applicable to NIS schools.

Results: Lesson observations

- 'Breaking down the words'
- Games
- Matching activity
- Building associations to terminology

Results: Teachers' survey

11 and 18 years old

Minimum - 1 year,
maximum - 12 years
average - 6,5 years

Focusing on subject specific
terminology is important in
Science lessons

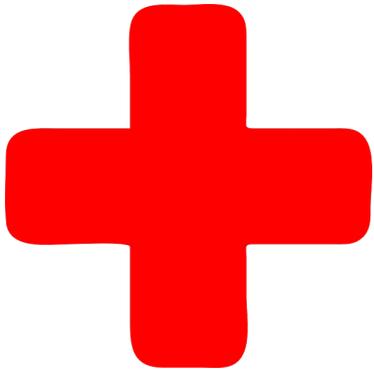
5 minutes of each lesson



Results: Teachers' survey

frequency of mention





Results: Teachers' survey

SEN students, e.g., dyslexic students and different abilities of the students.

- better understanding of key concepts and context in general.
- exam results
- losing time to teach context and main concepts of the lesson

Results: Students' survey

Survey conducted from students was focused on several aspects:

1. If students like learning terminology.
2. The importance of learning terminology outside of exams.
3. If they think that learning terminology is difficult and
4. The way how teachers can support them to learn terminology.

A second part of the survey was Likert scale.

Results: Students' survey

- 23% of participants do not like learning terminology
- 77% of participants enjoy learning terminology
- 13 respondents - learning terminology is not important only in exam achievements
- 53% - learning terminology is only important for academic achievements
- students in most cases do not believe that learning specific words requires a certain efforts

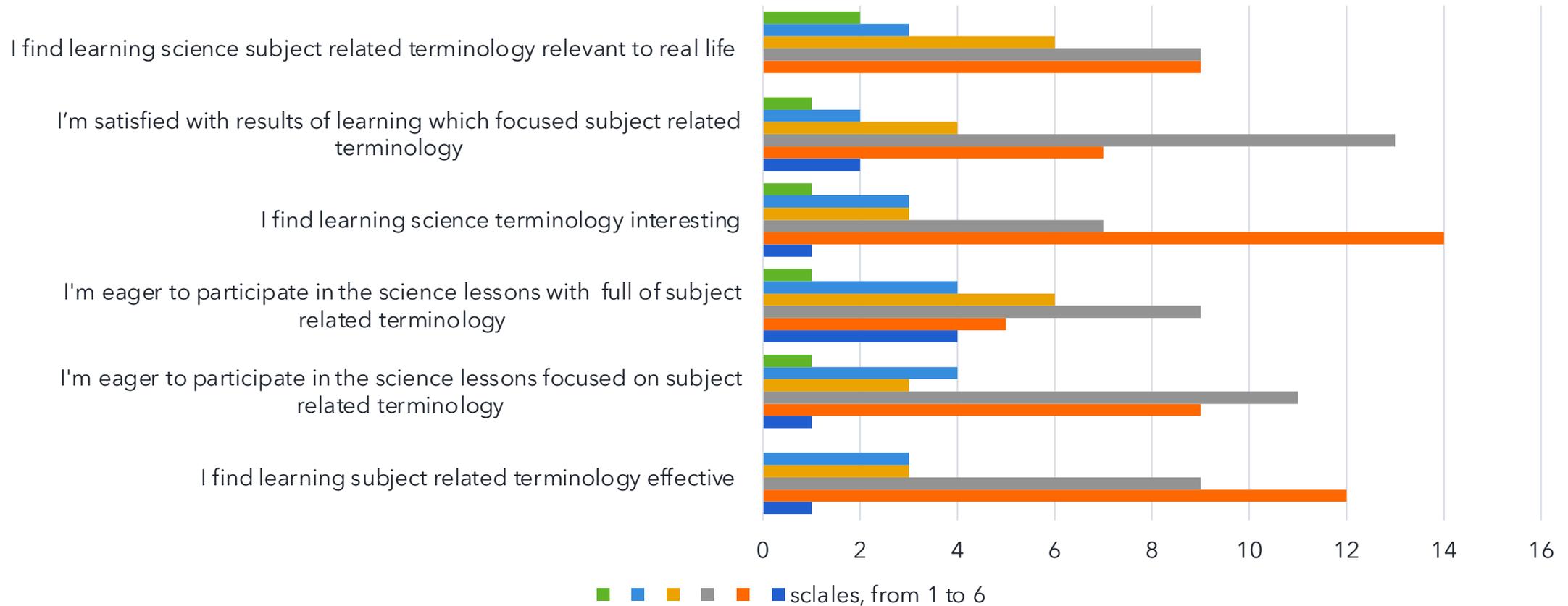
Results: Students' survey

- 5 respondents - definitions of specific words.
- 2 respondents - independent work with dictionaries.
- 3 respondents - examples of how to use subject specific words are given.
- 3 respondents - playing games and quizzes
- Same number - go further in learning new terminology.
- 10% of respondents -ways of memorising terminology.



Results: Students' survey

Number of students by different scales



1-always, 2-very frequently, 3-occasionally, 4-rarely, 5-very rarely, 6-never



Discussion

Discussion



UK teachers aware of importance of teaching academic terminology



It needs special focus on the lesson

However, most teachers assume that this focus should be smooth and integrated to other activities of the lessons



Discussion

77% of students have
positive attitudes
towards learning
subject specific words

Limitations

- End of the academic year
- Revision lessons
- Exams were passed
- Only Year 10 students

Future plans

- Method that will help students to build link between terminology and relevance of them in real life



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Thank you for
your attention
