



L2 Classroom Talk and Subject Content Learning:

Investigating the relationship between L2 learning and content learning in EMI mathematics and science classrooms

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A naturalistic study



New experience for F.1 and 2 students
Transition and Adaptation

Teachers' pedagogical strategies
Challenges and Opportunities

SCOLAR-funded Project

L2 Classroom Talk and Subject Content Learning: Investigating the relationship between L2 learning and content learning in EMI (English-medium) mathematics and science classrooms

April 2016 – June 2018



Presentation

3 parts

- Project objectives and methodology
- Lesson excerpts and observation
- Overall findings and recommendations of the project



Language in subject content classrooms



An examination of language use in any classroom research is crucial; with “language” representing “the most fundamental resource with which participants negotiate and construct their meanings in classrooms.”

(Christie, 2002: 10)



Language(s) in Maths classrooms

Classroom management

Mathematical terms
Symbols, signs, equations



English language (L2)
Cantonese (L1)
Code-mixing of L1 and L2

Non-linguistic cues

Social talk

Key objectives

- 1) Identify the distinctive features of the L2 classroom talk which promote successful learning in mathematics and science subjects
- 2) Investigate the linguistic competency and knowledge required for students to participate in mathematics and science lessons
- 3) Discuss teachers' pedagogical and linguistic strategies useful to facilitate the meaning making process and L2 acquisition in class



Project background

8 local secondary schools

7 Maths classrooms

7 Science classrooms

Grounded theory approach

Mixed methods research

- Lesson observation with transcribed recordings of a teaching unit
- Pre/Post Unit and Lesson interviews with teachers and students
- Collection of student work samples
- Student questionnaire (n=390)



Findings from student questionnaire

Most difficult

“Understanding scientific terms and/or concepts in English”

“Understanding Mathematical terms and/or concepts in English.”

Lesson excerpts

Subject teacher language awareness

*Pedagogical strategies

Learners' difficulties with understanding concepts in English



Overall observation and findings (on interaction & engagement)

Teachers

- encouraged student-initiated questions in class to stimulate curiosity, classroom discussion and meaning making.
- asked open-ended questions to stimulate learners' thinking and prompt them to justify their reasoning.
- gave reasonable wait-time for learners to understand and make sense of teachers' questions.
- scaffolded learners' understanding of concepts, ideas and vocabulary.



More overall observation and findings (on interaction & engagement)

Teachers

- revised key words and concepts before starting a new unit.
- used authentic materials and examples to contextualise and personalize subject content.
- supported learners to use more English in class; and use Cantonese to help understand technical terminology in English if necessary.
- encouraged peer learning.



Conclusions and Recommendations

- Pay greater attention to the transition from senior primary classes to junior secondary classes where the MOI changes.
- Increase the number of programmes for teacher professional development with particular emphasis on the differences between L1 and L2 instruction.
- The development of teaching packages and exemplars that demonstrate effective teaching through L1/L2 with exemplars of good questioning skills/effective discussion prompting and facilitation.



Conclusions and Recommendations

- The development of case studies and exemplars showing clear examples of student learning in classrooms where the MOI is English.
- Strengthen collaboration between subject content teachers and the English teachers in and across school networks. (see Davison, 2017).
- Offer students more out-of-class exposure to subject content learning through carefully structured ECAs that align with the curriculum and support and extend students' engagement and motivation in the subjects.



References

- Christie, F. (2002). *Classroom discourse analysis: A functional perspective*. London: Continuum.
- Davison, C.M. (2017). Collaboration between English language and content teachers: Breaking the boundaries. In A. Tajino, T. Stewart and D. Dalsky (Eds.), *Team teaching and team learning in the language classroom*. London: Routledge.



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