

Supporting Mathematical Communication for STEM Students through Open-Access Resources: A Case Study at SWJTU-Leeds Joint School

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Context: The Southwest Jiaotong (SWJTU)-Leeds Joint School in Chengdu, China provides Leeds engineering programmes with English as the medium of instruction. *The Academic Language of Mathematics* is an open access book written by Costas Loizou, Shuwei Chen & Deak Kirkham (2026) aiming to address the challenges non-native English speakers face at SWJTU-Leeds Joint School.

The research aims to evaluate:

- The linguistic challenges faced by students in The SWJTU-Leeds Joint School
- How *The Academic Language of Mathematics* open access book can address those challenges.

Research questions:

RQ1: What linguistic challenges do SWJTU-Leeds Joint School students face when learning mathematics in English?

RQ2: How can the academic language of Mathematics open access book address these challenges?

Methodology: The study consisted of 6 students from the Joint School.



- **Focus group:** gathered qualitative data
- **Mock class:** Addressed the data from the focus group
- **Questionnaire:** students evaluated the mock class

Summary of focus group

Students were ask to express which challenges they meet studying at the Joint school. Responses could be sorted into four themes of challenges: **Vocabulary**, **notation**, **speaking** and **writing**.

Figure 1 show representative quotes from each theme:

Vocabulary	Notation	Speaking	Writing
"Some things I have learned in Chinese, but I'm not clear about it in English"	"It is easy to forget our understand-ing of the formula,"	"I can't express [myself] clearly, especially in English"	"I'm having some troubles to write linking words"

Figure 1

Result: Students expressed they meet many challenges with speaking, and significant challenges with vocabulary.



Summary of mock class

4 students participated in the mock class. The activities were designed to respond to the linguistic challenges the students expressed in the focus group. Throughout the class, all 4 themes of challenges were addressed by some activities.

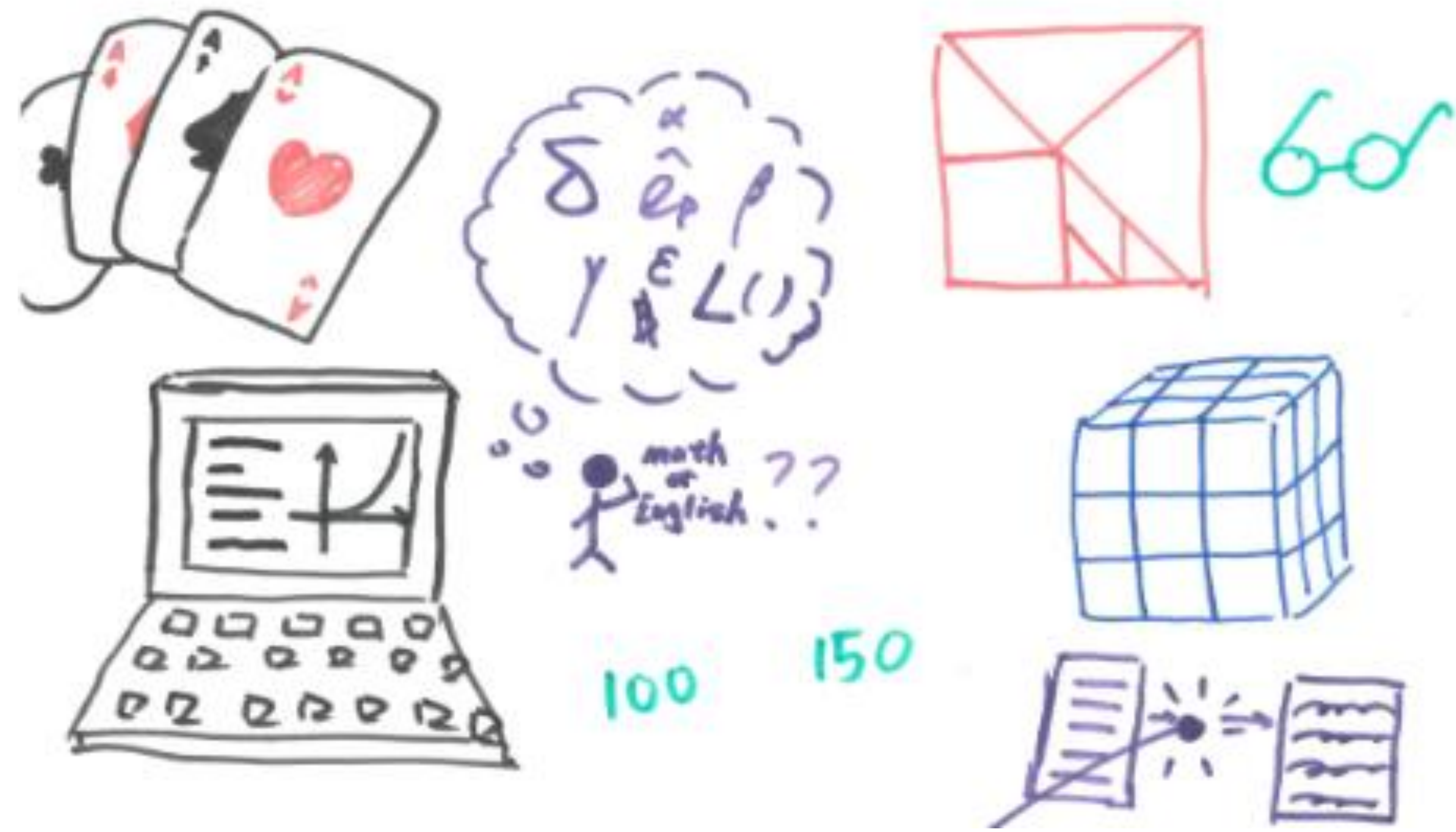


Figure 2: Students were instructed to create a poster prompted by: "What do you think when you think of math?" Whereafter they presented to the class.

Summary of questionnaire

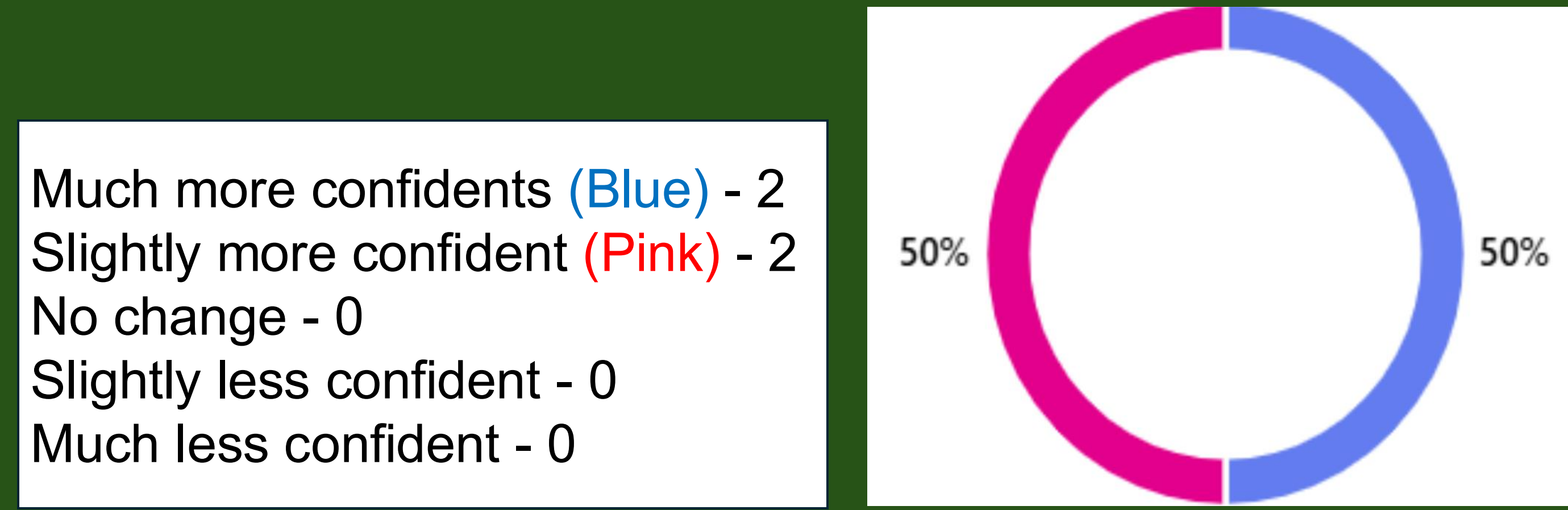
Students completed the questionnaire after the mock class

- 4 students answered the questionnaire
- 4 quantitative data questions
- 4 qualitative data questions

Representative questions:

Q: In what ways did the mock class address the language related challenges you meet?
Answers include: reading formulae out loud, writing problems, vocabulary and pronunciation.

Q: How has your general confidence in communicating mathematics changed after the mock class?



Result: Students expressed that the activities in the class addressed the challenges they meet, and that they all were either much more, or slightly more confident in communicating mathematics after the mock class.

References: Loizou, C., Chen, S., & Kirkham, D. (2026). *The Academic Language of Mathematics*. The University of Leeds: Press Books; <https://leeds.pressbooks.pub/academic-language-of-mathematics/>
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