

Effect of Engineering Literature in Enhancing Analytical Skills Through Academic Conversations in Kindergarten

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Research Question:

What is the effect of engineering-centered literature in enhancing linguistically diverse students analytical skills through academic conversations?

Background

- Academic conversations build students' academic vocabulary, grammar, questioning skills, reasoning, and analysis of 'Big Ideas'
- Deeper understanding of student thinking is necessary to guide innovations in teaching practices.
- Starting with narrative structures is important because it facilitates recall of ideas and concepts and hands on for sustained engagement in challenging tasks

Methods

- Teacher Participant: One kindergarten main stream teacher with an experience of 6.5 years
- Student Participants: Three kindergarten students from low socio economic background representing high, average and low ability levels.
- Design: A treatment of withdrawal single-subject study design with multiple probes (Applied Behavior Analysis)

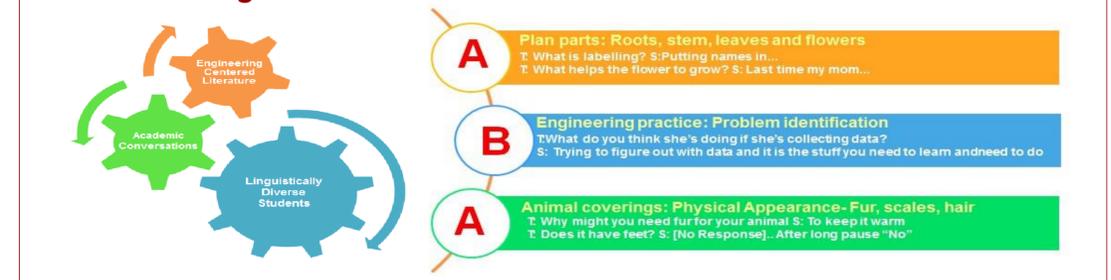
Figure 1. Engineering-Centered Literature and Academic Conversation Skills



Analysis and Findings

- Qualitative observations on students' contributions to academic conversations were monitored, recorded and analyzed from the recorded videos. During baseline, the focus was on lower level knowledge however during intervention, the focus was on analysis and communicated big ideas.

Figure 2. Academic Conversation Patterns



Implications and Conclusions

- There was a visible increase in discussion participation for all 3 students including academic terminology, reasoning for idea-building and effective problem-solving
- The redundancy of ideas, related academic vocabulary, conversational and analytical skills of the students improved during the intervention period.
- These findings suggested that the engineering centered literature enhanced the analytical skills through academic conversations in linguistically diverse students.
- These findings were based on one classroom only.

References and Acknowledgements

Aguirre-Muñoz, & Pantoya, M. (2016). Engineering Literacy and Engagement in Kindergarten Classrooms. *Journal of Engineering Education*, 105(4), 630-654.

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