Inhibitors of Problem Solving Strategies for Representational Task Formats

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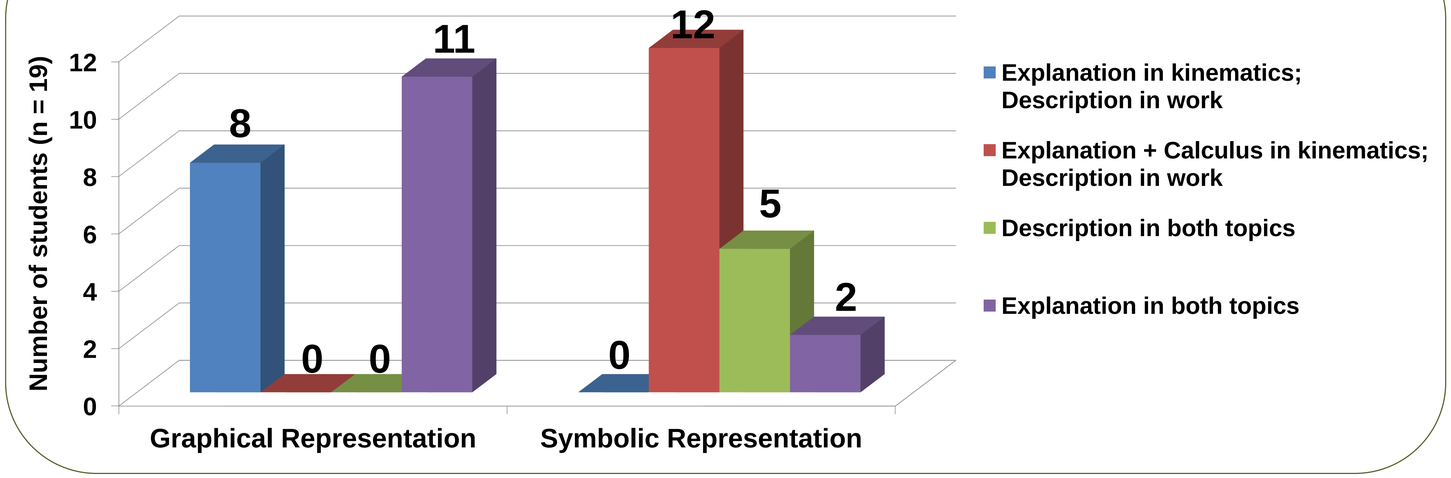
Research Question

What is the effect of representational mode, topic and nature (qualitative or quantitative) of solutions on problem solving strategies?

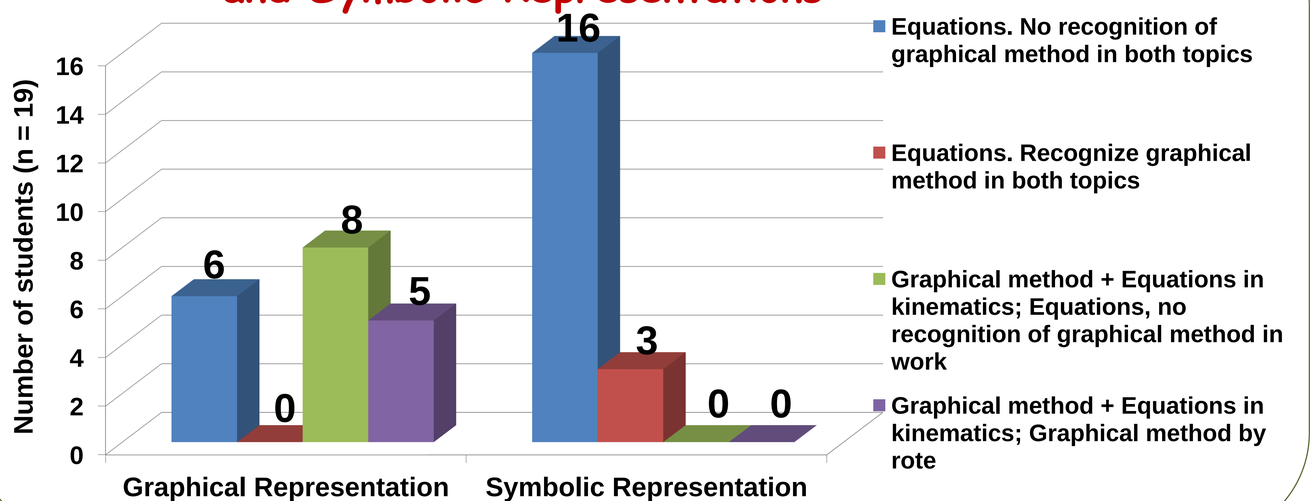
Research Method

- 19 engineering students; calculus-based physics course
- 10 non-directed tasks (kinematics and work) with linguistic, graphical and symbolic formats; qualitative or quantitative solutions
- Complete tasks individually followed by individual interviews
- Code characteristics of problem solving approaches and interview responses
- Compare same student's actions and reasoning with same kind of representation across topics

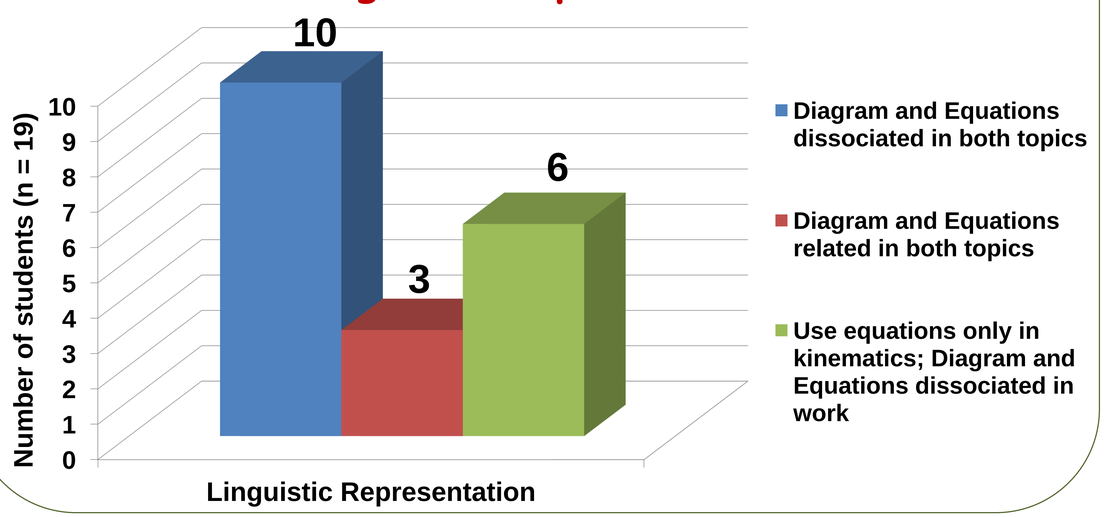
Result I: Interpret Symbolic and Graphical Representations



Result II: Solve for Value from Graphical and Symbolic Representations



Result III: Solve for Value from Linguistic Representations



Conclusion

- Representational mode impacts on approach used
- Topic effects on representation interpretation for qualitative solution but no effect on approach for quantitative solution
- Nature of solution has no direct influence on problem solving approach