

STUDENTS' REASONING THROUGH GRAPH CONVENTIONS

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The ability to read and write graphical representations is important for students to progress in STEM coursework and careers (Costa, 2020). Graphical representations commonly draw on conventions. Although students must know these conventions and use them to communicate ideas with others, research has shown that overemphasizing conventions can detract from important student reasoning that could support their graph literacy (e.g., Mamolo & Zazkis, 2012; Thompson, 1992). Collectively, these studies provide insight into complexities students can experience when they have been overexposed to graphing conventions.

Our work examines U.S. middle-grades students (10–13 years old) who have had less exposure to graphing conventions. We document how these students are capable of reconciling cognitive conflict between graphing conventions and their reasoning about quantities; we argue that such reconciliation can result in their understanding of graphing conventions as choices rather than as required rules. In this poster, we describe students' thinking about graphical representations in unconventional Cartesian coordinate systems (e.g., with positive y-values going down the vertical axis), including how these students' attention to graphing conventions, quantitative strategies, and thinking within reference frames interplayed. We discuss implications of students' graph thinking for future research and teaching regarding students' developing meanings for graph conventions.

Acknowledgements

This paper is supported by the NSF under Grants #DRL-2200778 and #DRL-2239316.

References

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