

Public Abstract

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Title:A Study of Algebra 1 Students' Use of Digital and Print Textbooks

This case study employed qualitative methods to investigate how students in two Algebra 1 classrooms, taught by the same teacher, used print and digital formats of a commercially published Algebra 1 textbook during a chapter about linear functions. Activity theory framed the study, functioning as a tool to understand how students use textbooks in classroom contexts. Data analysis focused on clips of student textbook use, recorded from hat-mounted video cameras worn by students. Clips were supported by stimulated recall interviews in which students elaborated on textbook use.

Findings indicate that students used a small proportion of the textbook resources and features, regardless of textbook format. In both classes, students viewed the textbook primarily as a source for homework exercises, and textbooks use was predominantly teacher-directed. Students tended to engage with the teacher and peers while using print textbooks, while the class using the digital format remained mostly silent during textbook use. The digital textbook included interactive features, but those features were rarely used. Nonetheless, students in both classes expressed preferences for digital textbooks.

Implications of the study suggest that strategic use of textbooks, regardless of format, is not automatic for students and that classroom teachers play an important role in how students use textbooks. In order to capitalize on the potential that digital textbooks offer for integrating mathematics curriculum with technological learning tools, students must not only understand how to use these powerful resources, but also have a motive to engage more deeply with the mathematics conveyed in the materials.