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Evaluation of *Cyberchase Do the Math* Online Videos

Report for Thirteen/WNET
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Drawn after viewing Buzz & Delete *Do the Math* Video: *Can't Wait to Tessellate*

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EXECUTIVE SUMMARY
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Cyberchase is a public television series of half-hour animated math shows for 8-11 year olds produced by Thirteen/WNET New York. As part of a National Science Foundation grant, *Cyberchase* has produced and posted on the *Cyberchase* website ten short-form animated *Do the Math* videos to motivate viewers to do math-related activities both online and offline, to increase confidence and interest in mathematics and to improve math knowledge. Four videos presented *The Misadventures of Buzz & Delete* covering the topics of fractions, tessellation, linear measurement and inverse operations. Three *Lucky Star* videos showed Jackie hosting a math game show with *Cyberchase* characters as contestants. In three live-action *Math Magic* videos, the character Harry demonstrated math tricks with a child helper. Employing online tracking and pre and post surveys and interviews, Multimedia Research implemented a pre-post same-sample evaluation of the impact of the *Do the Math* videos on third graders who viewed at home one video daily for ten days. Because participating children were assigned to watch a daily video, the study results are limited in generalization to similarly motivated users.

Children increased their engagement with mathematics by taking advantage of the online and offline opportunities.

- Eight out of ten children were motivated to replay one or more of the assigned ten *Do the Math* videos. Three-quarters of the viewers reported talking to others about the videos.
- Watching the videos motivated almost all viewers to click on a *Do the Math* video-related game, particularly the *Lucky Star* game. One-fifth of the group reported playing *Cyberchase* math games not related to the videos.
- One child submitted a story to *Cyberchase* via the Sent It feature, but one-third of viewers said they were motivated to send something and 15% clicked on the Send It button. The other children said they were simply not interested in sending something or that they had no time or did not know how to send something.
- *Do the Math* videos motivated almost three-quarters of the children to do at least one offline math activity not related to school or homework. A majority of children reported doing at least one non-school math activity related to the *Buzz & Delete* videos and/or a *Math Magic* video trick.

Children were motivated to continue interactions with *Cyberchase*.

- After the ten days of assigned viewing, online activity continued to be tracked. A few children viewed a video short again or started a video-related game online, and a few children asked about future access to the *Math Magic* videos to practice the tricks.
- Of those children who had not watched the television series in the months prior to the study, 13% were motivated by the short-form videos to watch the long-form show during the study.

Children demonstrated greater confidence in solving math problems related to the *Do the Math* videos.

- Viewing the ten short form videos significantly increased children's confidence in solving math problems. Almost three-quarters of the children were more confident about their ability to figure out *Do the Math* type problems after viewing the ten videos.

Children showed increased understanding of math content specific to three of the four *Buzz & Delete* videos.

- Viewing three of the four *Buzz & Delete* videos significantly improved specific math knowledge related to fractions, tessellation, and measurement. Children learned that $1/3$ is larger than $1/8$, that hexagons can “tessellate,” and that a measuring instrument will help split a room equally. Exposure to the *B&D: Together Again* video did not change viewers' ability to reverse directions.

Children found the *Do the Math* genres and videos fun and appealing.

- The three *Do the Math* video genres did not differ significantly in appeal ratings, with 84% to 88% of viewers liking the three genres “a lot” or “sort of.” When asked to choose one favorite and one least favorite video, the children split their votes fairly equally among the ten videos, with no genre being preferred.
- Viewers liked the ten videos because they were fun and funny, because the characters and their interactions were appealing, and because they learned from them.
- Lower appeal of videos resulted when the viewers were already familiar with the math or when they found the math confusing; on average, however, the math hit the third-graders' sweet spot.

In conclusion, the ten *Do the Math* videos were successful in motivating both online and offline math-related activities during the study period, successful in increasing viewer confidence in their ability to do math problem-solving, and successful in improving specific math knowledge. The videos were less successful in encouraging math-related activities after the assigned viewing period, possibly because the sample of children were already saturated with the available *Do the Math* experiences. With the addition of more well-produced *Do the Math* videos and games, it is likely that future video viewers will be motivated in a manner similar to the study sample.