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# Technology Use in a High School Math Classroom to Enhance Student Engagement

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## Introduction

With the increasing use of mobile technology in society in general, there is a growing need to intentionally use this technology with 21st century learners in our schools. (Jordan et al., 2016) While laptop and desktop computers continue to top the list of digital tools being used by teachers and students, they are now joined by cell phones and smartphones as a fairly common educational tool. Almost three-quarters of AP and NWP teachers (73%) say that they and/or their students use their mobile phones as a learning device in the classroom or to complete assignments. (Purcell, Heaps, Buchanan, & Friedrich, 2013) It is undeniable that mobile devices have become a constant presence in a high school classroom. While often viewed as a distraction, cell phones can be an effective tool for engaging students in learning. (Engle & Green, 2011) Many high school educators have learned to embrace them and use them productively and instructionally in the classroom.

## Methods

The design of this study was pre-experimental using mixed methods. Student engagement and math achievement were both explored and measured during this study. To measure student engagement, subjects took two surveys, the first given before any treatment, and the second survey was post treatment. The initial survey included questions about the frequency of classroom computer use, students' thoughts of the importance of having access to technology, and ranked their engagement levels of several different classroom activities, some of which included technology, and some of which did not. The post survey had three open-ended, qualitative questions asking how different classroom activities supported their understanding of the math lesson. It also contains three quantitative questions asking students to rank how engaging they thought the different treatment lessons were.

## Driving Question

How does mobile device technology use affect high school math students' engagement and achievement?

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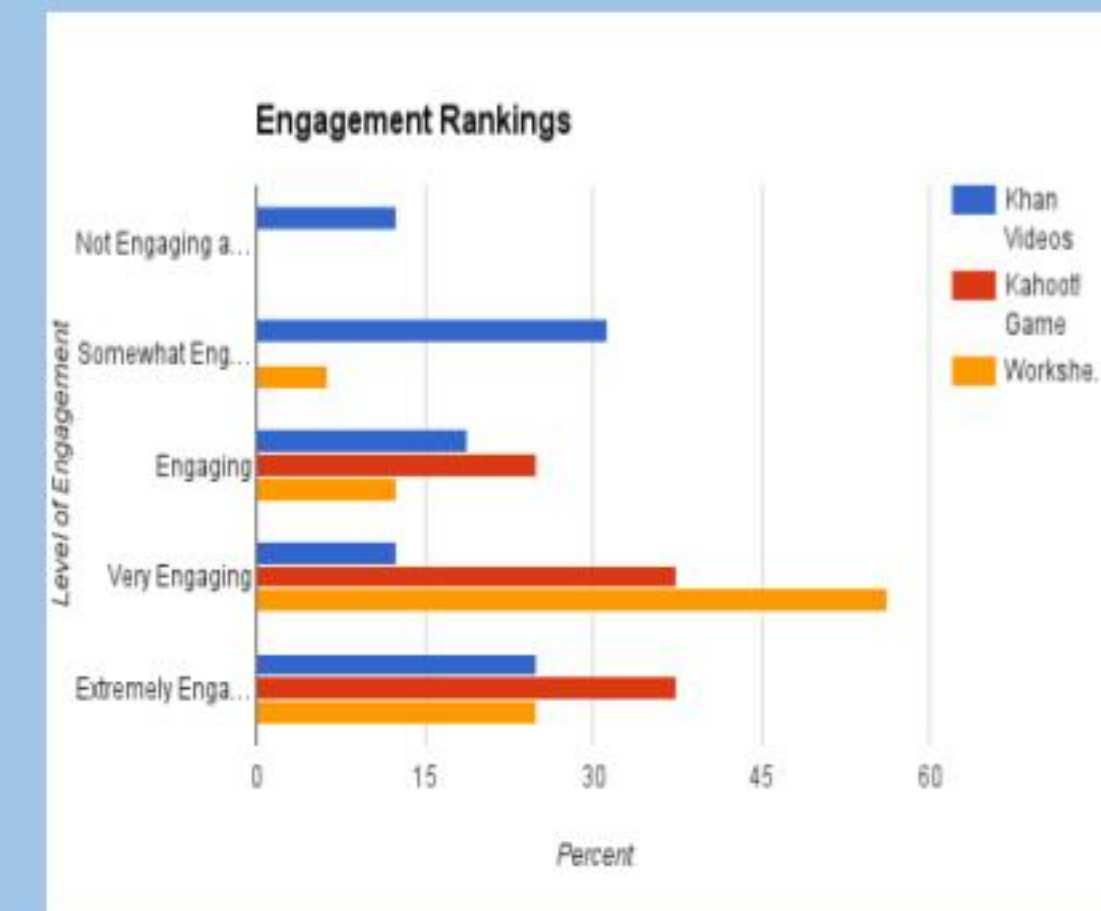
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## Results

On average, students find activities in a math classroom that utilize technology to be more engaging than activities that don't use technology. When measured on a five point scale from "Not Engaging at All" to "Extremely Engaging," both of the technology activities ranked higher in engagement than all but one of the non-technology activities. Scores were totalled from the "Very Engaging" and "Extremely Engaging" categories, and in the two technology activities the combined averages were higher than all the non-technology activities except for Board Math. According to this data set, students do find using technology in the classroom more engaging than activities that don't use technology.



## Conclusions

It is important for all teachers to vary the lessons and activities used in the classroom. There are various learning styles in each classroom, and what works for some students, may not work for others. This is regardless of whether or not a classroom teacher decides to incorporate technology in their classroom. Technology should not be used in the classroom solely for the sake of using technology; also, there are many technologies that are not engaging for students. Classroom teachers need to be very careful when deciding what classroom technologies they want to use in their classrooms because the effective and engaging use of mobile devices in a math classroom is just one example of differentiating instruction to help meet the needs of all students. Mobile devices enable every conceivable form of teaching and learning and create a learning environment in which each student can find an appropriate niche (Dede, 2010). In conclusion, one of the best ways to find out if classroom activities are engaging is to ask the students.

## Next Steps

Areas of further study for me:

- Continue utilizing Desmos.com for supplemental help with my stations activities
- Take Kahoot! to the next level by starting to have my students make Kahoot! quizzes for instruction during class
- Continue to use google forms to get feedback from my students on what activities they find engaging
- Attend innovative technology education seminars to keep adding resources to by toolbox

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## For further information

Please contact [napamadigans@gmail.com](mailto:napamadigans@gmail.com) More information on this and related projects can be obtained at <http://www.learninginnovationlab.com/madigan-home.html> The online version of this poster can be found there.