Digital Tutorial, iPads & Mathematics

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Introduction

In 2014 Maritzburg College launched two iPad pilot classes. These pilot classes gave me the opportunity to embrace the 'Maker world'. The revised Bloom's Taxonomy points out that creation is at the highest order of learning. *"New digital tools available to students have flung open the doors to creativity, imagination, and student directed learning."* (Donaldson ,2014).

The 'Maker world' allows educators to zone in on creativity by allowing learners to learn in an exciting way through creating and Making. In my action research project, I wished to understand how creating digital tutorials with various apps (app smashing) might stimulate and enhance boys' attitude towards mathematics. By fostering a passion and positive attitude towards mathematics, boys should in turn have a better understanding of mathematical concepts. The iPad offers the opportunity to create digital material to stimulate passion in boys. It would be interesting, therefore, to observe how these technologies facilitate boys' creative responses.

Research Question

How can the creation of digital tutorials on iPads enhance boys' understanding of Geometry?

Research Context

Maritzburg College was founded in 1863 as the Pietermaritzburg High School. Over the course of its long history, of which we who make up the College of today are very proud, the school has evolved from the small, village school of 1863 into a vibrant, bustling, 21st century establishment that employs 150 staff and is the educational home to 850 day scholars and nearly 400 boarders. Although the school boasts all the modern educational tools and sporting facilities that one could imagine, it has retained its own unique character, which fosters a powerful sense of identity and belonging in our community.

Participants

I used one of the pilot iPad classes which consisted of 25 boys. I focused on ten of the boys with regard to the theme of "Boys as Makers". This sample consisted of one pair of twins who worked together on the project. The entire class was involved in the Maker activity, but my research and data collection were based on the ten boys who were chosen. The ten boys were randomly selected, interviewed and observed.

The Research Action

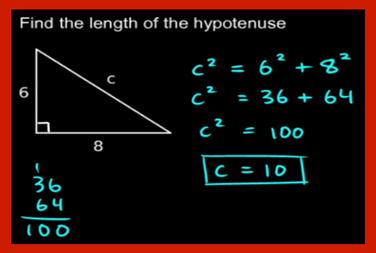
Boys were a given a task to create a digital tutorial on a geometric concept. After completing the digital tutorial, boys completed an online survey. Each boy was interviewed and then requested to create a one minute iMovie clip on their reflections on the project.

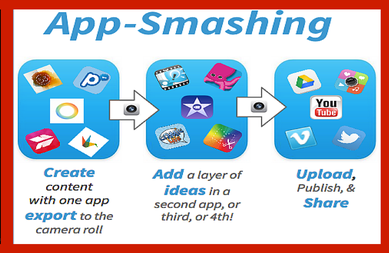
Data Collection

- Questionnaire using Survey Monkey was completed by each boy
- Observation
- Individual interviews
- Boys made a 1 minute iMovie recording their reflections on making the digital tutorial

Data Analysis

- Data collected from the student survey were transcribed analysed and themed
- Data collected from the interviews and iMovie reflections were carefully reviewed, categories and themes surfaced from this process.
- Boys' voices emerged and highlighted their feelings during the making process.





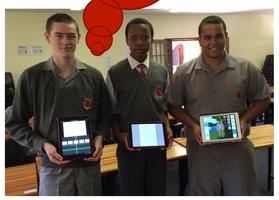
Key Findings and Discussion

- A deeper understanding of geometric concepts was reached –the iPad allowed boys to source information from a variety of websites and YouTube videos. They were not confined to a textbook. Teaching the concept improved their understanding of the content.
- Using the iPads increased motivation – the project stimulated and motivated boys to show off their creative and technical skills.
- The iPad is a powerful learning tool – the various apps used (app smashing) in the making of digital tutorial makes the iPad a powerful learning tool for research, creation, collaboration, and learning.

"by using the iPad, I was motivated to go beyond the borders and do something extravagant"

"It indeed furthered my understanding of the concept as I physically found ways and methods to do it"

"It was a fun way to learn maths. I was very excited to be creative and keen on using new apps"



Conclusions

Loveless (2002:15) considers digital technologies as a tool useful for "developing new ideas, making connections, creating and making, collaboration and communication, and evaluation".

It is clear from the findings that creating and making a digital tutorial on the iPad stimulated motivation within the boys, helped them gain a deeper understanding of the concepts, and allowed them to communicate their tutorials with their fellow learners (shared creation and collaborative learning). Creating a digital tutorial on geometric concepts shifted the boys' mindsets about maths being laborious and tedious at times, to being creative and exciting. We, as teachers, need to embrace the Making process to stimulate creative and exciting learning opportunities.

"We would recommend that boys make digital tutorials to master their mathematics"

Key Readings

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Further Information

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