Enhancing Grade 6 boys engagement with Geometry using Scratch

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The Ridge School

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Firstly, a little bit about me…

- Primary School Maths and IT teacher in Johannesburg

- Previously taught High School Maths at St Alban's College in Pretoria

- IBSC "Boys as Makers" action research project was a wonderful fit with my passion to emphasize "coding" in Primary School IT lessons

- I also saw an opportunity for my boys to explore some more applied Maths using Scratch, which would hopefully make the ever tricky transition between concrete and abstract concepts more engaging

Why Scratch?

- Founded on the principles of Seymour Papert's theory of "constructionism"

    1. Creating
    2. Personalizing
    3. Sharing
    4. Reflecting

- Block-based programming language that eliminates the barrier to entry created by the complicated syntax of more formal programming languages

- It's free, and it's from MIT!

1. To create

- Scratch is designed to stimulate the productive and creative use of technology rather than mere consumption of multimedia, which is a key element to the effective use of technology in education

- The learning process with creating dynamic and interactive computational media allows boys to have a further appreciation for the software that they use in their everyday lives
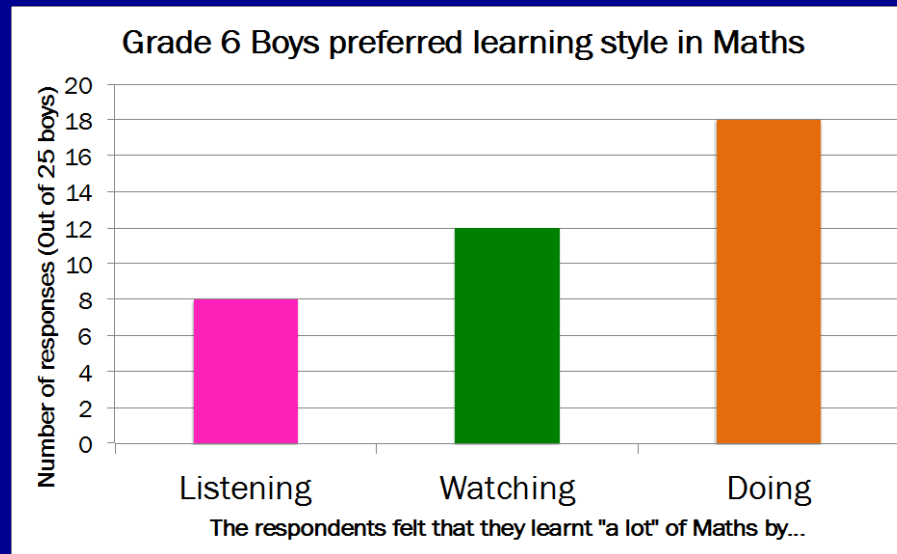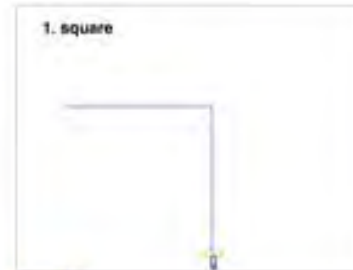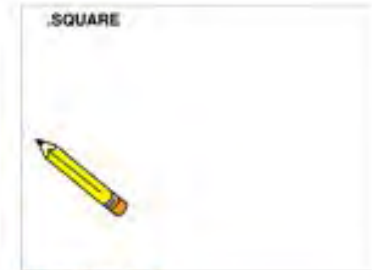
2. To personalize

School Maths Project -...
by Lokuin
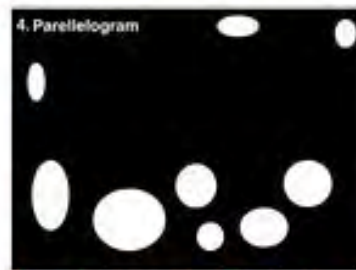
Quadrilaterals Made By...
by enderjock

math!
by alexrobins123

Untitled-2
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by peterqueally

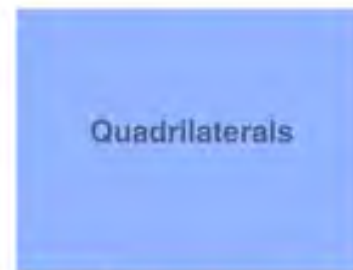**math**
by zaidyboy122

Quadriaterals
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Math Project
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school maths and I T p...
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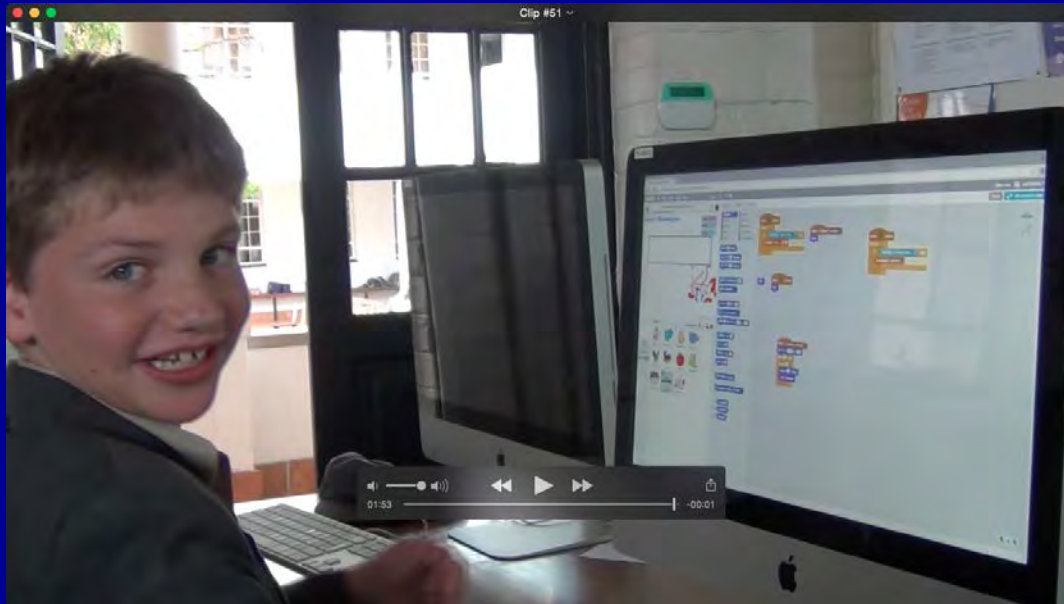**the bossness of shapes**
by 12december

shapes
by JoeClucas

The Math project
by mitchtheman14

3. To share

- To support Lev Vygotsky's theory of the zone of proximal development

- The boys were able to engage with Scratch and the underlying Maths principles as co-creators, teachers and as an audience

4. To reflect

- The "cloud based" medium of Scratch makes tricky yet important process a lot more feasible

- Provides an opportunity to celebrate and recognize different approaches to the task and round-off the "maker based" learning process

Conclusion

- The steep contrast between the "maker based" learning and the more traditional curriculum driven approach is disruptive, challenging and rewarding

- Developing a valuable project in Scratch requires a significant amount of lead time in order to develop some of the foundational programming skills that really empower the boys to create something meaningful

- Through Scratch the boys are able to naturally engage with a substantial amount of mathematical concepts

Some useful resources

These are all hyperlinks

- Website: scratch.mit.edu

- My IBSC blog (again): danielmclachlan.edublogs.org

- "Creative Computing" Educators Guide to Scratch (developed by the Harvard Graduate School of Education)

- My Scratch studio: Grade 6 Maths Quadrilaterals Project