MINECRAFT IN THE MATH CLASSROOM

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Minecraft in the Math Classroom

Presentation Line Up

- My Inspiration
- My Journey
- Why I Use Minecraft as a Tool
- Minecraft In My Math Classroom
- Genius Hour
- Science Project
- Other Classes
- Coding
- Resources
- Who to Follow / Hashtags
- What Education/Research Is Saying
- What Students Are Saying
- Break Out
- Build Battle
- Wrap Up
Minecraft in the Math Classroom

My Inspiration
Minecraft In The Math Classroom

My Journey

On behalf of the Minecraft: Education Edition team, I would like to express our gratitude to all the educators who are implementing Minecraft in their classrooms. This year, we have seen a record number of applicants for the program, and we are thrilled to have added so many new educators to our community. We hope you are looking forward to growing the Minecraft: Education Edition community even further in the future.

Dean Vendramin
Saskatchewan, Canada
Minecraft in the Math Classroom

21st Century Skills

What are 21st century skills? These 4 C’s:

- **C**ommunication: Sharing thoughts, questions, ideas & solutions
- **C**ollaboration: Working together to reach a goal. Putting talent, expertise, and smarts to work
- **C**ritical Thinking: Looking at problems in a new way and linking learning across subjects & disciplines
- **C**reativity: Trying new approaches to get things done equals innovation & invention
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<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
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<tbody>
<tr>
<td>Substitution</td>
<td>Technology acts as a direct tool substitute with no functional change.</td>
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<tr>
<td>Augmentation</td>
<td>Technology acts as a direct tool substitute with functional improvements.</td>
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<tr>
<td>Modification</td>
<td>Technology allows for significant task redesign.</td>
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<tr>
<td>Redefinition</td>
<td>Technology allows creation of new task, previously inconceivable.</td>
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Model by Ruben Puenteclura
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Universal Design for Learning

**Recognition Networks**
The "what" of learning

*How we gather facts and categorize what we see, hear, and read. Identifying letters, words, or an author's style are recognition tasks.*

**Strategic Networks**
The "how" of learning

*Planning and performing tasks. How we organize and express our ideas. Writing an essay or solving a math problem are strategic tasks.*

**Affective Networks**
The "why" of learning

*How learners get engaged and stay motivated. How they are challenged, excited, or interested. These are affective dimensions.*

- **Principle #1:** Present information and content in different ways
- **Principle #2:** Differentiate the ways that students can express what they know
- **Principle #3:** Stimulate interest and motivation for learning
How I Use Minecraft In The Math Classroom
How I Use Minecraft In The Math Classroom – Amusement Park

Rollercoaster – Slope
Water Park – Surface Area & Volume
Water Slides – Scale/Trig
Attraction & Path - Scale
How I Use Minecraft In The Math Classroom – Grade 9 Math Concepts

Surface Area
Scale
Symmetry
Polynomials
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How I Use Minecraft In Other Classrooms

Genius Hour
Science Project
Coding
Other Subjects
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How to Play

- Start Your Minecraft Journey
- Minecraft Tutorial
- Minecraft 101
- Planet Minecraft
- Ask Your Students
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Resources

- Minecraft Education Edition
- My Minecraft Resources
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Who to Follow / Hash Tags

https://education.minecraft.net/community/minecraft-mentors/

https://twitter.com/BBTNB
Ben's Video / Ben’s Mentors Market

https://twitter.com/mr_isaacs
https://twitter.com/ImmersiveMind
https://twitter.com/wrenchey

https://twitter.com/katjaborregaard
https://twitter.com/MeenooRami

https://twitter.com/PlayCraftLearn
#minecraftedu
#minecrafteducationedition
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Minecraft In Classroom Articles

- Minecraft's Presence Growing In The Classroom
- Assessing Curriculum With Minecraft
- Teaching And Learning With Minecraft
- Changing The Education Landscape Block by Block
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Pedagogy / Tips

Background Information
(Sway with Useful Pedagogy and Game Play Info)
"GAME-BASED LEARNING FITS IN VERY WELL WITH MEETING STUDENTS WHERE THEY ARE. THEY'RE PLAYING GAMES AT HOME, USING DIGITAL DEVICES, AND NAVIGATING VIRTUAL WORLDS, SO THEY'RE ALREADY VERY FAMILIAR WITH THIS."

Steven Messner
THE MOST IMPORTANT TIP I CAN GIVE YOU IS STAY OUT OF THE WAY AND LET STUDENTS DRIVE THE CLASS, RATHER THAN STRICTLY FOLLOWING YOUR SET PLANS. KIDS NEED TIME TO PLAY, EXPLORE, INQUIRE AND CREATE THEIR LONG-TERM DESIGN PROJECTS.

Pike and Lamb
NOT TO BE CONFUSED WITH GAMIFICATION, GAME BASED LEARNING (GBL) IS THE PROCESS OF USING GAMES TO ACHIEVE A DEFINED SET OF LEARNING OUTCOMES.

Steven Johnson
DON’T TELL MY KIDS, BUT MINECRAFT IS A MATHEMATICAL GAME. IF YOU HAVE ANY DOUBTS, A QUICK GLANCE WILL CONFIRM THIS. THE GAME CAN HELP DEVELOP OR DEEPEN A CHILD’S SPACIAL AWARENESS AND SKILLS. BUILDING AND CREATING WITH MINECRAFT REQUIRES A SOLID GRASP OF SYMMETRY.

Amy Landisman
“MINECRAFT IS USEFUL IN THE CLASSROOM BECAUSE YOU CAN USE IT FOR PRETTY MUCH ANYTHING YOU WANT,” THALKAR SAID. “THAT’S THE BEAUTY OF THE WAY THE GAME WAS DESIGNED AND HOW OPEN ENDED IT IS. IF YOU WANT TO USE IT FOR SOMETHING FOR MATH OR FOR SCIENCE YOU CAN, EITHER JUST BY USING THE GAME ITSELF OR BY MODIFYING IT.”

Anthony Perez
Pedagogy / Tips

Work Place Math 20 (16-17 year olds) Minecraft Comments and Tips

- Use Minecraft because it allows students to be more creative. Santana A
- Need to be creative and come up with solutions for limitations. Jeff N
- Helps visualize math concepts. Ashley S / Taylor C
- Let students try things on their own within the learning goal. Cody S
- Use as a different alternative to enjoy learning. Troy D
- Helps with giving a visual aid to represent to understand 3d objects. Renz D
- Give it a try. Luke S
- You can learn from Minecraft. Jacob G
- It cools. Like to work collaboratively and share the work. Taylor EI
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Pedagogy / Tips

Math 9 (13-14 Year olds) Students Minecraft Comments and Tips

- Helps one visual the math and enjoy learning. Like when teachers join our worlds to play and check out our work. Krisel M
- Make a 2D drawing come to life in a 3D world. Give students a chance to play. Christina T
- I’d like to see teachers use Minecraft more. Allows for an interactive sense of learning rather than just copy notes. Jaiden H.
- “Don’t be discouraged to use Minecraft as tool just because it may appear to be ‘childish’”. Neil S
- Sometime can be distracting but other times helps me. Emily W
- Play a bit yourself and have a general idea of how to use it, but don’t have to know everything. Emily W
- Minecraft is good for the classroom because it can be used to understand math concepts such as surface area, symmetry. Also good for doing in class projects and give students a better understanding and see the big picture. Joseph D
- Learn the game first just to get used to it. Jan D
- Its good for combining math, art, and graphic design. Helps students learn. Jessica G
Pedagogy / Tips

Minecraft Tips from Students

- Mess with Redstone and see what happens.
- Use flat world to start then there is more creating and less digging.
- If you want to make something move you need Redstone to make automatic doors and rails.
- Use certain colour blocks when making as reference points.
- Do not start in creative mode you can switch to creative after using commands (won’t have access to TNT right away and you can control what student gets what).
- Signs helps leave tips and info as reminders of tasks to get done.
- Signs and ladders stop water and lava...
- In creative mode, middle click gives you the object you’re looking at...
- Never dig straight down!!!
- Build a house near a river, a cave and a forest...
- Pressing ctrl and w will make you sprint...
- You won’t lose hunger in peaceful mode...
- Water flows 7 blocks, but lava flows 6...
- Never sleep in the nether...
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Digital Breakout

Fun Way to Engage

Used OneNote

Slope Breakout

You are saved good thing Mr. V taught you all about slope :-)}
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Build Battle

Fun Way to Engage

Creativity Counts

Each side is 1m

Get Ready For A Build Battle
Build Battle #1 – Surface Area

You will have 5 minutes to construct an object with a surface area of 25m² (side of each cube is 1m)
Build Battle #2 – Surface Area

You will have 5 minutes to construct an object with a surface area of 50m² (side of each cube is 1m)
Build Battle #3 – Symmetry

You will have 5 minutes to construct an symmetrical pattern and indicate type or types of symmetry.
Build Battle #4 – Scale

You will have 5 minutes to construct a monument of your choice that represents the community you are from (reduction or enlargement).
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PD Opportunities

#MADPD
Microsoft Innovative Expert -
https://education.microsoft.com

Code for Points -
DVOJT2HOTH90FY2017
Please tell me three take-aways or ideas you got from this presentation

[www.menti.com](http://www.menti.com) with code 785890
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THANK YOU

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