Polycraft World: A Minecraft Modification that Motivates Materials Mastery

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1: The University of Texas at Dallas
2: Syzygy Memory Plastics

1969 – Incorporated as UT Dallas
2015 – Fearlessly engineering the future
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Inspire!
Our goal is to inspire elementary school children to continue learning math, science, and engineering as they progress through their early education.

Volunteer!
We travel to local schools and present engaging experiments and demonstrations to show what it means to be a scientist. We’re looking for volunteers!

Get Involved!
Email <riseutd@gmail.com> for more information.
Group Lecture
Individual Attention
Student Messes
Student Successes
Hot to the touch
Frozen solid
Frozen attention
(and this is really hard
with 30, 4\textsuperscript{th} graders)
Dancing to the music
This is why science is fun
RISE Resources

• $1000 setup costs
• Minimal event-to-event expenses
  – Bananas and racquetballs
  – Cornstarch and popsicle sticks
  – Liquid nitrogen
  – Notecards and Paperclips
  – Rubber bands and shape memory polymers
The RISE Team

• 1 Faculty Member
• 5 Graduate Students
• 30 Undergraduates
Magnitude

- Contacted >100 teachers in Fall 2013 from Plano ISD, Dallas ISD and Richardson ISD
- Gave 6 local demonstrations and lectures to date at elementary, middle and high schools
- Have set up more than 25 additional events in 2014
- Hosted a RISE event at NIST during one of my conferences in DC
- **Major problem**: we are bandwidth limited
Polycraft World

A Mod for the Popular Video Game Minecraft
An Introduction to Minecraft

Minecraft 1.7.4

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The World – Tabula Rasa
Building and crafting toward success
Nightfall
Danger
Hunger
Goods Storage
Magic and Enchantments
Exploring
Transportation in the elements
Minecraft Trains architects
Minecraft trains electrical engineers
Features that make Minecraft so much fun and so addictive

- Asynchronous and aperiodic rewards
- Self-imposed goals and objectives
- No one tells you what to do (or so you think)
- Threats to survival (early versions = boring!)
- Learning by doing at your own pace
- Extensive documentation and wiki-style help
- Resource, land, time management
- Deep satisfaction from completing projects
- Massively multiplayer to co-create with friends
Minecraft statistics

LOGINS
• 241,920,000 logins per month
• 1,000 logins per hour
• 4,000 logins per second after 1.0 launch

FILES
• 2 billion files downloaded by the launcher
• 11,000 skin downloads per second

SYSTEMS
• 10 million copies on Xbox 360
• 1 million copies on PlayStation 3
• 10 million copies of Pocket Edition
• 100 million registered users on PC alone
How can we scale RISE orders of magnitude? ...through Minecraft.
We are trying to...

...transform higher education through video games, neuroscience, materials and a love of tinkering.

http://www.polycraftworld.com
http://polycraft.utdallas.edu
Polycraft World

• Outreach to young and not-so-young adults
• Basic and advanced training in polymer processing, energy and thermodynamics
• Failure: <100,000 users
• Full Success: incorporation into vanilla build which is more popular than World of Warcraft with more then 100 million eager students of the “game”
Outreach platform

• Added 4,000 items into Minecraft including 100 polymers and thousands of chemicals
• Incorporated items into game to seem “fun” and not educational
• Tap into basic desires in Minecraft for students to teach themselves polymer chemistry
Thank You
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