

CIRMS President's Welcome | 4.19.16

Polycraft World: A Minecraft Modification that Motivates Materials Mastery

Shelbi Parker¹, Christina Thompson¹, Jim Amato², Benjamin Lund¹,
Christian Cortes¹, Ronald A. Smaldone¹ and Walter Voit^{1,2}

1: The University of Texas at Dallas

2: Syzygy Memory Plastics



1969 – Incorporated as UT Dallas



2015 – Fearlessly engineering the future



Acknowledgements



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- **Adaptive 3D Tech team:** Dr. Benjamin Lund, Dr. Brent Duncan, Jim Amato, Jesse Huffstetler, Grant Beall



RISE

*Reaching and Inspiring Student Engineers
The University of Texas at Dallas*

Inspire!

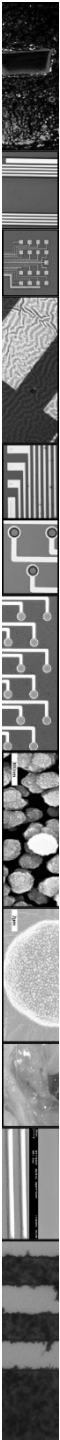
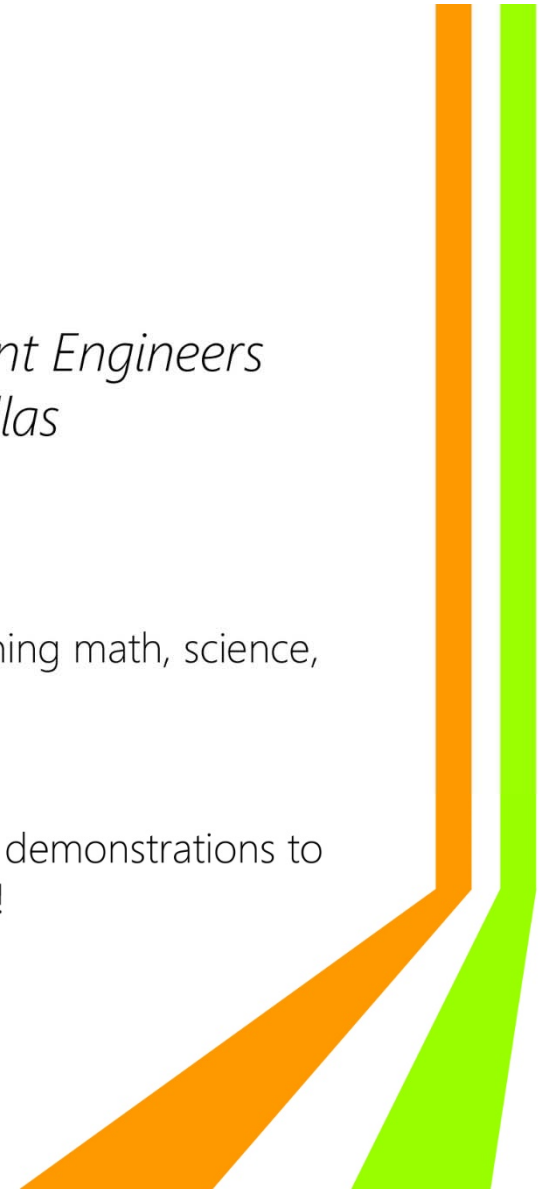
Our goal is to inspire elementary school children to continue learning math, science, and engineering as they progress through their early education.

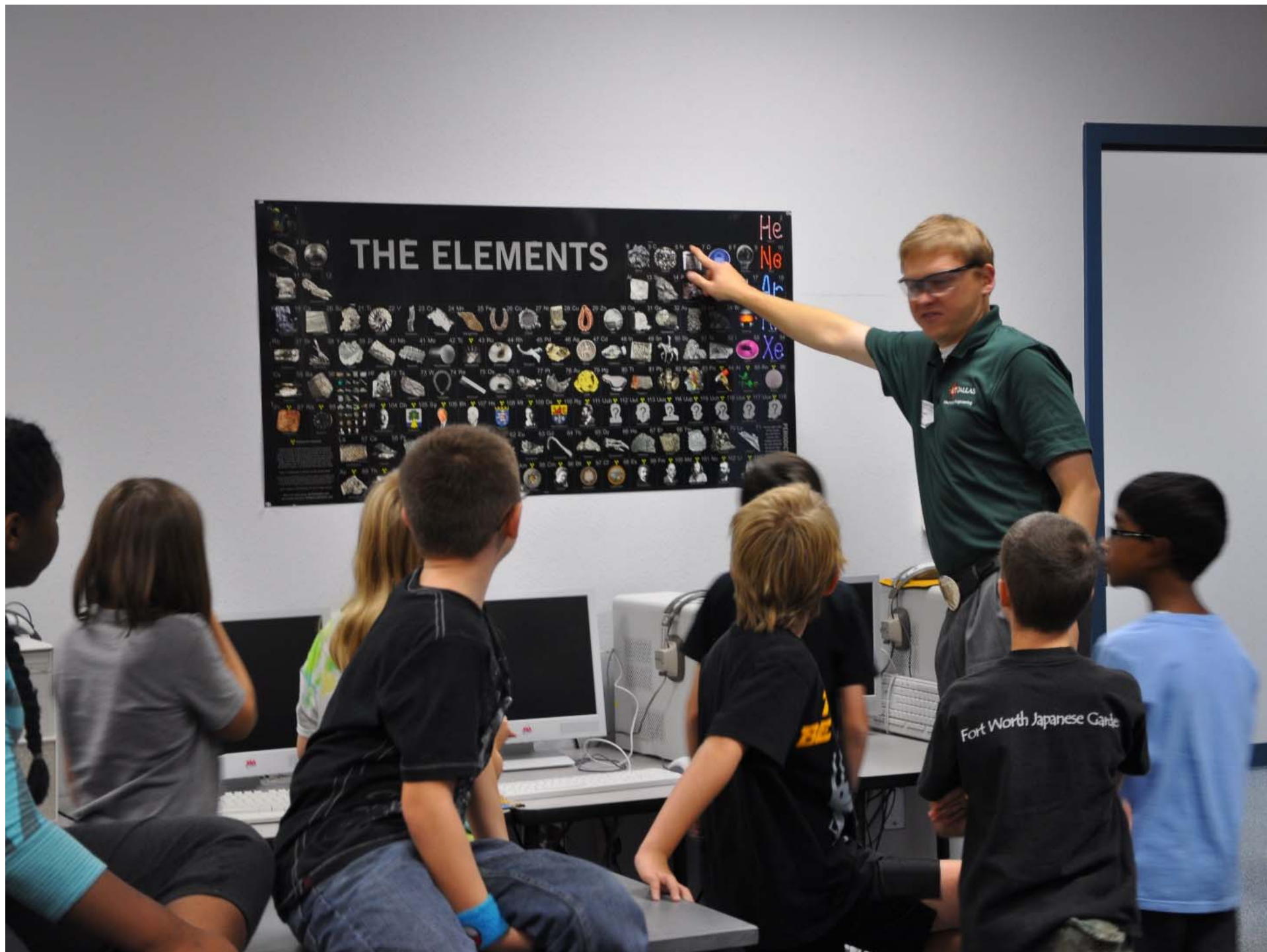
Volunteer!

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



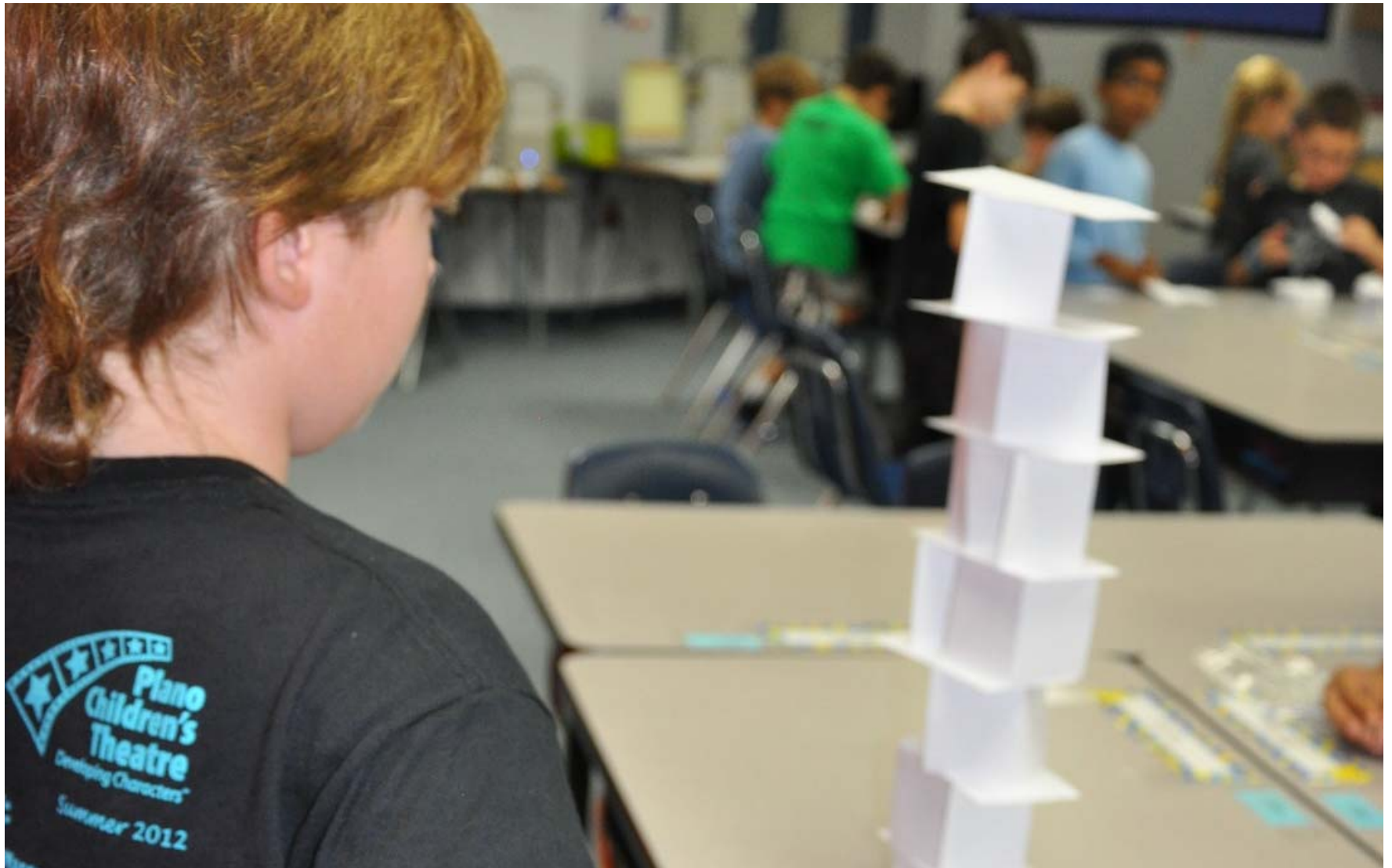
Individual Attention



Student Messes



Student Successes



Hot to the touch



Frozen solid



Frozen attention (and this is really hard with 30, 4th 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

An Introduction to Minecraft



The World – Tabula Rasa



Nightfall



Danger



Hunger



Goods Storage



Magic and Enchantments



Exploring



Transportation in the elements



Minecraft Trains architects



Minecraft trains electrical engineers





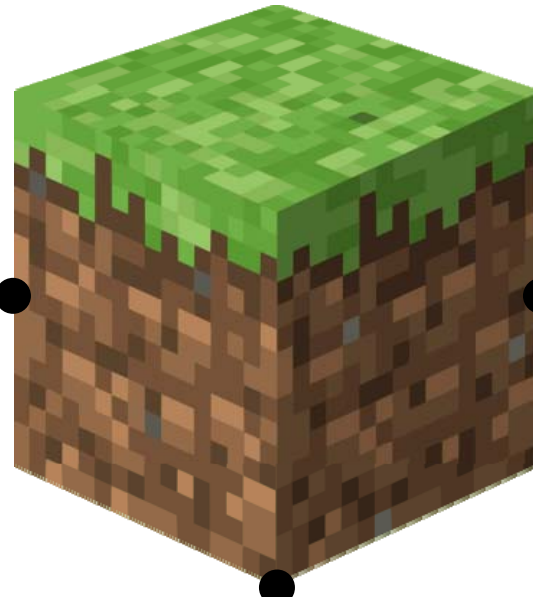
Features that make Minecraft so much fun and so addictive

- 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



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

FILES

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

How can we scale RISE orders of magnitude? ...through Minecraft.



POLYCRAFT WORLD

A Minecraft Mod From UT Dallas

<http://www.polycraftworld.com>

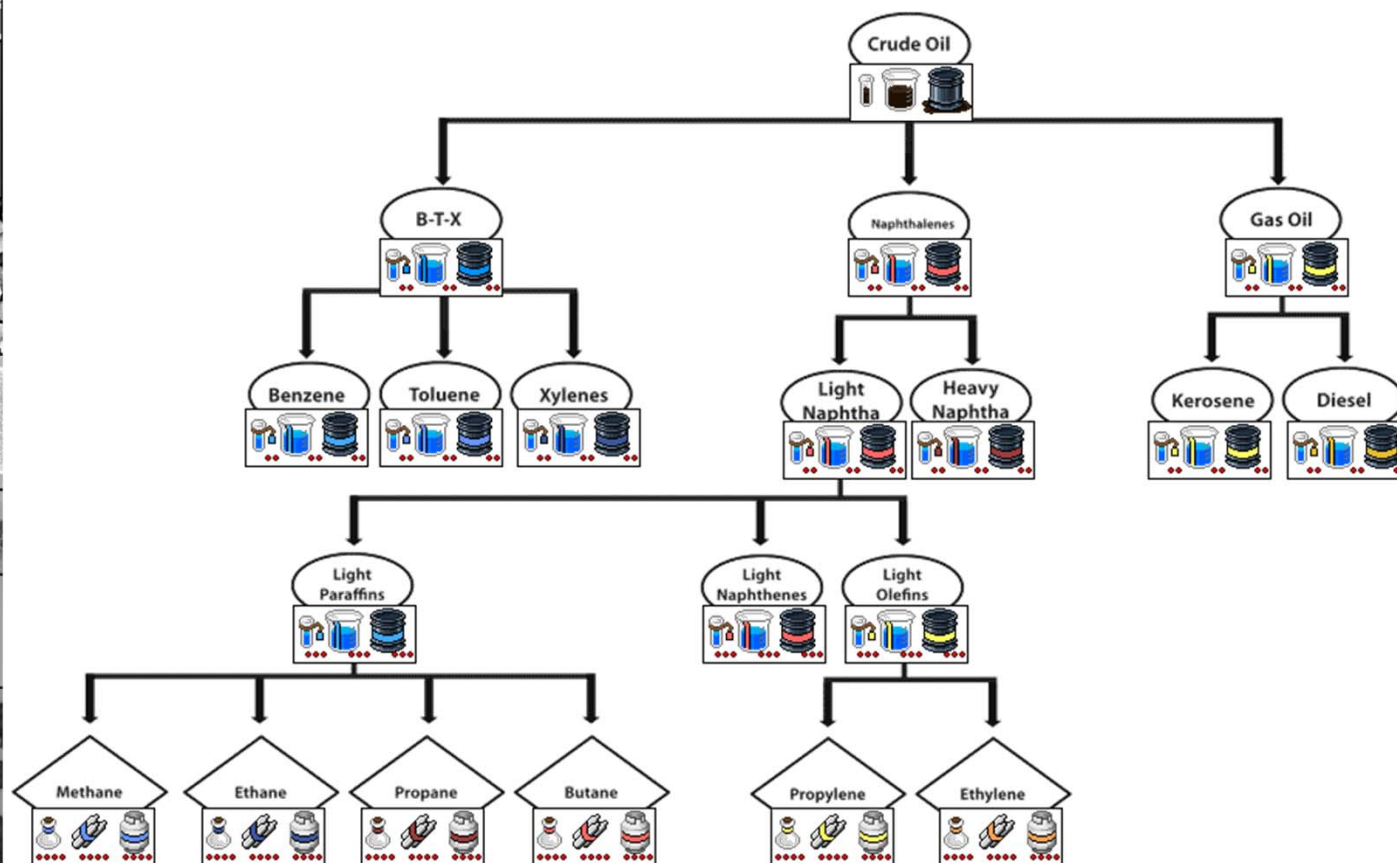
<http://polycraft.utdallas.edu>

We are trying to...

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



Distillation of Crude Oil



Tar Sand

Sand

Bitumen

Crude Oil

Gravel

Gas

Liquid

Solid

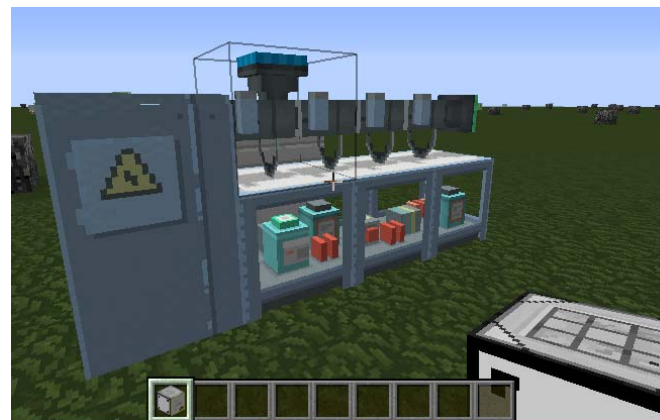


Polycraft World

- 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 than 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

walter.voit@utdallas.edu

<http://polycraft.utdallas.edu>

www.polycraftworld.com

