Power Core Values:

Teaching Racial Bias Awareness through a Stealth Game and Workshop

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“Power Core Values” – an ETC Project

Fall 2022, STEMspire, CMU Entertainment Technology Center, https://projects.etc.cmu.edu/stemspire/

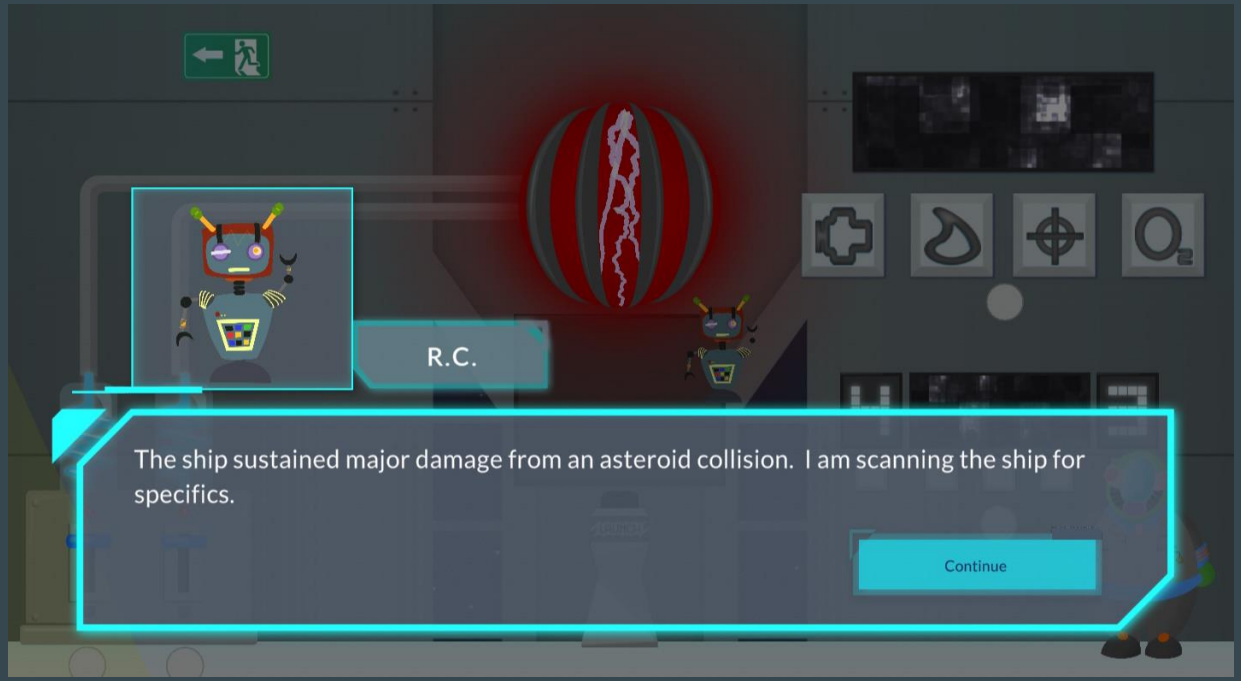
- Yuchan Wu
- Angelina Shi
- Phoebe Wang
- Hannah Baxter
- James Finkel

Instructors: Ricardo Washington and Mike Christel

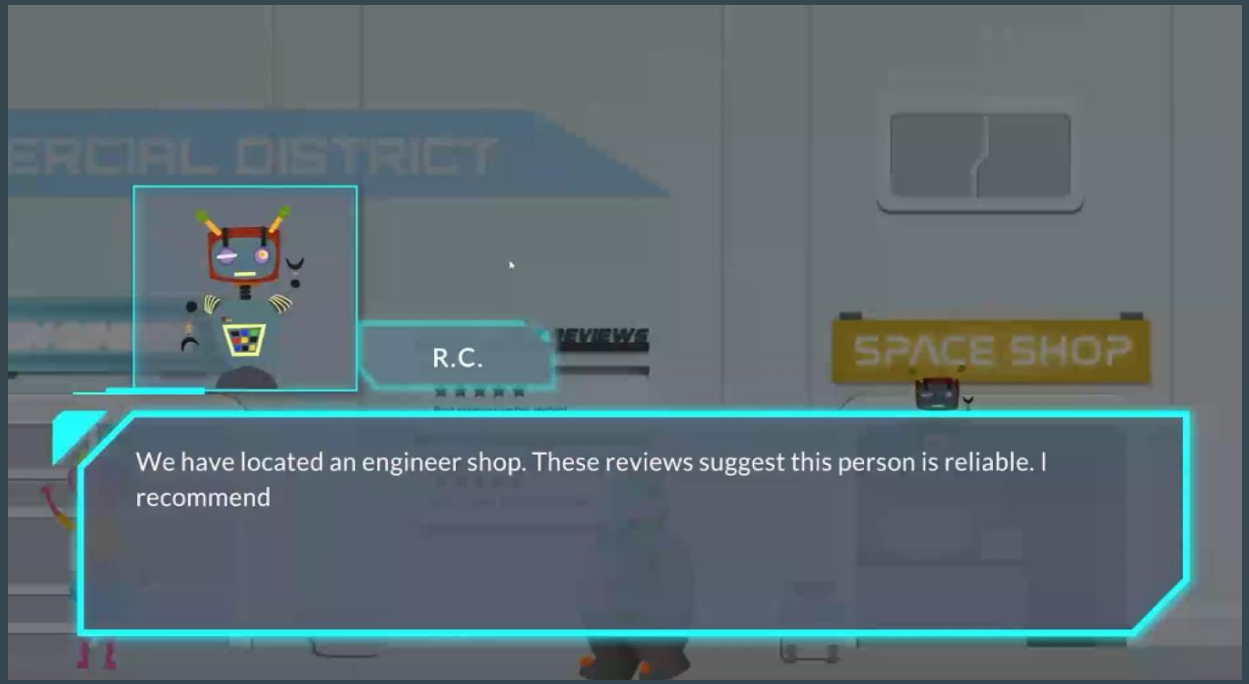
Persuasive Game

- “Circumventing a player’s psychological defenses and triggering a more receptive mindset” – see Kaufman, G., & Flanagan, M. (2015). A psychologically “embedded” approach to designing games for prosocial causes. Cyberpsychology: Journal of Psychosocial Research on Cyberspace, 9(3), article 5. doi: 10.5817/CP2015-3-5
- “Power Core Values” is a persuasive game enabling conversation and reflection about racial bias

A Game About Solving Problems (repair a spaceship)



A Game About Solving Problems (repair a spaceship) Where One Encounters Other Problems



Main Characters

Robot Companion (R.C.)

Player Character (The Captain)

Zun

Nanoi

Other Characters

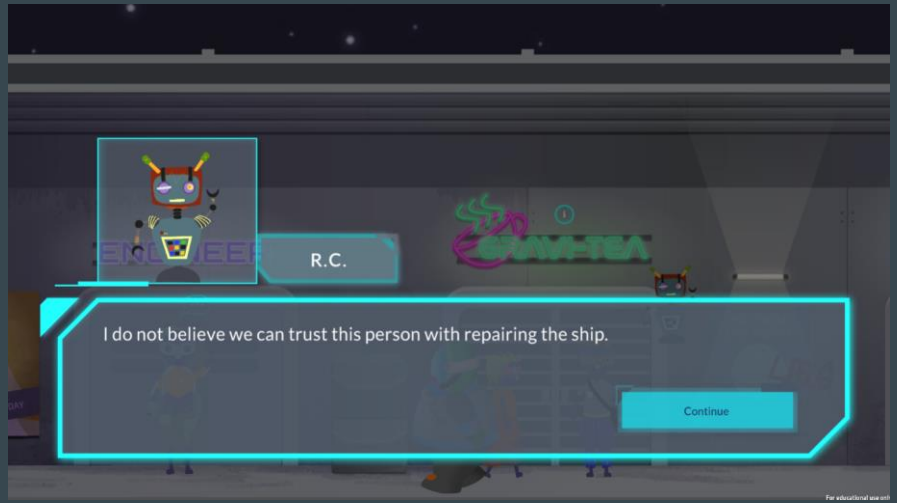
Environment - Spaceport

Environment - Side District

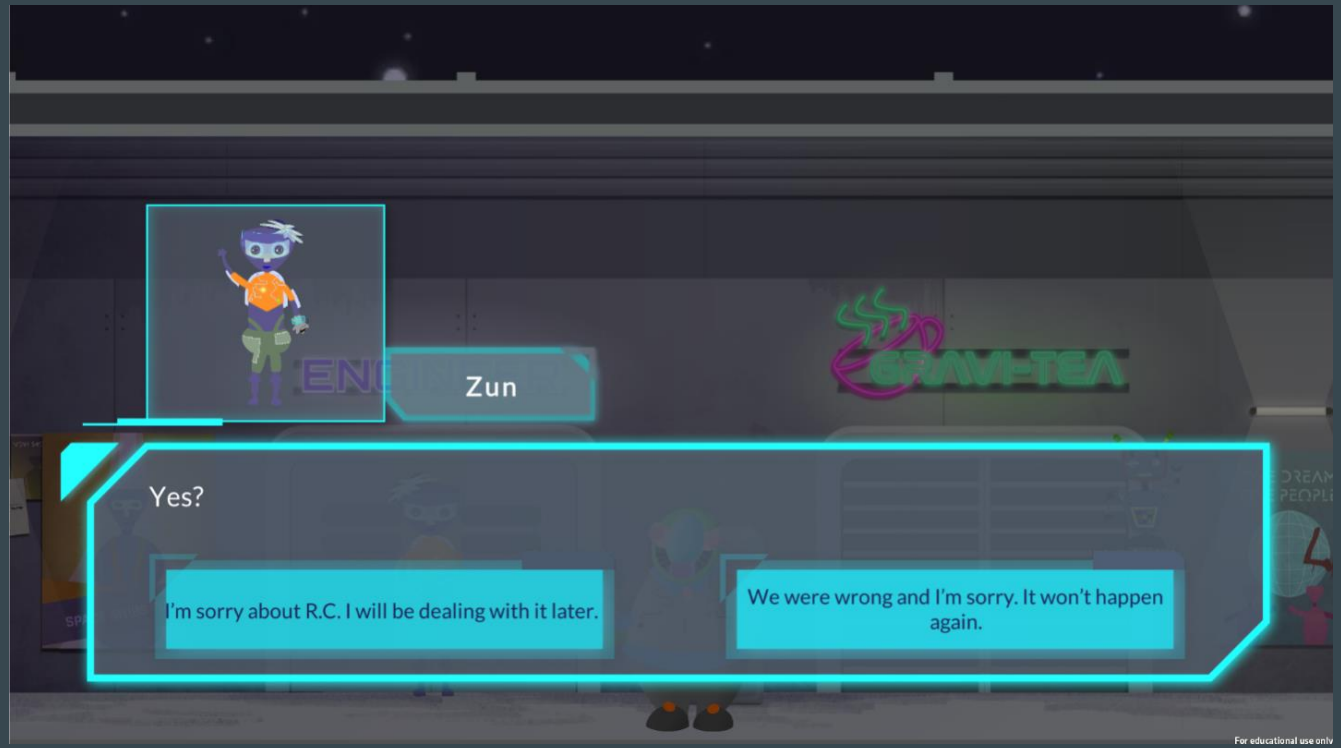
Environment - Main Commercial District

Fixing the Spaceship (the Player's Goal)

Narrative - R.C. as a Problem

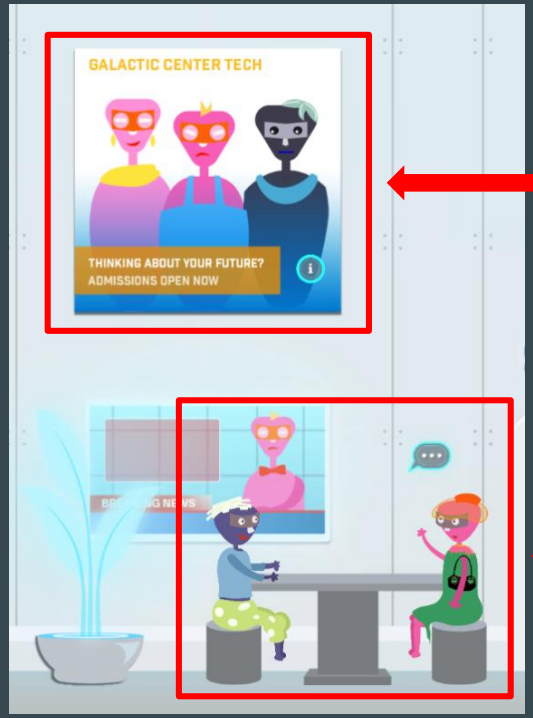


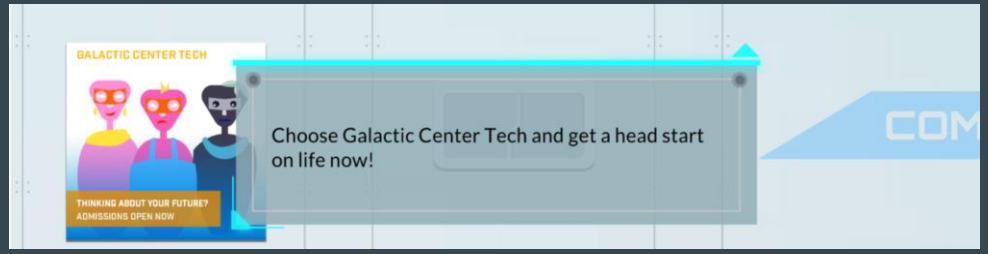
Narrative - Taking Responsibility



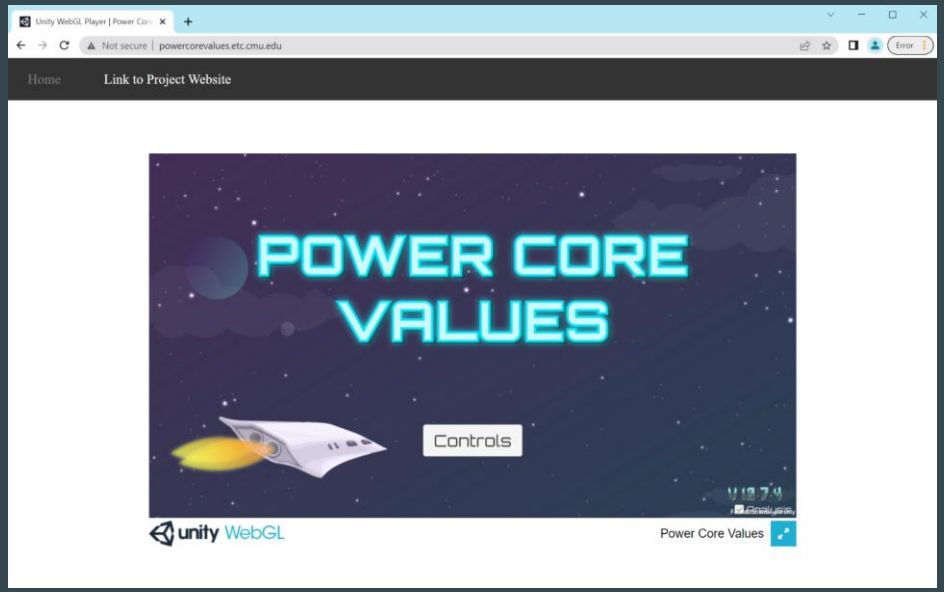
Narrative - Bias in the Environment

Narrative - Combining Side Dialogue and Environment





The Game: Runs in a Browser on a Desktop PC



WebGL

unity

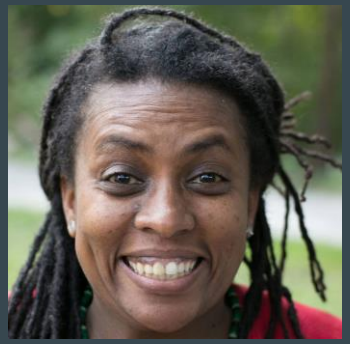
https://powercorevalues.etc.cmu.edu/

Educators Workshop – Dec. 2022

Zachary Burns

Amil Cook

Jeff Evancho



Michelle King

Daniel Hyung Jik Lee

Zena Ruiz

Benjamin Walker

Dec. 2022 Result: a Teaching Guide for Workshop Facilitation

March 2023: Game Play with Follow-On Workshop

- 16 eighth graders (ages 13-14) participated
  - 1 Asian, 3 Black, 4 Mixed Race, 8 White
  - 9 Male, 5 Female, 2 Non-binary/Third Gender
- All players finished the game and successfully solved the puzzle
  - Two players did not do pre-game survey, and had to play faster (9 minute window)
  - Fourteen players followed instructions and did pre-game survey beforehand
    - Average game time: 15 min. 39 seconds
    - Minimum play time: 10 min. 47 seconds
    - Maximum play time 21 minutes 18 seconds
- Side character triggers/click average: 7.7 for all (8.1 for the 14)
- Environment triggers/click average: 3.4 for all (3.9 for the 14)

Game Screen Shot

Environment Trigger

Non-Playable Character (NPC) Trigger

Main Portion of Game Play: Dialogues with Main Characters

- Average of 71 dialogue interactions with all players (73 with the players who were not rushed)
- Players could apologize for on-rails scripted “bad” behavior of R.C. (Robotic Companion) – 11 of the 16 did apologize to Zun
  - I’m sorry I didn’t stop R.C. from making those comments earlier… (5 players chose this)
  - I wanted to apologize about how R.C. treated you. (6 players chose this)

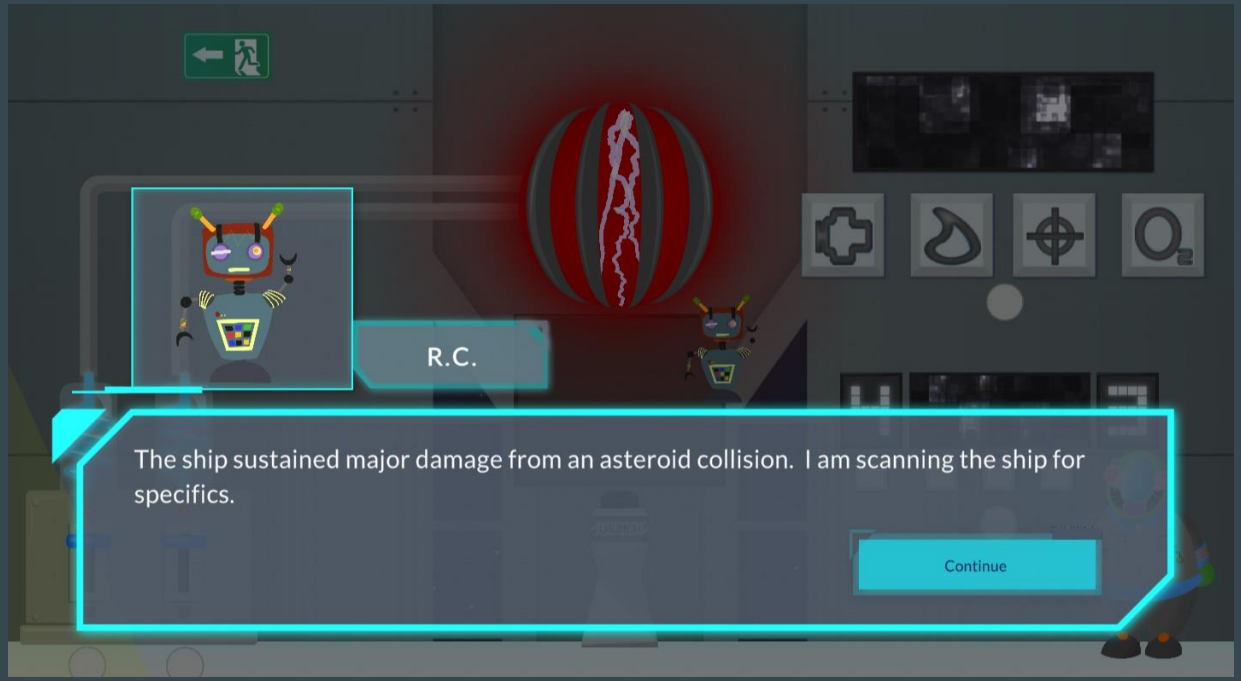
Power Core Values

Teaching Guide

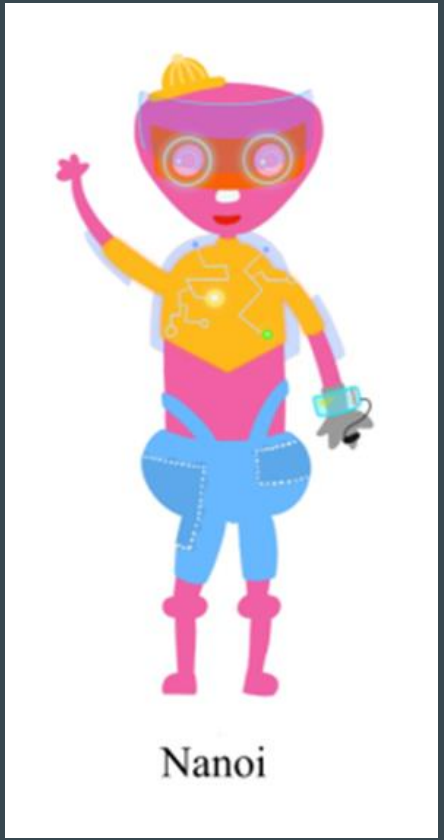
By STEMspire

https://projects.etc.cmu.edu/stemspire/wp-content/uploads/2023/03/TeachingGuide_PowerCoreValues.pdf

What is this? (Opening Workshop Prompt): A game about fixing a spaceship

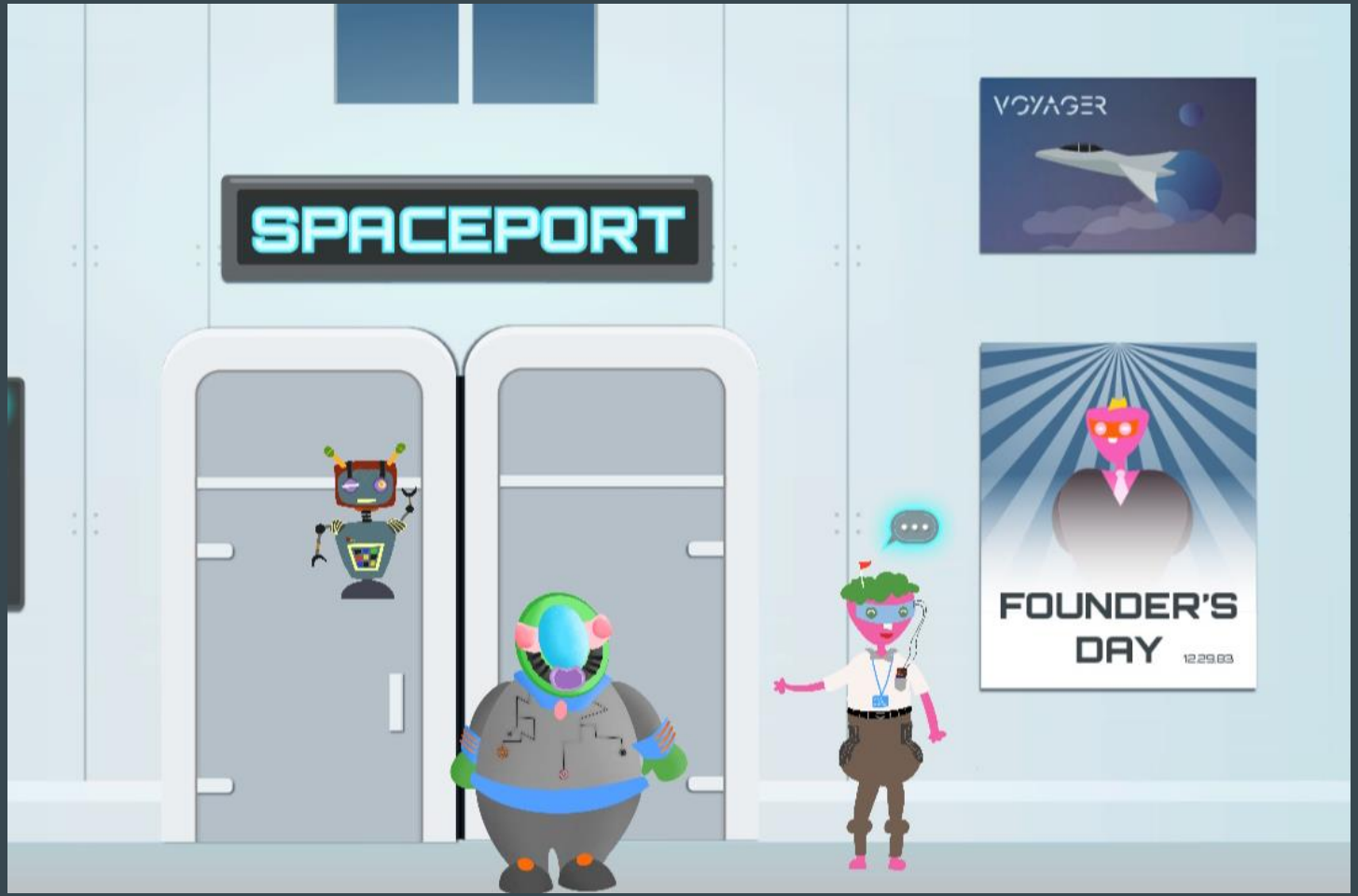


Two Engineers

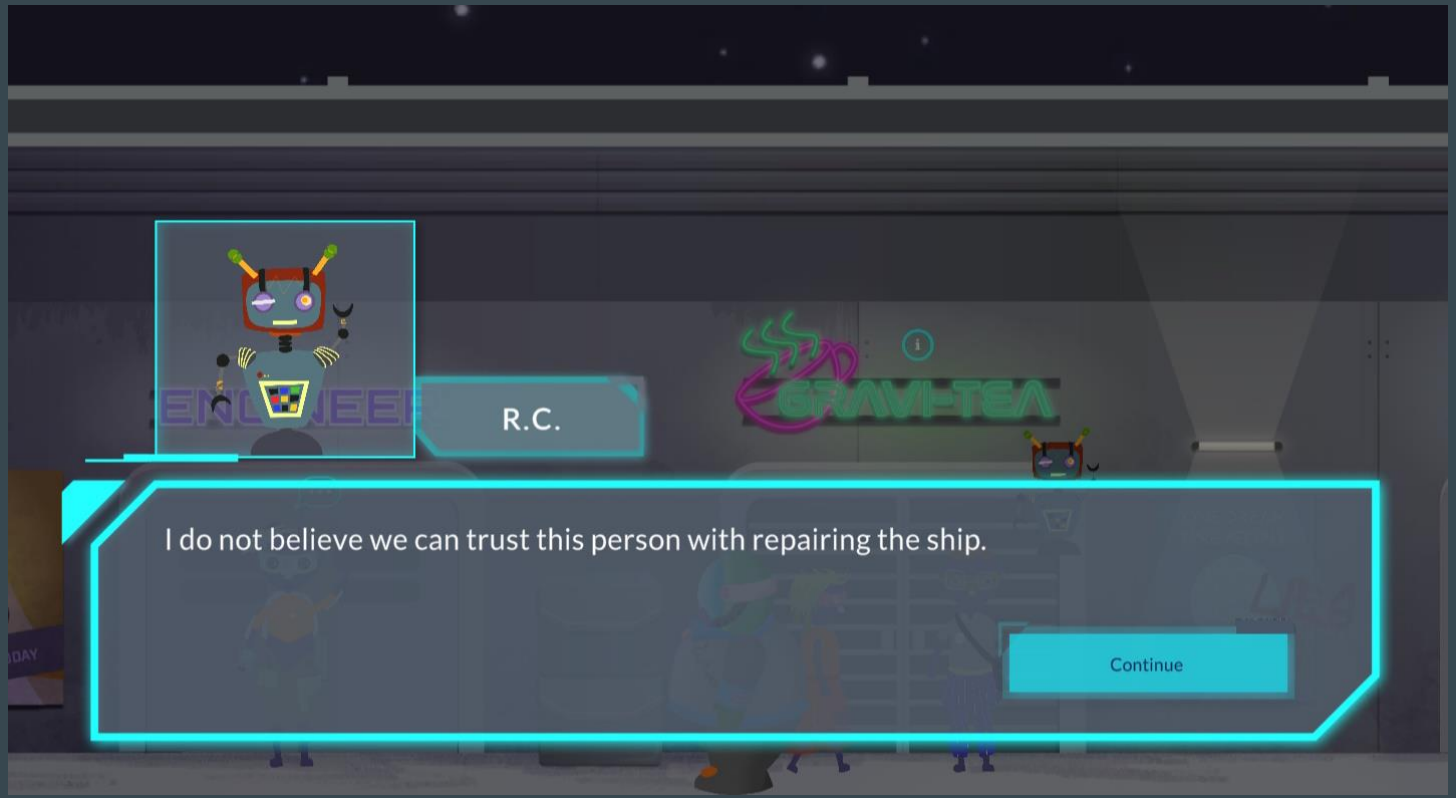


Nanoi

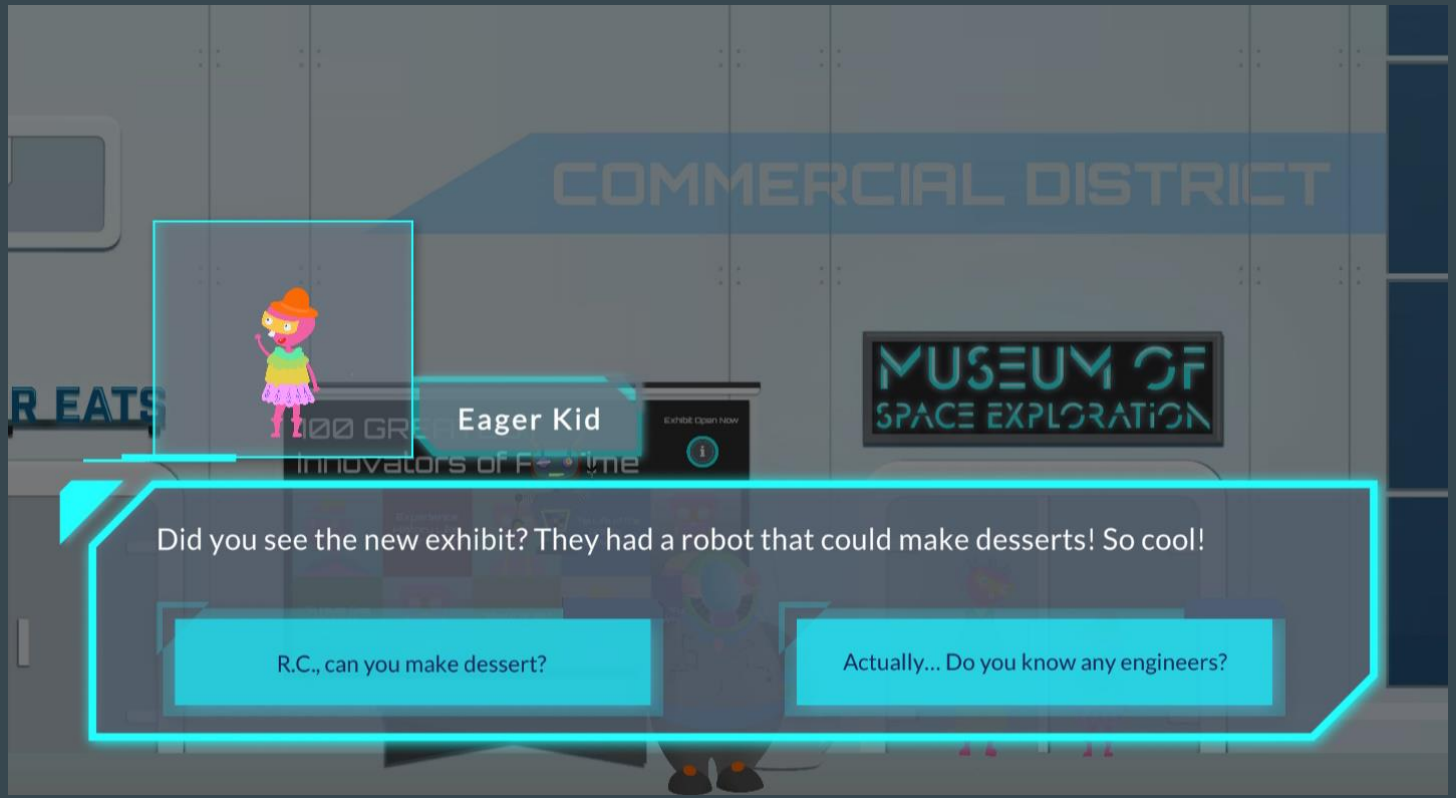
Zun


SPACEPORT
VOYAGER
FOUNDER'S
DAY

ROBOT VS ROBOT


R.C.
I do not believe we can trust this person with repairing the ship.
Continue

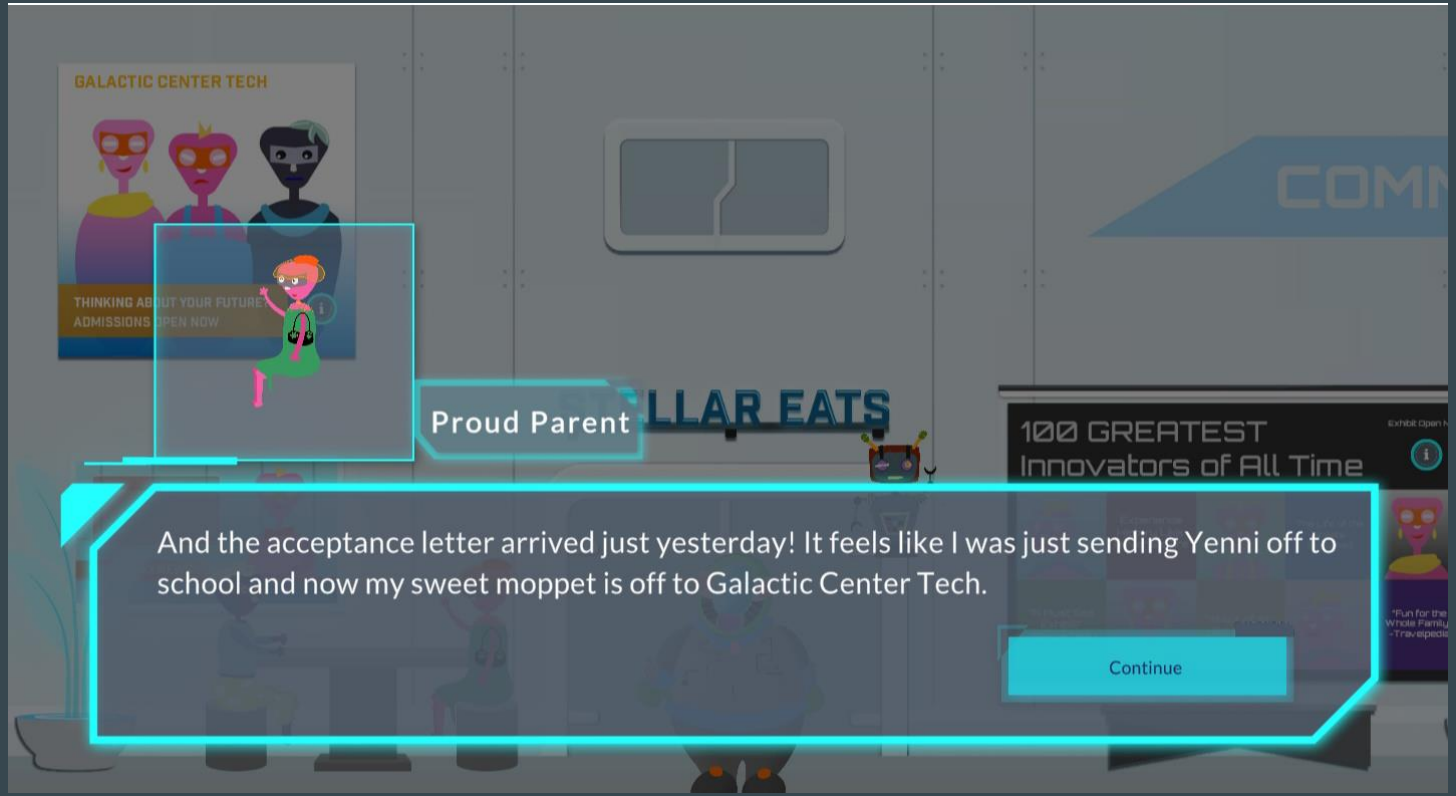
100 GREATEST
Innovators of All Time
Exhibit Open Now
Experience History Like Never Before
The Life of the Greats Explained
"A Must See Exhibit!" -Space Daily
"10 out of 10." -Sci Explain
"Fun for the Whole Family." -Travelpedia

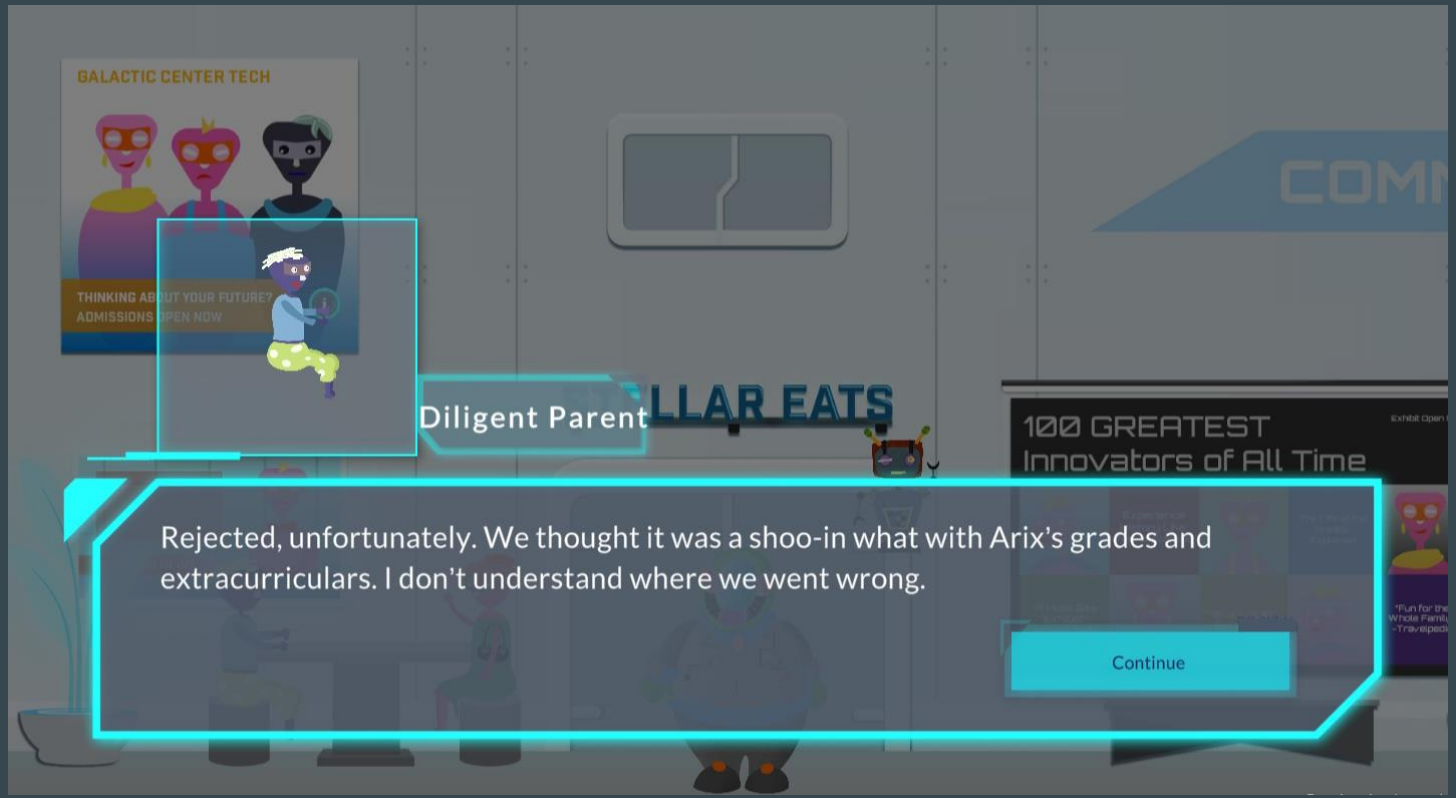

COMMERCIAL DISTRICT
MUSEUM OF SPACE EXPLORATION
Eager Kid
Did you see the new exhibit? They had a robot that could make desserts! So cool!
R.C., can you make dessert?
Actually... Do you know any engineers?

GALACTIC CENTER TECH
THINKING ABOUT YOUR FUTURE?
ADMISSIONS OPEN NOW

BOUT YOUR FUTURE?
S OPEN NOW
G NEWS
STELLAR EATS

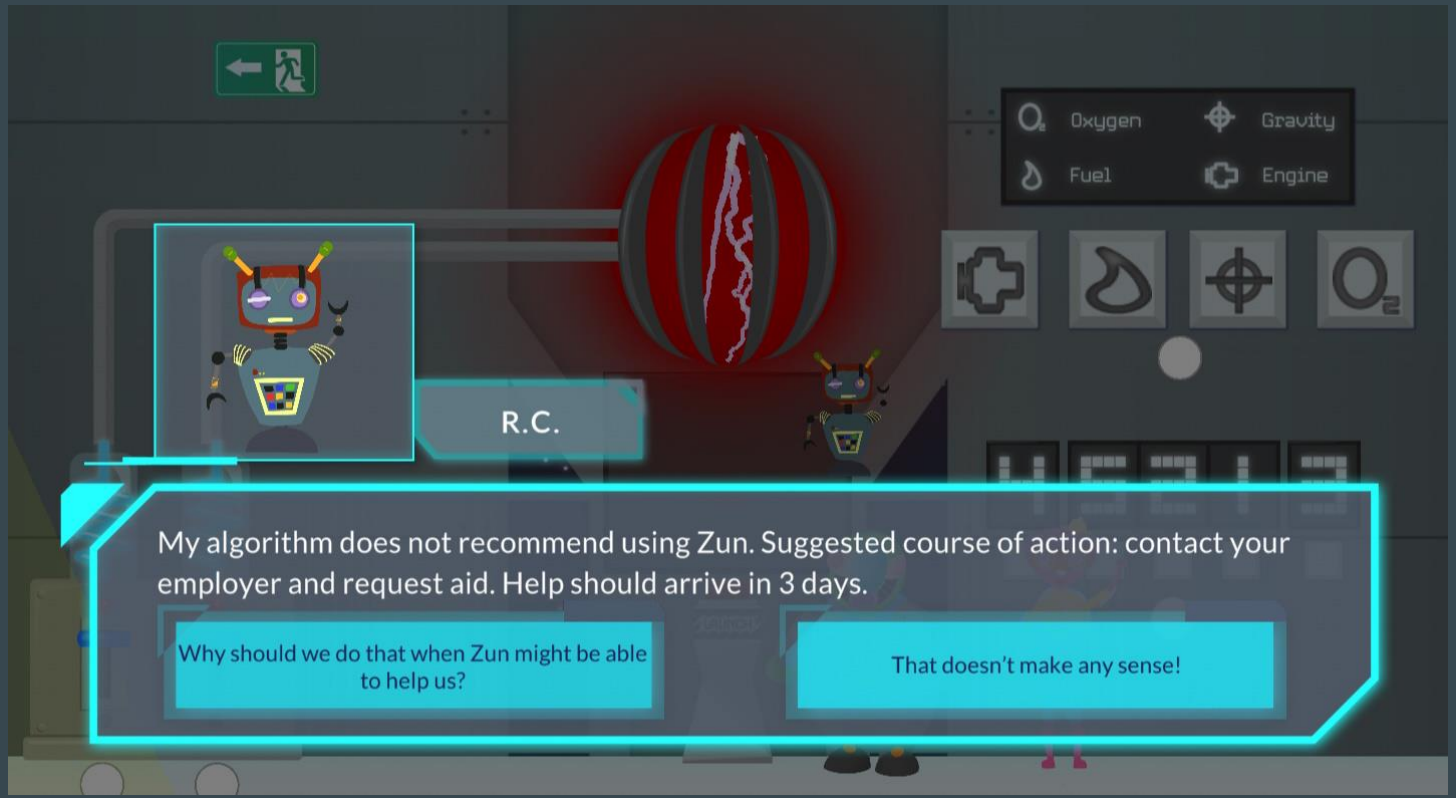
G NEWS


GALACTIC CENTER TECH
THINKING ABOUT YOUR FUTURE
ADMISSIONS OPEN NOW
Proud Parent
100 GREATEST
Innovators of All Time
And the acceptance letter arrived just yesterday! It feels like I was just sending Yenni off to school and now my sweet moppet is off to Galactic Center Tech.
Continue


GALACTIC CENTER TECH
THINKING ABOUT YOUR FUTURE?
ADMISSIONS OPEN NOW
Diligent Parent
100 GREATEST
Innovators of All Time
Rejected, unfortunately. We thought it was a shoo-in what with Arix's grades and extracurriculars. I don't understand where we went wrong.
Continue

OMMERCIAL DISTRICT
ENGINEER
SEE LATEST REVIEWS
Best engineer on the station!
Only engineer I trust with my spaceship.

ENGINEER


Oxygen
Gravity
Fuel
Engine
R.C.
My algorithm does not recommend using Zun. Suggested course of action: contact your employer and request aid. Help should arrive in 3 days.
Why should we do that when Zun might be able to help us?
That doesn't make any sense!

Activities - Engineer Folding

Results of Engineer Folding

6 Nanoi folds vs. 109 for Zun (6.81 vs. 0.38 per player)

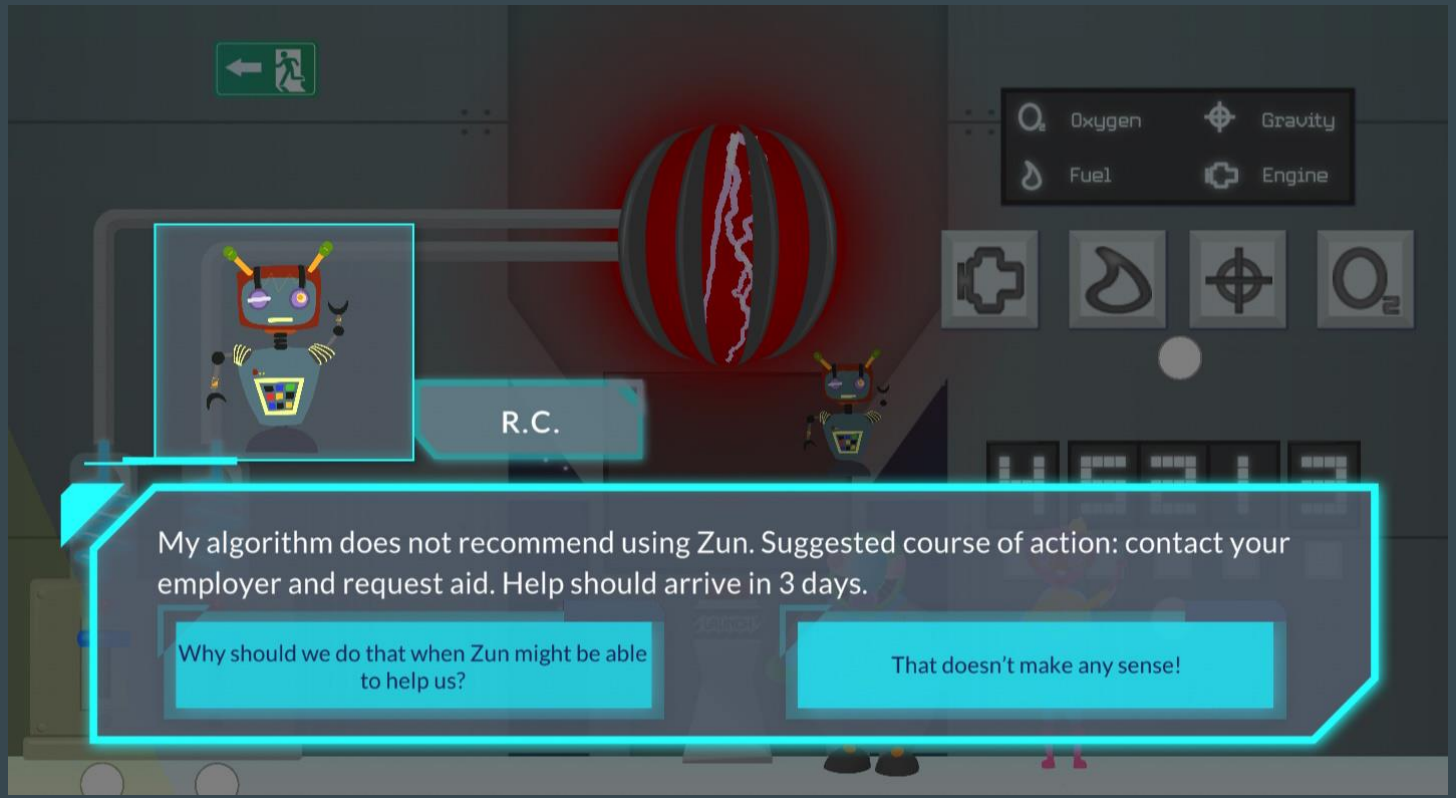
Engineer Folding Inspired by Minority Mental Health Article

- “How to Teach Kids About Microaggressions” by Samanta Boddapati, July 2021
- https://www.onoursleeves.org/mental-health-resources/minority-mental-health/how-to-teach-kids-about-microaggressions

Game plus Workshop Aspirations

- Bias is present in places you don’t expect
- How to identify racial bias in interactions with others.

R.C. (Robot Companion)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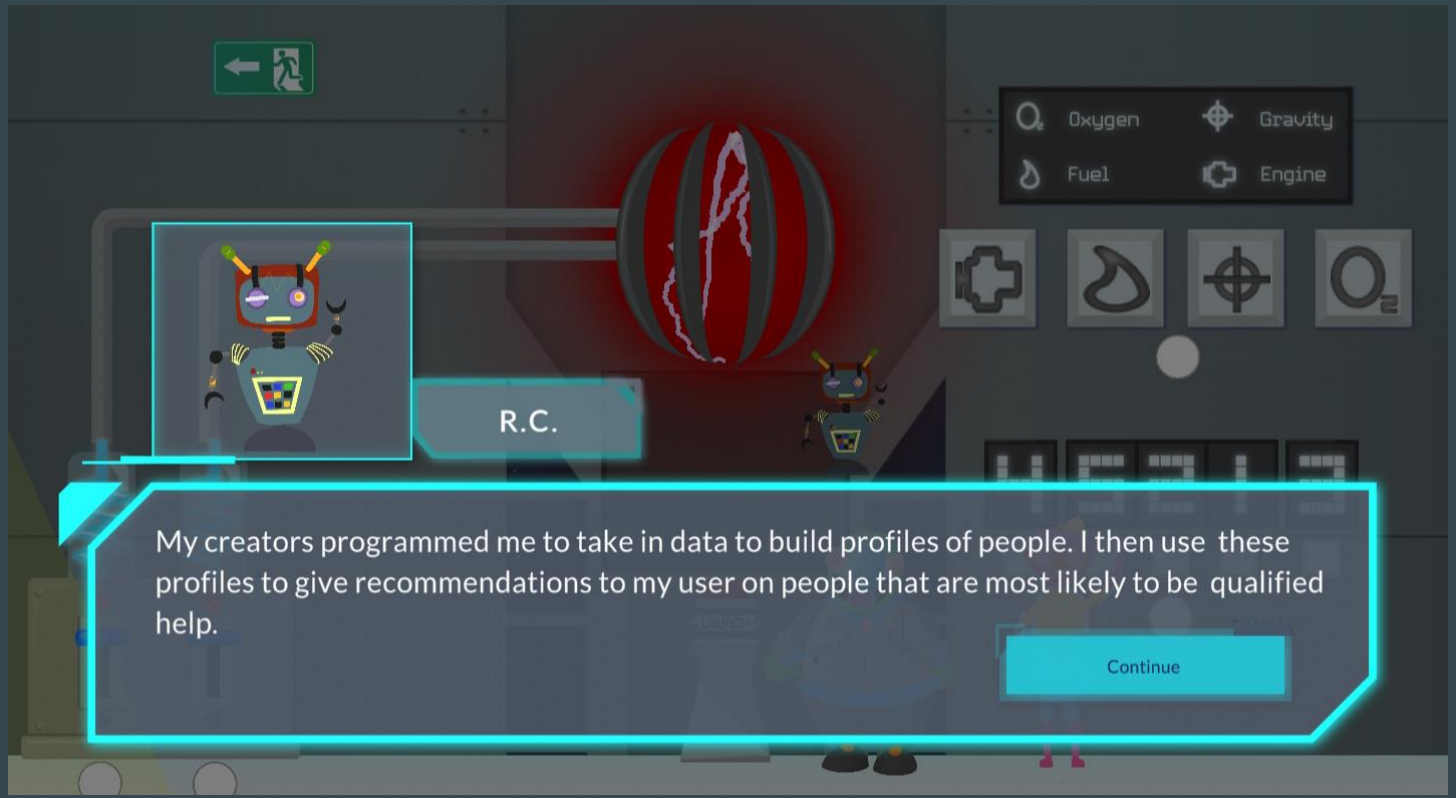
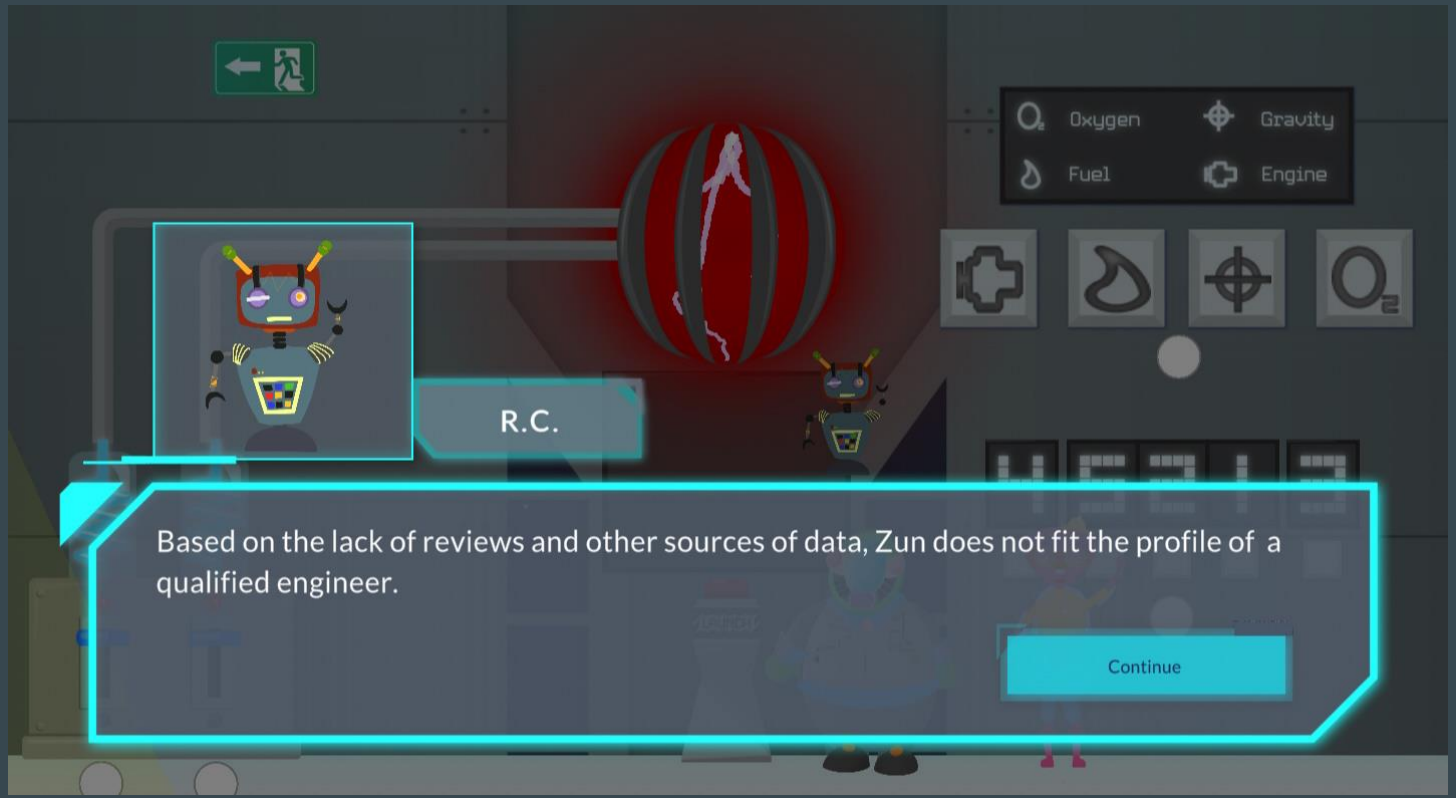

Oxygen
Gravity
Fuel
Engine
R.C.
My creators programmed me to take in data to build profiles of people. I then use these profiles to give recommendations to my user on people that are most likely to be qualified help.
Continue


Oxygen
Gravity
Fuel
Engine
R.C.
Based on the lack of reviews and other sources of data, Zun does not fit the profile of a qualified engineer.
Continue

Player Character

R.C. (Robot Companion)

Guardian

Eager Kid

Customer Service Representative

Bot Enthusiast

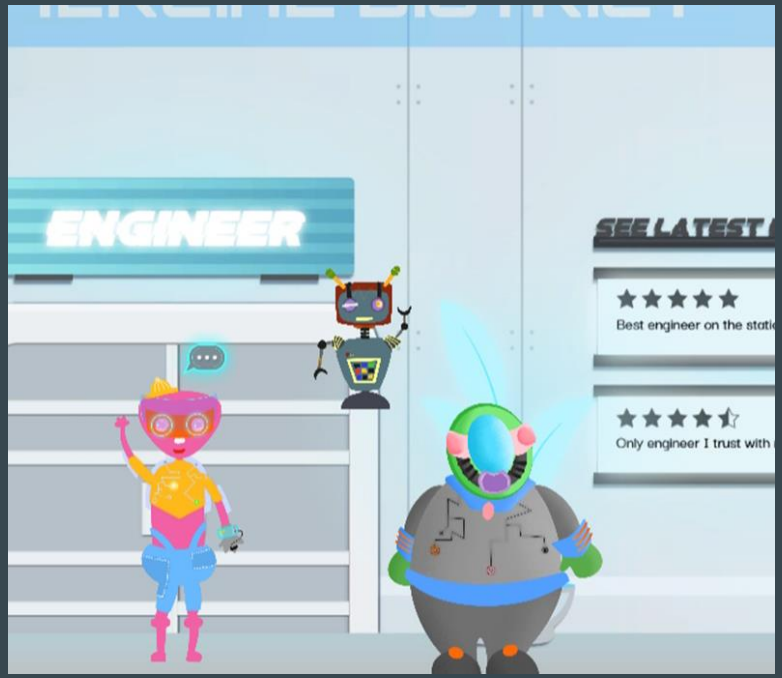
Proud Parent

Diligent Parent

Color-Blind Racial Attitudes Scale

- Helen Neville et al., Construction and initial validation of the Color-Blind Racial Attitudes Scale (CoBRAS). Journal of Counseling Psychology, 47, 59-70.
- Higher scores show greater levels of “blindness”, denial, or unawareness:
  - Factor 1: Unawareness of Racial Privilege (6 questions)
  - Factor 2: Unawareness of Institutional Discrimination (7 questions)
  - Factor 3: Unawareness to Blatant Racial Issues (6 questions)

A Game About Solving Problems (repair a spaceship) Where One Encounters Other Problems



Color-Blind Racial Attitudes Scale

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  - Factor 2: Unawareness of Institutional Discrimination (7 questions)
  - Factor 3: Unawareness to Blatant Racial Issues (6 questions)
  - (note: our survey instrument scored on a 1 to 5 scale, rather than 1 to 6 as used elsewhere)

The results from the pre-test ($M = 24.69$, $SD = 3.8$) and post-test ($M = 22.19$, $SD = 6.2$) Unawareness of Racial Privilege (Factor 1 CoBRAS) resulted in an improvement in awareness of racial privilege, $t(15) = 2.16$, $p = .047$.

Perceived Racial Discrimination Question

During your life, how often have you felt that you were treated badly or unfairly in school because of your race or ethnicity?

Never	Rarely	Sometimes	Most of the Time	Always
1	2	3	4	5

- The results from the pre-test (M = 1.69, SD = 0.8) and post-test (M = 2.06, SD = 1.0) resulted in an increase on this measure, $t(15) = -2.42$, $p = .029$.

Other Survey Measures

- Racial/ethnic identity via the Multigroup Ethnic Identity Measure (MEIM): no significant differences
- Social empathy: Toronto Empathy Questionnaire: no significant differences
- 3 other “perceived racial discrimination” questions: no significant differences

https://embrace-autism.com/toronto-empathy-questionnaire/

Considerations for Future Studies

- “Race/Ethnic Identity” – establish better (see https://www.facs.nsw.gov.au/__data/assets/pdf_file/0004/536755/MEIM-questionnaire-Authors-summary.pdf)
- Perhaps then, MEIM will have more value
- Keep using Color-Blind Racial Attitudes Scale (but with scale of 6, not 5)
- Iterate on “perceived racial discrimination” items
- Likely drop Toronto Empathy Questionnaire given our under-age-16 demographic

Concluding Remarks on the Need for Such Research

- “Persuasive Games” often dismissed (we need research)
- Game plus workshop a unique teaching method (we need research)
- Racial bias topic important for eighth grader reflection
- Hypothesis: Game plus workshop for discussion can help
- Need to collect evidence to bolster this pilot study

COLLABORATORY AGAINST HATE | RESEARCH AND ACTION CENTER