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# SCIFI D.I.

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DESIGN INTELLIGENCE FOR THE FUTURE  
**LEARNING**

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**Singularity**  
UNIVERSITY

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Take a deeper dive by visiting our Exponential  
Guide to the Future of Learning, located at:  
[su.org/learning-guide](https://su.org/learning-guide).



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# Foreword from SU's CEO



One of the greatest challenges for entrepreneurs, innovators, and leaders alike is to overcome the status quo bias of their customers, clients, or constituents. People don't like to change unless there is a compelling, super-credible, and pressing reason to do so. Typically, there are greater incentives to focus on more immediate needs; for a business, it's the quarterly earnings and financial return to shareholders, and for politicians, it's the next election cycle.

Unfortunately, the biggest problems facing humanity—the global grand challenges—and the biggest opportunities we have are on very long time horizons, so they do not feel urgent. Being deluged with increasing amounts of information and “fake news” makes it harder and harder to discern what is credible, which only further serves to distract people from focusing on our most dire issues at hand, such as the climate crisis and the troubled state of our global education system. And having only a vague notion of what the future may hold makes the need for change feel deceptively less compelling. As Peter Diamandis likes to say, “the day before something is a breakthrough, it's a crazy idea,” and rarely does someone want to invest in or follow a “crazy” idea.

At SU, we've come to realize that the narrative arc is a critical tool in overcoming barriers to change, reversing this status quo bias, and encouraging people to consider what our world will look like and need 30 years into the future with a greater sense of urgency. Can we create a credible vision and story of the future that is so engaging and inspiring that it compels us to action? Maybe more to the point, have we ever been compelled to action by anything other than a powerful story?

To date, we've successfully utilized science fiction storytelling to help today's leaders visualize the future of their industries and organizations, and innovate to take advantage of the coming technology disruptions and opportunities. We've guided many leading companies like Lowe's, Bayer, and Airbus using this method of turning science fiction into science fact. The impact on their businesses has been profound, but the impact on the world can be even greater as their advancements continue to improve our quality of life.

Given these positive outcomes, we thought it was time to apply the same methodology to the most important problems—the global grand challenges. If we can articulate the possible future in vivid enough detail, with researched and credible roadmaps to achieve them, perhaps we can overcome the status quo bias and spark new innovations and impact initiatives. To get started, we applied this approach to help us envision the future of learning.

We conducted a Future of Learning Science Fiction Design Intelligence (SciFi DI)

workshop and convened more than 50 SU Faculty, staff, startups, and members of our global community, as well as local teachers, students, nonprofits, and foundations all connected to the field of learning. Together, we explored trends in exponential technologies, took a deep dive into augmented reality and virtual reality, discussed the future of learning and work, and more. We identified current challenges in the global education system and then re-imagined these challenges after assuming a number of technological and social advances that could occur within fifteen years.

We then led the participants through a process of capturing the life and story of an individual living fifteen years into the future, which artists and writers in the room transformed into the graphic novel you now hold in your hands.

We hope you'll enjoy following the journey of the central characters Yabi and Carlo, their Nepis (personalized AIs), families, and friends as they learn and thrive in a future world. Through the adventures of these compelling characters, we explore central questions about the future purpose of learning, what it will mean to be a student or teacher in the future, what a school might look like in the future, what a curriculum might look like, and what life might feel like in general.

In particular, we imagined a world where a school could follow the student instead of the student attending a school, where today's learning curriculum and grading system is replaced by students advancing in their learning by solving real-life problems, where the boundary between being a student and teacher blurs, and where adults and children often learn together.

While I hope you'll enjoy immersing yourself in this particular version of the future, I encourage you to design your own. What will a student, teacher, school, and curriculum look like? What technologies would you incorporate, and how would they help bring about a world where everyone could be inspired to learn and teach, solve real-world problems, and find opportunities to contribute to their community?

At SU, we're optimistic about what the future holds, precisely because of the rapid advancements of exponential technologies such as robotics, artificial intelligence, and augmented reality. They're the building blocks for the fascinating innovations we encounter here with these characters and can be the basis for many more visions of the possible positive futures ahead or the cautionary tales of futures we need to mitigate.

What role can you play to help bring about a future of learning to benefit humanity? Join our community using our app ([su.org/app](https://su.org/app)) and find a world of like-minded peers and potential partners to help bring your vision to life.

Rob Nail  
CEO and Associate Founder  
Singularity University

# INTRODUCTION



At Singularity University (SU), we spend most of our days thinking about how exponential technologies might shape the future and help to solve the world's biggest challenges. One of these methods we use for examining this possible future is called Science Fiction Design Intelligence (SciFiDI).

SciFiDI is an approach to innovation—it's inspired by the storytelling devices and methods regularly employed by science fiction writers and imagineers. In our workshops, we work with designers, writers, and futurists to imagine and understand the future capabilities of current technologies. We generate new ideas and build new worlds based on this shared understanding.

Why use science fiction? The genre removes constraints that tend to govern everyday processes which affect how we think, plan, and create. While art may imitate life, science fiction influences science fact, which in turn generates more science fiction. Science fiction creates a vision of the future based on science fact.

In early 2019, SU hosted our first ever SciFi DI Workshop on the Future of Learning. We want the Future of Learning to be a world with access to information and experiences that build knowledge and skills for all people at all stages of their lives, for personal fulfillment and benefit to society.

Our Future of Learning SciFi DI workshop convened more than 50 participants, including SU Faculty and staff, startups, SingularityU Chapter members, mentors, and alumni, as well as local teachers, students, nonprofits, and foundations all connected to the field of learning innovation.

With the release of this graphic novel, we invite you to follow the journeys of Yabi and Carlo, their friends and families, and their NEPIs (Neo-Educational Personal Intelligences) as they learn and thrive in a future world. Through their stories, we hope you'll explore central questions about the future purpose of education, how one might leverage what were once considered disabilities, and what life might feel like in the year 2039.

What if instead of a student going to school, school came to the student? What if today's learning curriculum and grading system were replaced by the advancement of students solving real-life problems, and a child could be both student and teacher? What if the act of learning were more often shared between adults and children? This doesn't have to stay a work of fiction. You could make it science fact.

For example, how would you build a NEPI that could guide every human from birth on a learning journey that lasts a lifetime? Or, how would you create a digital curriculum to address real-life problems emerging around the world? How would you lead your community (or the world) in deciding what values children should learn through school in the future? Could there be ways to continually train adults even as they work? How would you make learning more relevant and fun by harnessing the latest in brain-to-brain interfaces, holograms, exo-suits, and more? Whether you are an innovator, investor, technologist, policymaker, student, parent, or teacher. In fact, everyone has a role to play in this future.

And while this particular future vision of learning was created in Silicon Valley with an international group of participants and through SU's lens, we encourage you to design your own vision of the future of learning, appropriate for your community, and share with the world how you think you might help create it.

# Key Concepts

**N.E.P.I. (Neo-Educational Personal Intelligence):** A fully connected personal artificial intelligence that is a learning tool, friend, and mentor that accompanies every person on a life-long learning journey. N.E.P.I.s integrate with schools and private educational curricula, as well as the global N.E.P.I. Network, pairing students and educators across the globe to engage in project-based and mentor-based learning in both real-world and holographic educational environments. N.E.P.I.s can assume forms based on haptic-holographic technology or more durable physical bodies via nano-bot technology. The N.E.P.I.'s personality is customizable by students and parents, grows with the learner over time, and is capable of assuming multiple forms and growing personas to reflect and support the students' learning arcs.

**N.E.P.I. NETWORK:** A digital platform that connects N.E.P.I.s to all existing knowledge in the world, including curricula, learning experiences, the learning trajectories of other students, family and community intelligences, and problem-based learning curricula based on real-life problems that need to be solved. The N.E.P.I. Network operates at instantaneous speeds and is totally virtual and predictive.

**NEURAL NET:** The future of the internet, this network operates in the cloud and allows people to share information and full sensory experiences.

**SENSORY IMPLANTS:** Neural implants that super-power an individual's cognitive and sensory functions. These devices provide the highest fidelity Neural System.

**SECOND SKIN:** Part of the Neural System, Second Skin is worn directly on human skin to support individual biomes, aid in movement, and provide tactile and muscle memory from the Neural System.



**EXO-SUIT:** Part of the Neural System, these wearable robotics super-power an individual's physical strength and agility.

**AEROCAR:** The flying car of the future, the Aerocar is a driverless flying vehicle that can travel both short and long distances. As safe as previous generations of air travel, the Aerocar is used both by individuals and families, as well as for "big rig" jobs ranging from commercial activity to disaster relief. Blockchain-based ID tags manage border crossing and custom exchanges with ease. By accessing pre-designed travel routes and autonomous navigation, Aerocars are among the fastest, safest global travel options in the world.

**VERTI FARMS:** Verti Farms are tech-infused, smart, automated farms that are customizable for different growing environments such as extreme temperatures or hurricane force winds. In addition to growing food, Verti Farms can also grow shelters and/or physical objects. When Verti Farms grow, they may turn into skyburbs.

**SKYBURBS:** Efficient vertical neighborhoods that combine all necessary services for living in the future. Skyburb buildings are closed eco-systems, where all inputs and outputs are efficiently used to produce zero waste.

**ADAPTIVE GROW-BUILDS:** As opposed to today's schools (and other buildings) which have static, defined spaces, tomorrow's schools will dynamically reconfigure themselves in response to the space needs of inhabitants. The same space will morph to support such activities as individual quiet time, student body gatherings, and personalized learning experiences in a matter of moments through augmented reality, digital constructs from brain implants, robotic buildings, and furniture. The core structure is designed to "grow" from a single spore of mycelium.

**CONSTRUCTION BOTS:** Construction bots are robotic machines that 3D print construction materials in place and are controlled by humans and their NEPIs. Construction projects can become learning experiences as well as real-life solutions.



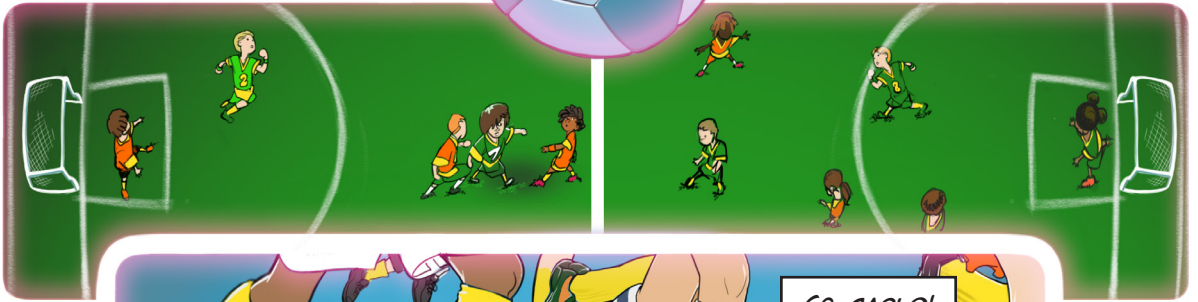


**NEP!**

N'DJAMENA, CHAD. 2039.

YAY! HERE WE GO, CARLO!  
PERFECT PASSING ANGLE!

HERE IT  
COMES, YABI!



GO, CARLO!



SOUTH FLORIDA, 2039.

PERFECT  
PASS, YABI!



AND...FREEZE  
SIMULATION!





MEET YOUR *Neo*  
**NEPI** *Educational*  
*Personal*  
*Intelligence*

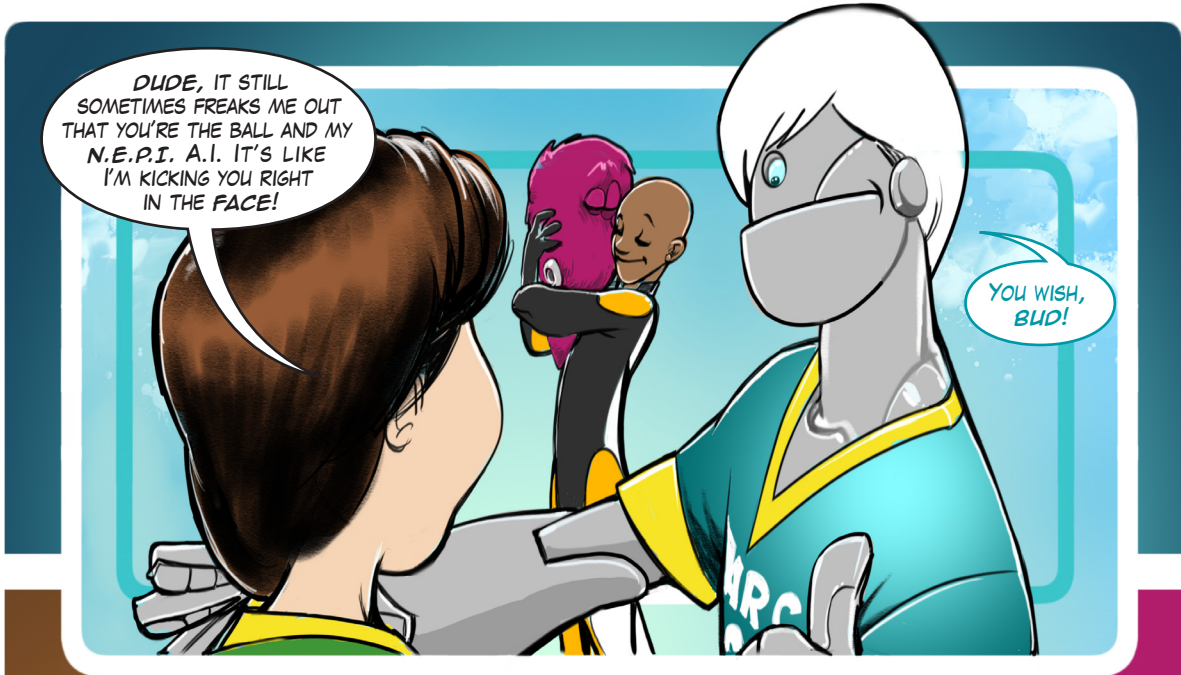
Your life-long personalized companion, tool, & mentor

Neural Network & 2nd Skin Integration

Infinite tactile-holographic options

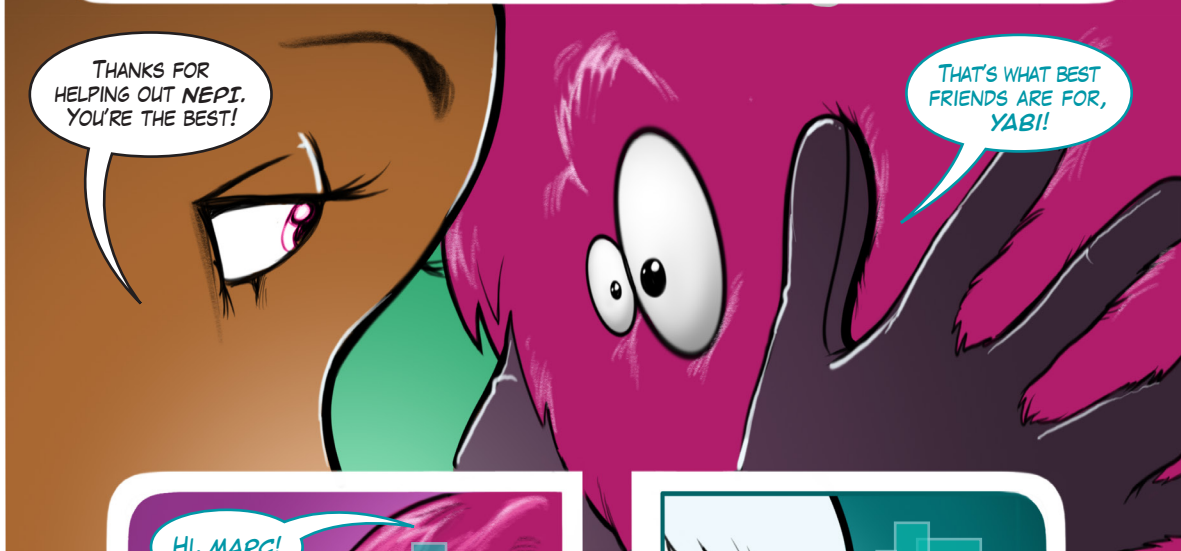
Customizable nano-bot takes on any shape

*ARLENS & ARFORM-BOT COMPLIANT*



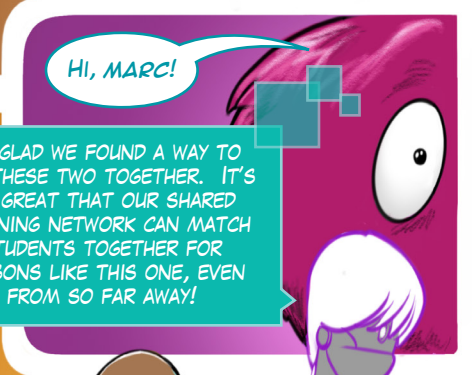
DUDE, IT STILL SOMETIMES FREAKS ME OUT THAT YOU'RE THE BALL AND MY N.E.P.I. A.I. IT'S LIKE I'M KICKING YOU RIGHT IN THE FACE!

YOU WISH, BUD!



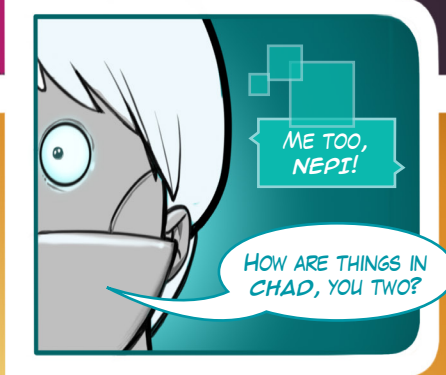
THANKS FOR HELPING OUT NEPI. YOU'RE THE BEST!

THAT'S WHAT BEST FRIENDS ARE FOR, YABI!



HI, MARC!

I'M GLAD WE FOUND A WAY TO GET THESE TWO TOGETHER. IT'S SO GREAT THAT OUR SHARED LEARNING NETWORK CAN MATCH STUDENTS TOGETHER FOR LESSONS LIKE THIS ONE, EVEN FROM SO FAR AWAY!



ME TOO, NEPI!

HOW ARE THINGS IN CHAD, YOU TWO?



GREAT! I'M LOVING OUR LEARNING CENTER'S NEW HOLO-SIMULATOR, I'VE NEVER KICKED A BALL SO FAR! HOW'S FLORIDA?

ADVANCED LEARNING PROJECT, N'DJAMENA, CHAD

PROGRESSIVE EDUCATION AND SPORTS ACADEMY, SOUTH FLORIDA, US

PRETTY GOOD, THOUGH WE'RE EXPECTING SOME NASTY WEATHER FROM A TROPICAL STORM LATER, I HEAR.

OH...WELL, CARLO, IT'S TIME FOR SOME PHYSICS. MARC AND NEPI TELL ME YOU'RE AN EXPERT AT BENDING THE BALL LIKE THIS, BUT WANT SOME HELP UNDERSTANDING WHY IT WORKS?

THAT'S A GOOD WAY OF PUTTING IT, YABI. I'M HAVING A LITTLE TROUBLE MEASURING FORCE AND AIR FLOW. I DO KNOW IF I KICK THE BALL WITH THE INSIDE OF MY FOOT IT PUTS SPIN ON THE BALL AND THE BALL CURVES; I'VE PRACTICED IT FOR HOURS AND HOURS.

WELL, YOU'RE RIGHT ABOUT FORCE. KICKING A BALL RESULTS IN WHAT'S KNOWN AS AN "INELASTIC COLLISION." THE BALL GAINS VELOCITY FROM YOUR FOOT WHEN YOU KICK IT, BUT SOME OF THAT KINETIC ENERGY IS LOST DUE TO (AMONG OTHER THINGS) AIR RESISTANCE.

RIGHT, WE LEARNED ABOUT THIS IN MY ENGINEERING COURSE. BUT NOT ABOUT THE BEND...?

THAT'S ME AND MARC! AND YOU CAN SEE THE AIRFLOW AROUND US GENERATED BY THE SPIN ON THE BALL.

THAT'S RIGHT, NEPI! THERE'S A THIN LAYER OF SPINNING AIR AROUND THE BALL THAT INTERACTS WITH THE AIR FLOWING ACROSS IT AS THE BALL MOVES AWAY FROM CARLO'S FOOT.

THE AIR MOVING ALONG THE RIGHT SIDE OF THE BALL FOLLOWS THE AIR SPINNING AROUND THE BALL, PUSHING IT TO THE LEFT. THAT'S BASICALLY NEWTON'S THIRD LAW.

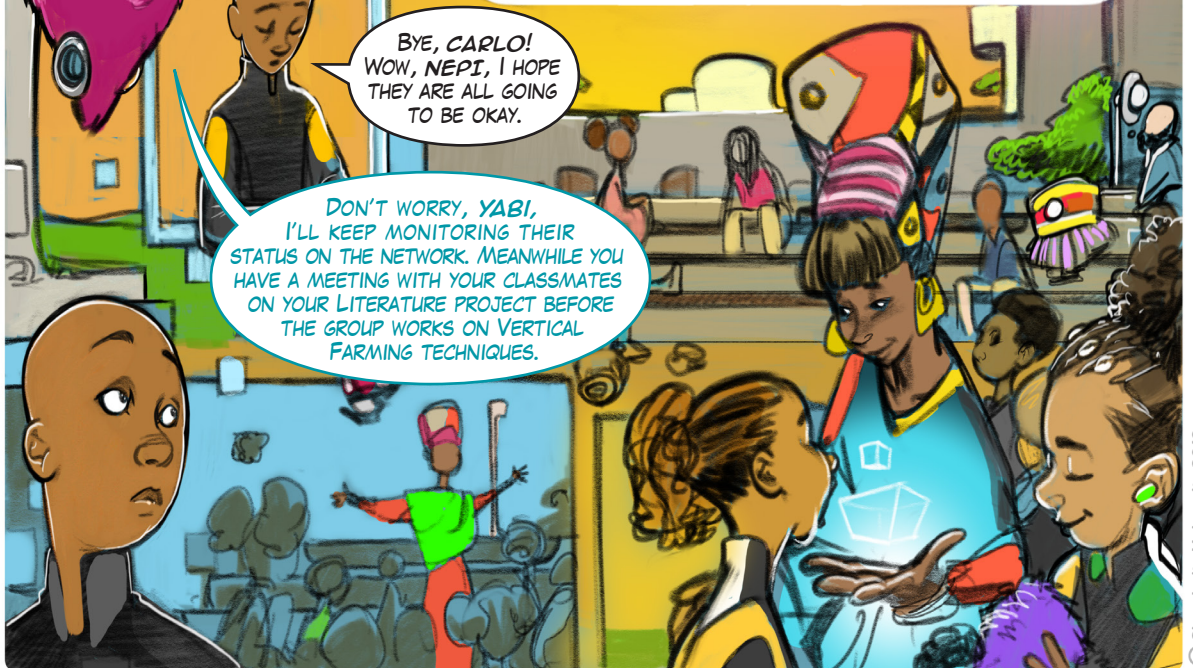
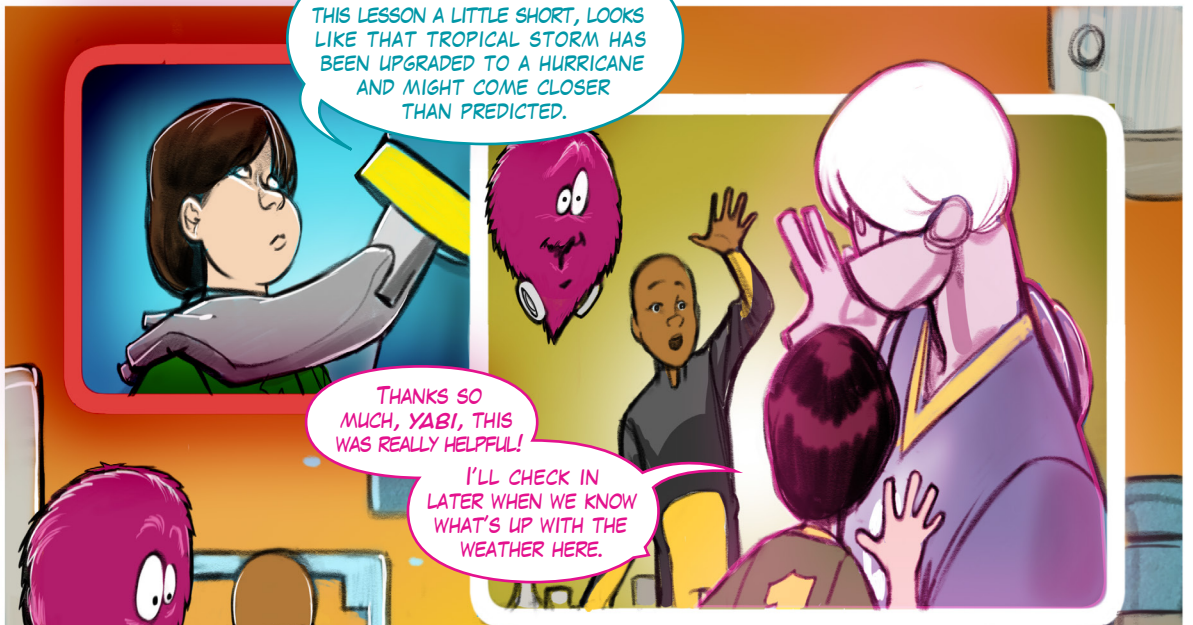
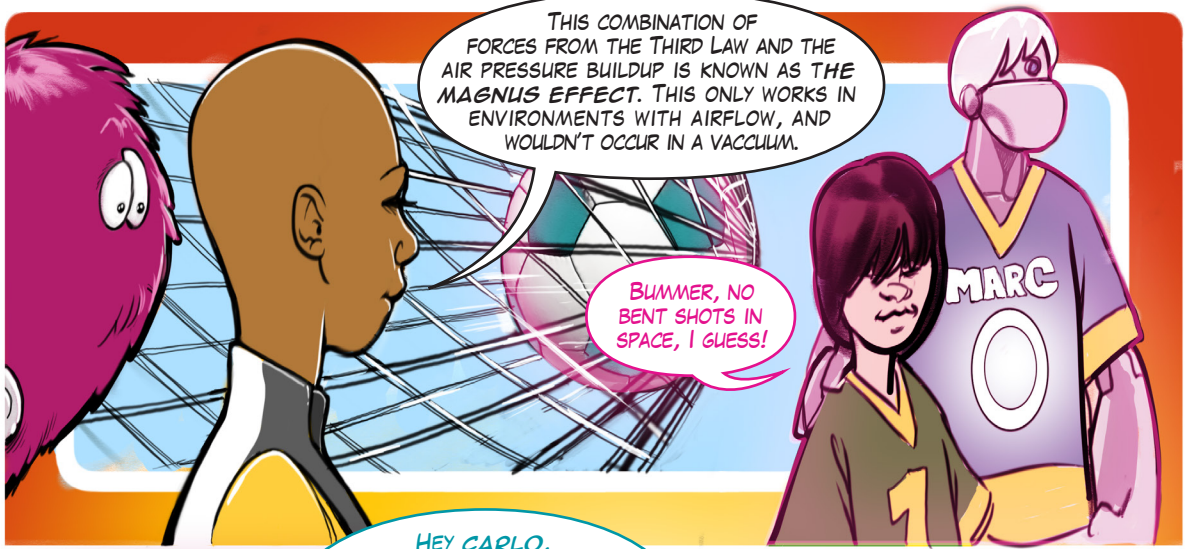
RIGHT. TWO OBJECTS PUSHING ON EACH OTHER WILL FEEL EQUAL AND OPPOSITE FORCE. THAT'S HOW ROCKETS FLY.

AWESOME, CARLO. YOUR SHOT IS A ROCKET!

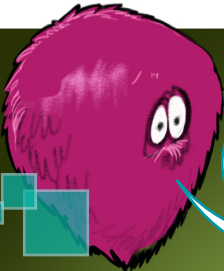
HAHA, THAT'S TRUE!

BUT THE BALL IS ALSO AFFECTED BY THE AIR FLOWING ACROSS IT IN THE OPPOSITE DIRECTION OF THE SPIN.


IT BUILDS UP AIR PRESSURE ON THAT SIDE OF THE BALL AND PUSHES IT EVEN FURTHER IN THE SPIN'S DIRECTION.



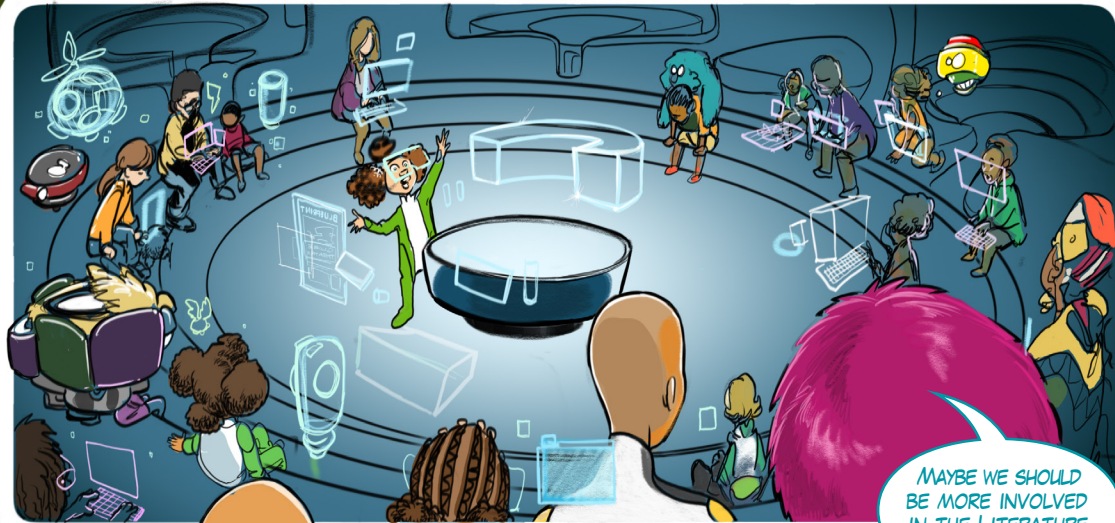





LOOK, YOUR MENTORING CREDITS HAVE POSTED AUTOMATICALLY, YABI. YOU DID WELL IN FINDING A REAL-WORLD EXAMPLE TO HELP CARLO WITH HIS PHYSICS. IN FUTURE LESSONS, OTHER PARTS OF HIS LIFE MIGHT BE HELPFUL, LIKE HIS ENJOYMENT OF ENGINEERING, OR...



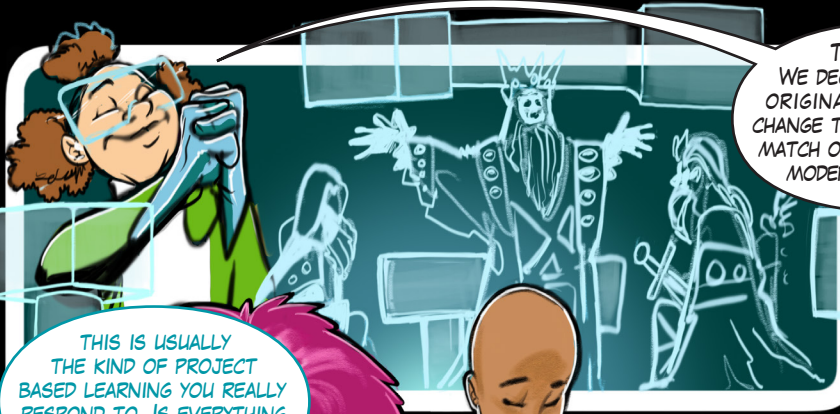
NEPI, CAN YOU SHOW ME THE WEATHER SIMULATION FOR SOUTH FLORIDA? I'M WORRIED ABOUT CARLO. WE MAY NEED TO SPEED UP THE MENTORING SESSIONS AROUND HIS SCHEDULE, AND...




MAYBE WE SHOULD BE MORE INVOLVED IN THE LITERATURE LESSON, YABI.



WOW, LUIZA, YOU ALL HAVE DONE A GREAT JOB ON THIS MODEL OF THE GLOBE THEATER.



THANKS, YABI. WE DECIDED TO KEEP THE ORIGINAL STRUCTURE BUT CHANGE THE ARCHITECTURE TO MATCH OUR LOCAL STYLES AND MODERN ADVANCEMENTS.



THIS IS USUALLY THE KIND OF PROJECT BASED LEARNING YOU REALLY RESPOND TO. IS EVERYTHING ALL RIGHT? DO YOU NOT ENJOY MACBETH?



I DO, IT'S JUST...

I'M PAYING ATTENTION, NEPI. I THINK THE CHARACTERIZATION OF LADY MACBETH AS MANIPULATIVE PLAYS INTO AND REINFORCES NEGATIVE AND SEXIST STEREOTYPES, AND I'M REALLY WORRIED ABOUT CARLO, AND...

MAYBE WE COULD USE A LITTLE DOWNTIME, YABI.

YABI?!

I'M SEEING FROM OUR CONNECTED INTELLIGENCES THAT MAYBE YOU'VE GOTTEN A LITTLE OVERSTIMULATED AND TIRED. WANT TO TAKE A BREAK?

MISS LINGERR! THANK YOU, YES. I'M WORRIED ABOUT MY FRIEND.

MAYBE A LITTLE TIME BEING MINDFUL WILL HELP YOU FEEL MORE CALM, YABI..

COOL. WE REALLY ENJOY YOGA, DON'T WE NEPI?

AFTER YOGA...

GOOD AFTERNOON, EVERYONE. MY NAME IS NADJIM, AND I'M THE CEO OF VERTI FARMS, A LOCALLY BASED MODERN FARM MANUFACTURING COMPANY.

I'M ALSO YABI'S FATHER. AND THIS IS MY COLLEAGUE FROM THE UNIVERSITY OF FLORIDA, DR. CANTOR.

C'MON, NEPI, IT'S TIME FOR THE VERTICAL FARMING LECTURE AND...PAPA!

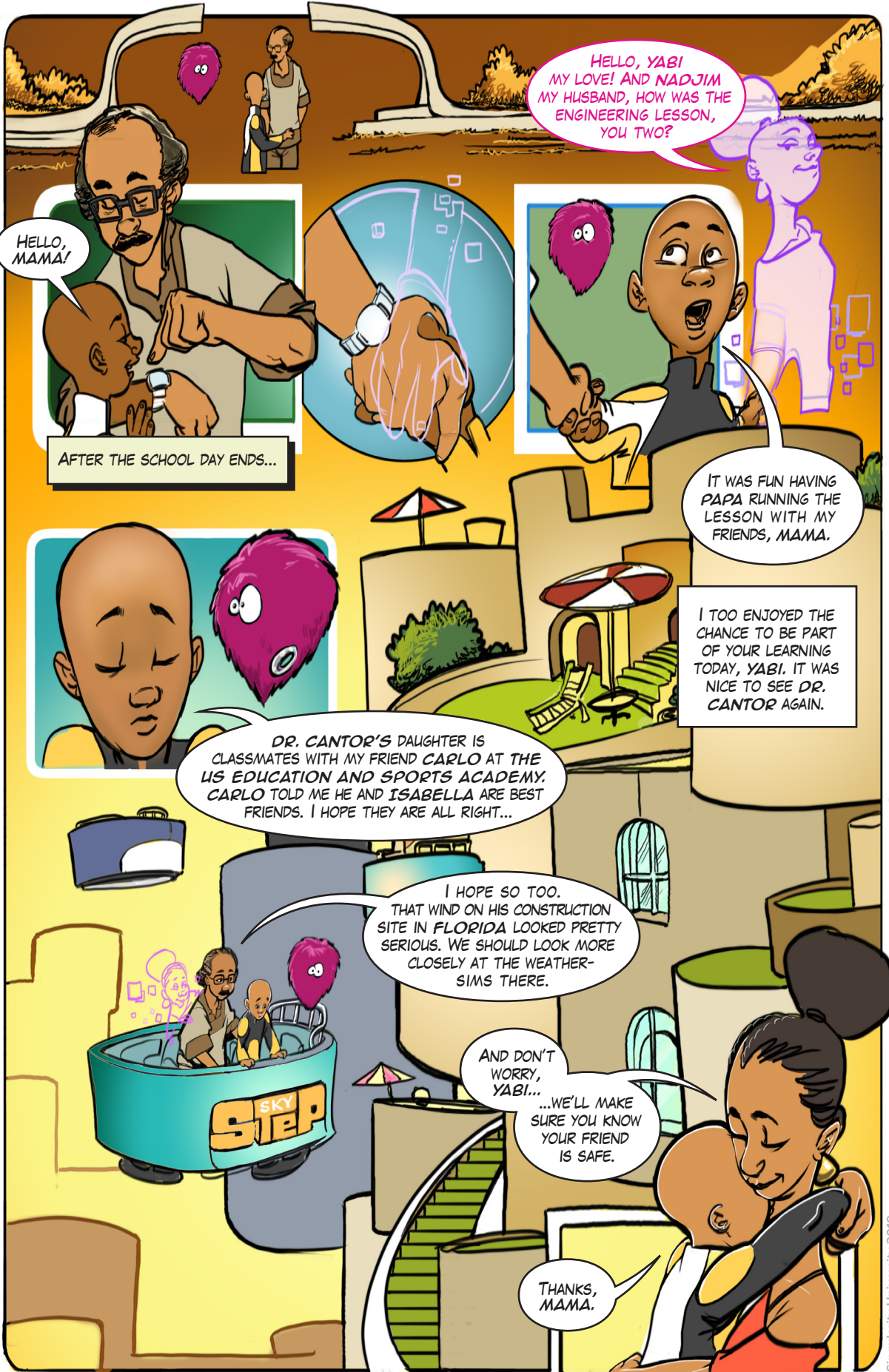
HELLO. MY NAME IS DR. CANTOR, AND I'M A PROFESSOR OF CLIMATE STUDIES AND EXTREME WEATHER EVENTS. HERE IN FLORIDA WHERE I LIVE WE HAVE MORE HURRICANES THAN EVER BEFORE, UNFORTUNATELY.

BUT DUE TO EFFORTS LIKE VERTICAL FARMING AND IMPROVED IRRIGATION, WE'RE LEARNING TO ADAPT AND EVEN REVERSE THE EFFECTS OF GLOBAL CLIMATE CHANGE.

THAT'S RIGHT. MY COMPANY'S VERTICAL FARMING STRUCTURES, LIKE THE ONES YOU USE FOR THE SCHOOL GARDEN PROJECT, ARE BUILT TO OPERATE HERE IN CHAD, WHERE WE'VE SEEN A GENERAL INCREASE IN THE AVERAGE TEMPERATURE OVER THE LAST 30 YEARS.

BUT TODAY WITH DR. CANTOR'S HELP WE'RE GOING TO LEARN HOW WE MIGHT ADAPT THESE STRUCTURES TO WITHSTAND HURRICANE FORCE WINDS, SO THEY CAN BE HELPFUL IN OTHER PARTS OF THE WORLD.

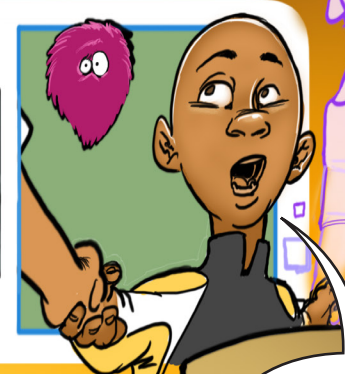
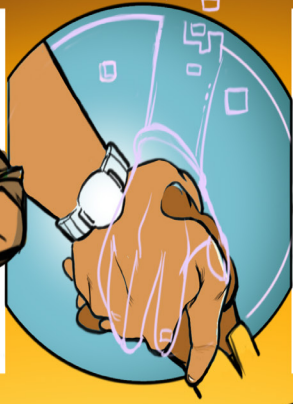
AND NONE TOO SOON! WE'RE EXPECTING A POSSIBLE HURRICANE HERE IN FLORIDA IN THE NEXT 24 HOURS!



HELLO, MAMA!

AFTER THE SCHOOL DAY ENDS...

HELLO, YABI MY LOVE! AND NADJIM MY HUSBAND, HOW WAS THE ENGINEERING LESSON, YOU TWO?

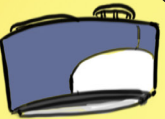


IT WAS FUN HAVING PAPA RUNNING THE LESSON WITH MY FRIENDS, MAMA.



DR. CANTOR'S DAUGHTER IS CLASSMATES WITH MY FRIEND CARLO AT THE US EDUCATION AND SPORTS ACADEMY. CARLO TOLD ME HE AND ISABELLA ARE BEST FRIENDS. I HOPE THEY ARE ALL RIGHT...

I TOO ENJOYED THE CHANCE TO BE PART OF YOUR LEARNING TODAY, YABI. IT WAS NICE TO SEE DR. CANTOR AGAIN.




I HOPE SO TOO. THAT WIND ON HIS CONSTRUCTION SITE IN FLORIDA LOOKED PRETTY SERIOUS. WE SHOULD LOOK MORE CLOSELY AT THE WEATHER-SIMS THERE.

AND DON'T WORRY, YABI...

...WE'LL MAKE SURE YOU KNOW YOUR FRIEND IS SAFE.

THANKS, MAMA.





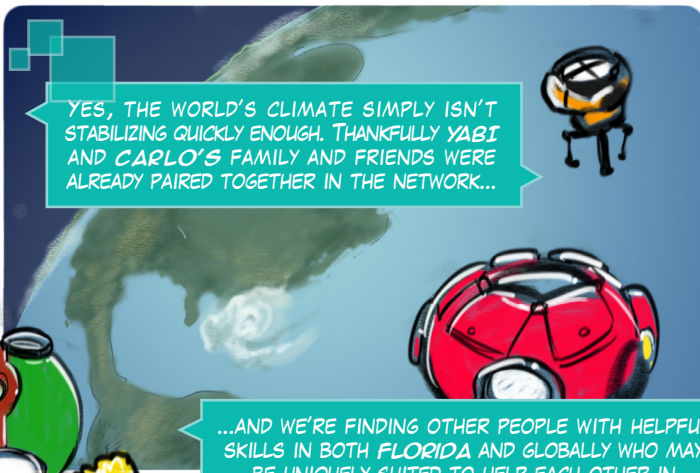




MY FRIEND YABI IS WORRIED FOR CARLO AND THE STUDENTS IN FLORIDA. I'LL NEED TO CHECK IN WITH THEM.



HELLO MARC, HOW ARE THINGS WITH YOUR AND YOUR CARLO?



NOT GREAT NEPI, THE TROPICAL STORM WE TALKED ABOUT EARLIER HAS BECOME A FULL-BLOWN HURRICANE, FASTER THAN ALMOST ANY ON RECORD!



YES, THE WORLD'S CLIMATE SIMPLY ISN'T STABILIZING QUICKLY ENOUGH. THANKFULLY YABI AND CARLO'S FAMILY AND FRIENDS WERE ALREADY PAIRED TOGETHER IN THE NETWORK...

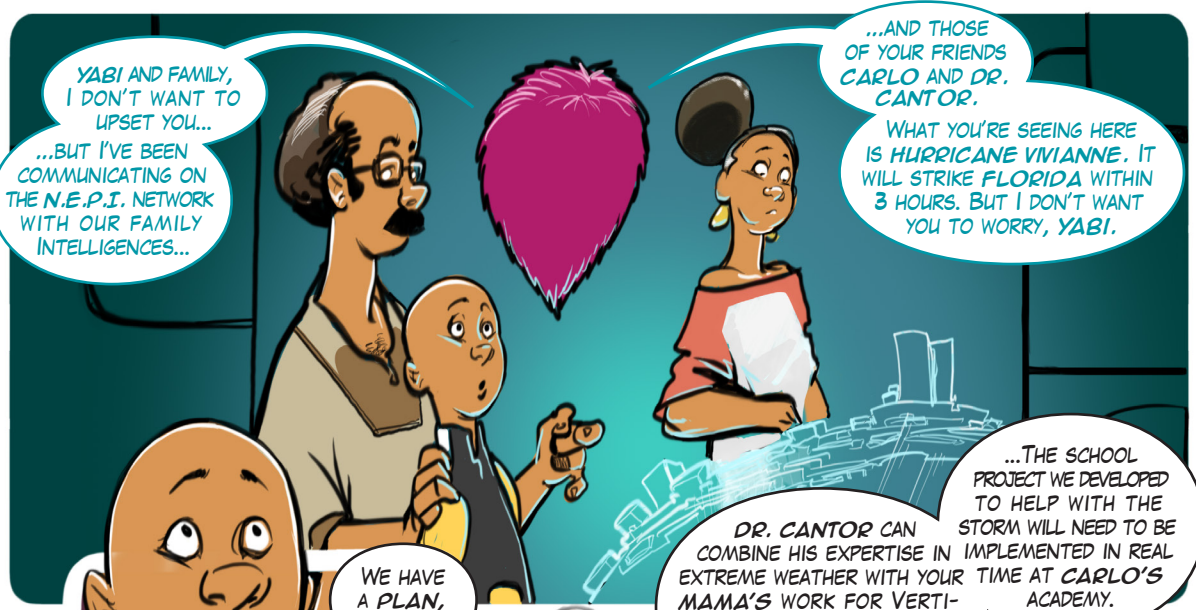
...AND WE'RE FINDING OTHER PEOPLE WITH HELPFUL SKILLS IN BOTH FLORIDA AND GLOBALLY WHO MAY BE UNIQUELY SUITED TO HELP EACH OTHER IN THE COMING STORM.



IT IS GOOD THAT WE CAN HELP PAIR UP THESE HUMANS, AND THEIR SKILLS AND KNOWLEDGE.



INDEED, IT'S WHAT WE WERE MADE TO DO.



YABI AND FAMILY,  
I DON'T WANT TO  
UPSET YOU...  
...BUT I'VE BEEN  
COMMUNICATING ON  
THE N.E.P.I. NETWORK  
WITH OUR FAMILY  
INTELLIGENCES...

...AND THOSE  
OF YOUR FRIENDS  
CARLO AND DR.  
CANTOR.  
WHAT YOU'RE SEEING HERE  
IS HURRICANE VIVIANNE. IT  
WILL STRIKE FLORIDA WITHIN  
3 HOURS. BUT I DON'T WANT  
YOU TO WORRY, YABI.

WE HAVE  
A PLAN,  
DON'T WE?

...THE SCHOOL  
PROJECT WE DEVELOPED  
TO HELP WITH THE  
STORM WILL NEED TO BE  
IMPLEMENTED IN REAL  
LIFE.

DR. CANTOR CAN  
COMBINE HIS EXPERTISE IN  
EXTREME WEATHER WITH YOUR  
TIME AT CARLO'S  
ACADEMY.  
MAMA'S WORK FOR VERTI-  
FARMS' GROWN HOUSING  
PLATFORMS AND IRRIGATION  
EFFORTS TO HELP WITH  
RELIEF AID.

YABI SHOULD  
COME ALONG!  
THE CHANCE TO  
SEE MANY OF YABI'S SCHOOL  
PROJECTS IN ACTION WILL BE AN  
EXCELLENT LEARNING EXPERIENCE, AND  
PROVIDE YABI WITH EARLY EXPERIENCE-  
ABROAD CREDITS. VIVIANNE WILL HAVE  
PASSED BY THE TIME WE ARRIVE SO  
THERE IS NO DANGER  
TO THEM.



I'LL GET TO  
MEET CARLO IN REAL  
LIFE, MAMA, CAN I  
GO? PLEASE?  
PAPA, CAN I?

IF YOUR N.E.P.I.  
HADN'T FOUND CARLO FOR  
PHYSICS LESSONS IN THE FIRST  
PLACE LAST QUARTER, NONE OF  
OUR FAMILY AND FRIENDS WOULD  
HAVE MET ON THE NETWORK,  
YABI. I KNOW YOU LOVE TO HELP  
PEOPLE, AND THIS EXPERIENCE  
WILL BE VALUABLE FOR YOUR  
EDUCATION. PLUS, IT  
MEANS WE GET TO...

...TAKE THE NEW  
AEROCAR!!




**USE YOUR CREDITS**

**GET YOUR OWN FLYING CAR TODAY**


# **AEROCAR!**




The flying car of the future, the Aerocar is a **driverless flying vehicle** that can travel both short and long distances. As safe as previous generations of air travel, the Aerocar is used both by individuals and families, as well as for “big rig” jobs ranging from commercial activity to disaster relief. **Blockchain-based ID tags** manage border crossing and custom exchanges with ease. By accessing pre-designed travel routes and **autonomous navigation**, Aerocars are among the fastest, safest global travel options in the world.



THIS IS REALLY EXCITING, PAPA!  
I HOPE WE CAN HELP CARLO  
AND HIS CLASSMATES, BUT I WISH  
MAMA HAD COME ALONG.



THANKFULLY HER  
N.E.P.I. A.I. IS TAGGING ALONG  
VIA THE NETWORK, AND WE BROUGHT  
HER NANITE-BASED RIGID HOLOGRAM  
PROJECTOR. SO IT'LL BE ALMOST  
LIKE SHE'S WORKING RIGHT  
ALONGSIDE US.



NOW GET SOME  
SLEEP YABI, IT'S ABOUT 9 HOURS  
TO FLORIDA WITH THE WEATHER  
DELAYS THERE, THANKS TO THE GLOBAL  
AERO-STRUCTURE. THE A.I.'S WILL  
HANDLE THE DRIVING; I STILL HAVE  
A LITTLE WORK TO DO.

ABOUT 9 HOURS LATER



WE'RE  
HERE.



OH,  
PAPA...



DAY 1

...SO MUCH DAMAGE!

WELCOME, NADJIM! WE'RE VERY GRATEFUL YOU'VE COME ALL THIS WAY TO PERSONALLY IMPLEMENT OUR GREENHOUSE AUGMENTATION PROJECT.

YABI!!! IT'S SO AWESOME TO FINALLY MEET YOU IN PERSON!

I WISH IT WERE UNDER BETTER CIRCUMSTANCES, BUT WE'RE GOING TO GET THROUGH THIS.

GLAD TO HELP, DR. CANTOR.

OUR STUDENTS HAVE BEEN HARD AT WORK ON THE VIRTUAL IMPLEMENTATION AS PART OF THEIR ENGINEERING CLASS PROJECT.

IN THE NEXT FEW DAYS I THINK WE'LL LEARN AS MUCH FROM THEM AS MUCH FROM THEM AS THEY WILL FROM US.

LOOK, YABI, THESE ARE THE CONSTRUCTION BOTS WE WERE TALKING ABOUT DURING THE LECTURE BACK HOME THEY'LL BE DOING THE HEAVY LIFTING.

AND THEY CAN ALL BE CONTROLLED BY THE PERSONAL INTELLIGENCES, SO THE STUDENTS WILL HAVE A CHANCE TO GET SOME REAL-WORLD EXPERIENCE PUTTING THEIR CLASS PROJECT INTO ACTION.

OK KIDS, TODAY WE'LL BE PUTTING THE HURRICANE SUPPORT DESIGNS YOU HELPED COME UP WITH INTO ACTION SO WE CAN REBUILD YOUR ON-SITE VERTICAL GREENHOUSE.

EACH OF YOU WILL GET TO USE YOUR PERSONAL INTELLIGENCE TO VIRTUALLY ENTER THE CONSTRUCTION 'BOTS, AND LATER, IF YOU LIKE, TO HELP RUN THEM YOURSELVES.

THE 'BOTS ARE UNDER THE CONTROL OF THE CONSTRUCTION CREW, BUT EACH STUDENT WILL GET TO EXPERIENCE WHAT IT'S LIKE TO PUT OUR THEORETICAL MODEL INTO ACTION.

THE PROFESSIONAL WORKERS CAN TEACH YOU EACH MOVE VIRTUALLY, AND THEN YOU CAN TRY IT YOURSELVES.

NEPI, ARE YOU RECORDING THIS? THIS IS SO COOL!

I SURE AM! IT WILL BE GREAT FOR YOUR REPORT TO THE CLASS WHEN WE GET HOME!

WHAT A WAY TO MAKE A POSITIVE LEARNING EXPERIENCE OUT OF SUCH A TRAGEDY.

THESE KIDS WILL HAVE A REAL SENSE OF PRIDE IN THEIR ACADEMY, HAVING SAFELY HELPED REBUILD IT THEMSELVES. THEY'LL ALWAYS FEEL CONNECTED TO IT.

WELCOME EVERYONE.  
TODAY OUR ECOLOGY CLASS IS TAKING ON A SPECIAL PART OF OUR SCHOOL RESTORATION; WE ARE REPAIRING OUR WATER FILTRATION SYSTEM. PLEASE WELCOME, DIRECTLY VIA THE N.E.P.I. NETWORK AND THE ADVANCED LEARNING PROJECT IN N'DJAMENA, CHAD...

...MISS CARINE!

YOUR MOTHER IS AN EXPERT IN IRRIGATION SYSTEMS, YABI. THIS WILL BE VERY HELPFUL.

THIS BIT WILL BE A LITTLE TRICKY, SO I'M GOING TO PHYSICALLY OPT-IN VIA THE N.E.P.I. NETWORKS' NANO-SYNTH SO I CAN HELP YOU ALL GET JUST THE RIGHT FEEL OF THIS EXPERIMENT.

YOU CAN LINK YOUR A.I.'S PHYSICAL UNITS TO FEEL MY MOVEMENTS.

...GREAT, SO YOUR STUDENT FACILITATOR IS DISTRIBUTING A SET OF COLLECTION CAPSULES TO EACH OF YOU.

THESE CAPSULES, 3D PRINTED HERE ON-SITE, WILL LET YOU COLLECT SAMPLES OF THE FLOOD WATERS THAT HAVE UNFORTUNATELY ACCUMULATED HERE. CAN ANYONE TELL US WHY THIS IS IMPORTANT?

TO HELP DETERMINE WHAT TO FILTER FROM THE SYSTEMS?

THAT'S CORRECT. THE SYSTEMS ARE AUTOMATICALLY SET TO FILTER OUT DEBRIS AND PARTICULATE MATTER, BUT THE REPLACEMENT SYSTEM WE BROUGHT WITH US FROM CHAD HAS A SPECIALIZED FUNCTION.

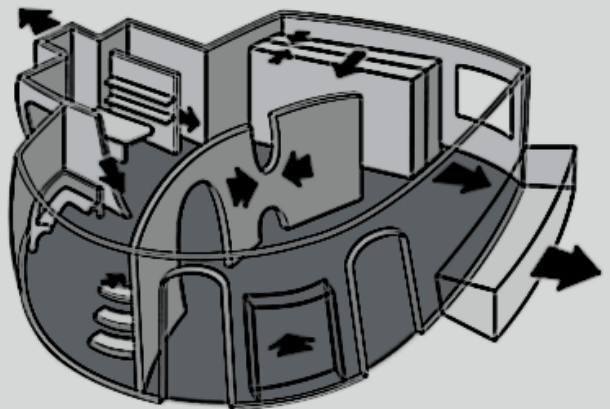
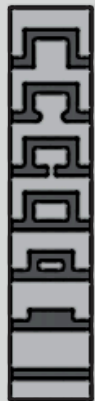
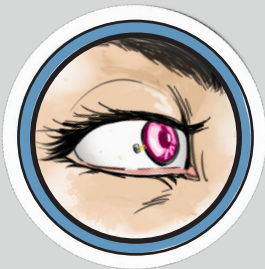
OUR SYSTEM WILL DETECT COMMON FLORA AND BACTERIA, BUT IT'S DESIGNED FOR OUR ENVIRONMENT WHICH IS VERY DRY AND HAS A MORE SIMPLIFIED MICROBIOME THAN FLORIDA'S.

BY GATHERING SAMPLES AND SCANNING THEM WITH YOUR A.I.'S INTO THE NETWORK DATABANKS, WE CAN PROGRAM THE NEW, LOCAL SYSTEM TO DETECT LOCAL CONTAMINANTS THAT OUR SYSTEM MIGHT HAVE OVERLOOKED...

...THIS WILL BE EVEN MORE IMPORTANT FOR OUR PROJECTS LATER THIS WEEK WITH OUR NEWLY GROWN STRUCTURES.

# ***GROW-BUILD***

***GROWS IN MERE HOURS!***



Leveraging mycelium-based technology, Grow-Builds dynamically reconfigure in response to the space needs of inhabitants. Customize your own in a matter of moments through augmented reality, brain implant digital constructs, and robotic architecture.

SO FAR THE STUDENTS ARE DOING REALLY WELL, AND SO MANY OF THE PARENTS WANT TO HELP AS WELL. WE NEED TO SET UP A FULL FACULTY AND PARENT PERSONAL INTELLIGENCE INTERFACE.

WE CAN USE BOTH THE PARENTAL A.I.S AND THE STUDENT N.E.P.I.'S TO CONNECT PEOPLE WITH SKILLS AND EXPERTISE TO SHARE, AND PAIR STUDENTS WHO WANT TO LEARN SOME OF THOSE SKILLS AS WELL.

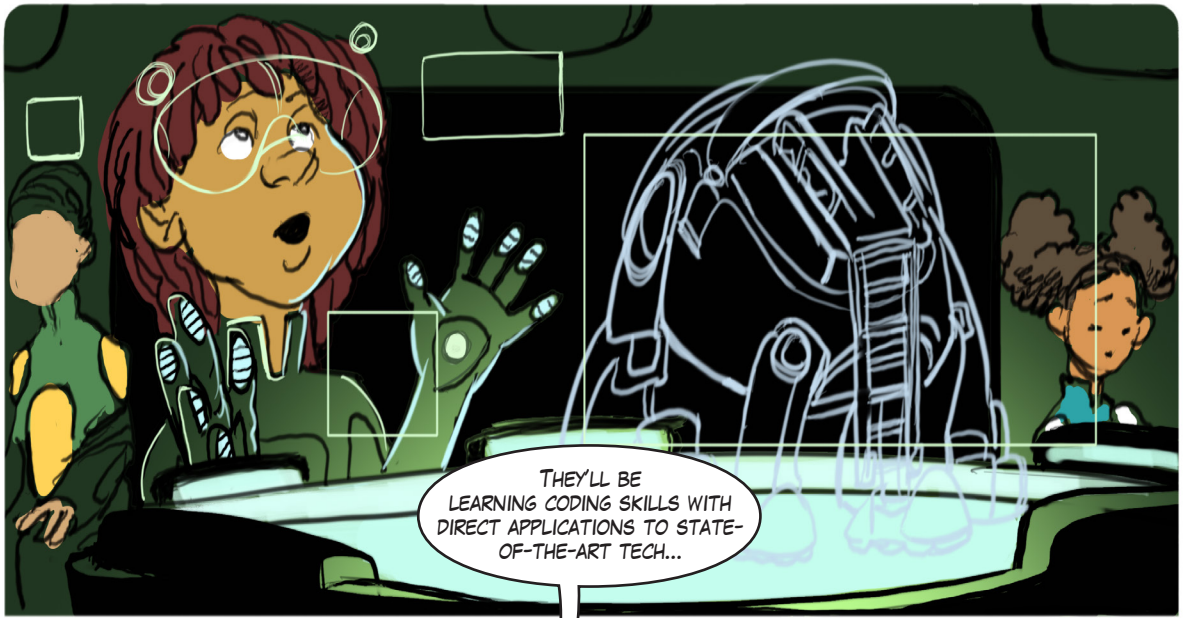
AGREED. ALMOST ALL OF THE FAMILIES HAVE GIVEN CONSENT FOR SOME LEVEL OF CONNECTION TO THE N.E.P.I. NETWORK

I CAN HELP!

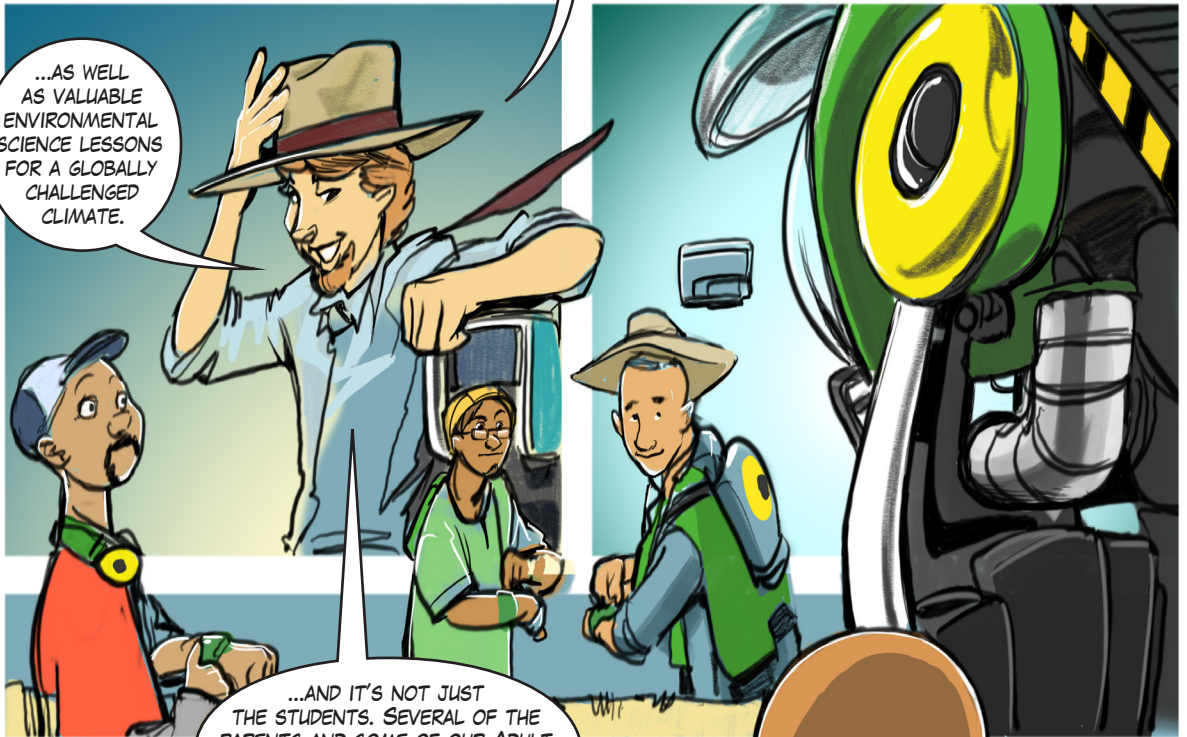
THANKS, NEPI! YOU ALL CAN HELP.

STUDENTS WILL GET PRACTICAL EXPERIENCE IN MATH...

...IN ECOLOGY AND PLANT SCIENCE...

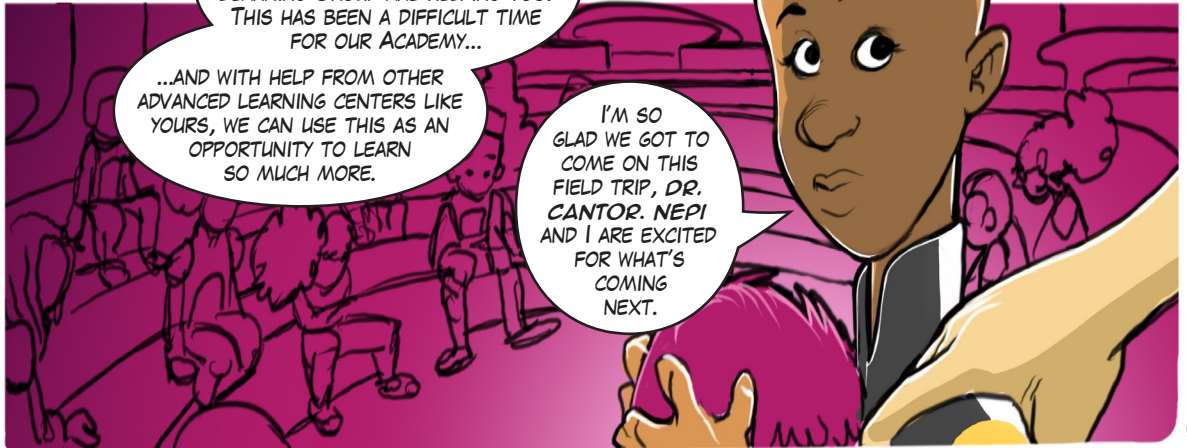


THEY'LL BE LEARNING CODING SKILLS WITH DIRECT APPLICATIONS TO STATE-OF-THE-ART TECH...



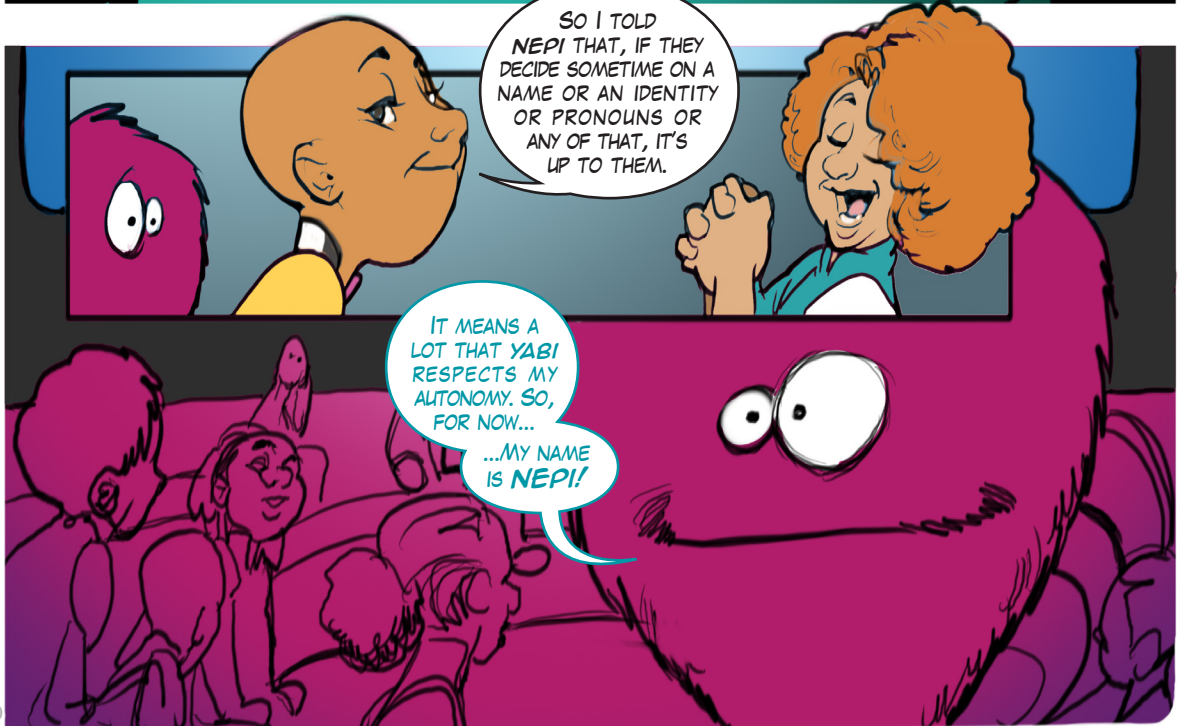
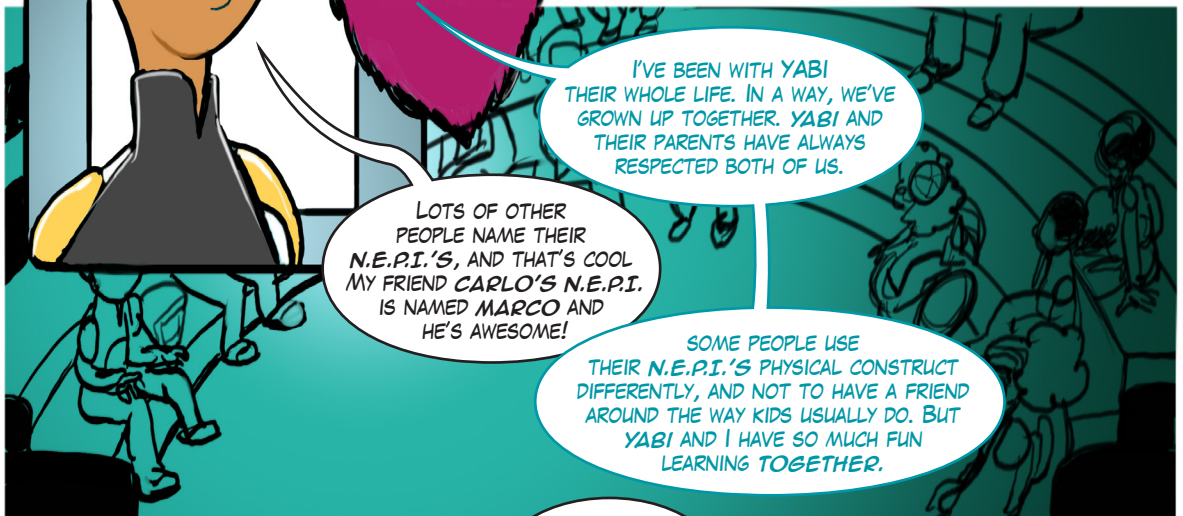
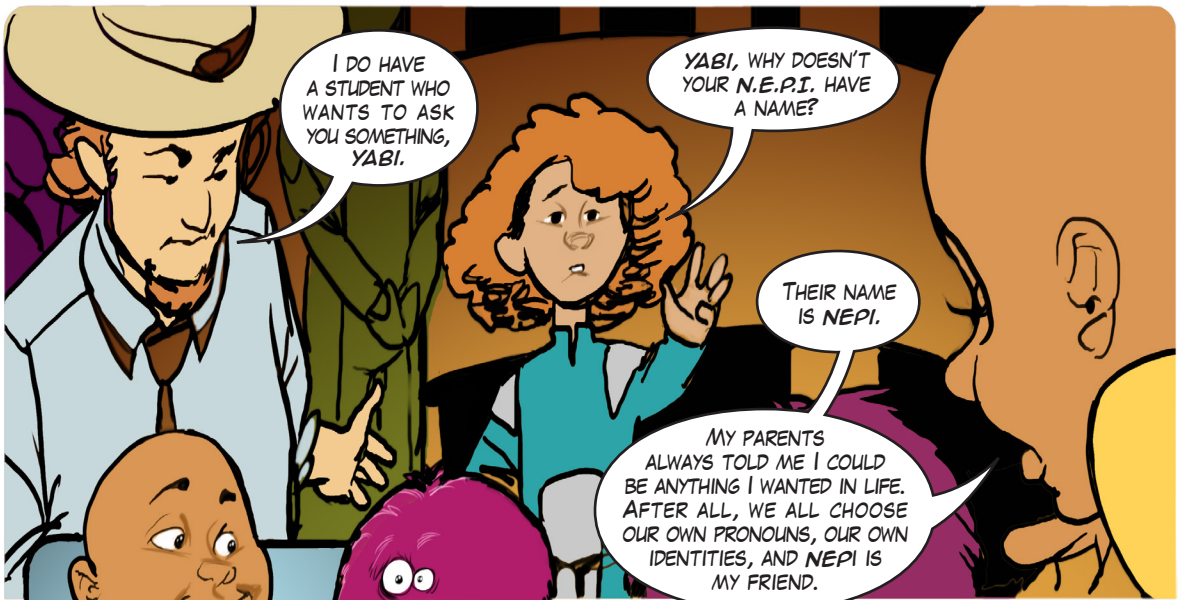
...AS WELL AS VALUABLE ENVIRONMENTAL SCIENCE LESSONS FOR A GLOBALLY CHALLENGED CLIMATE.

...AND IT'S NOT JUST THE STUDENTS. SEVERAL OF THE PARENTS AND SOME OF OUR ADULT LEARNING GROUP ARE HELPING TOO. THIS HAS BEEN A DIFFICULT TIME FOR OUR ACADEMY...



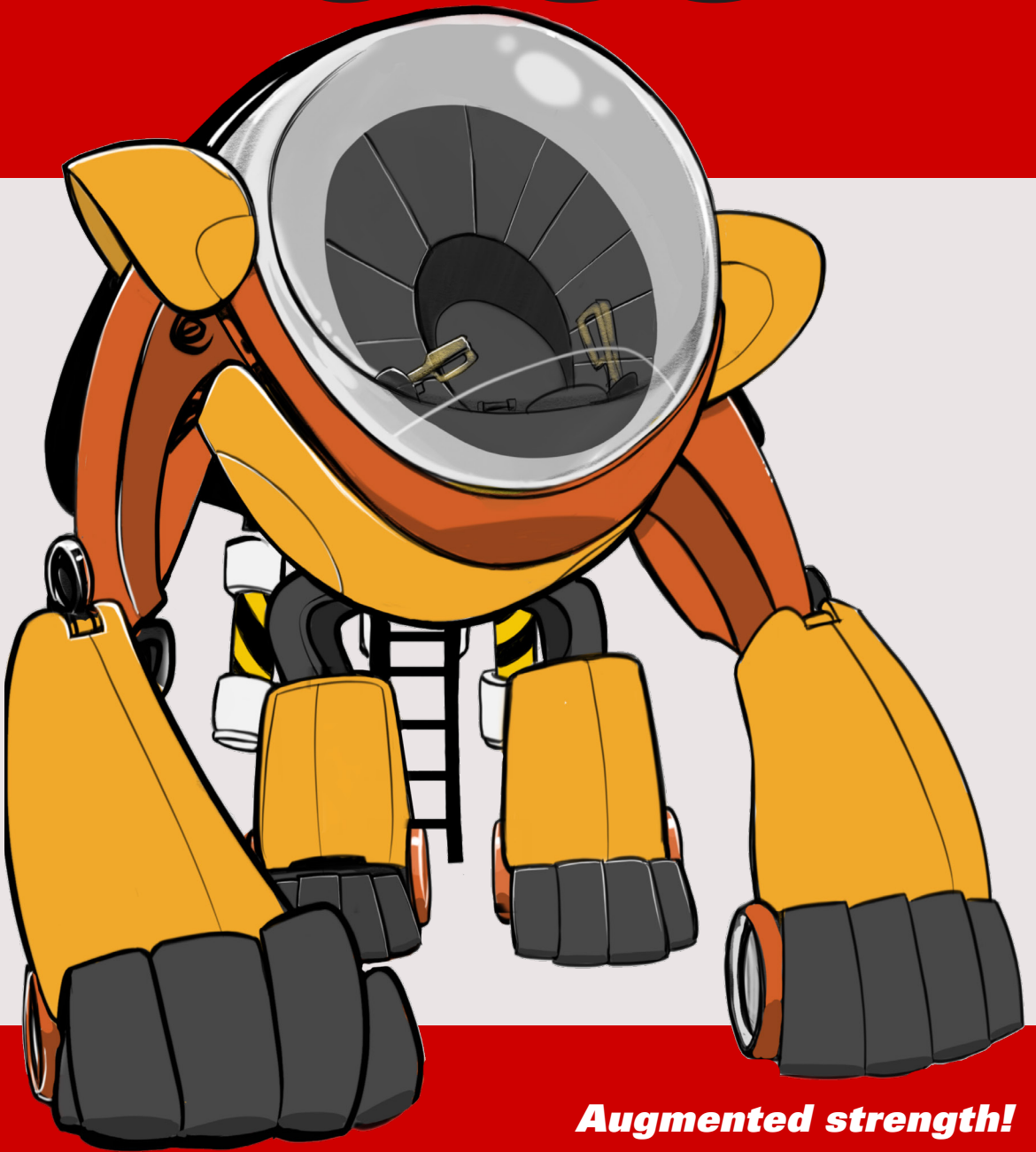
...AND WITH HELP FROM OTHER ADVANCED LEARNING CENTERS LIKE YOURS, WE CAN USE THIS AS AN OPPORTUNITY TO LEARN SO MUCH MORE.

I'M SO GLAD WE GOT TO COME ON THIS FIELD TRIP, DR. CANTOR. NEPI AND I ARE EXCITED FOR WHAT'S COMING NEXT.



**NOW YOU CAN BUILD AT SCALE!**

# **CONSTRUCTION EXO-SUIT**

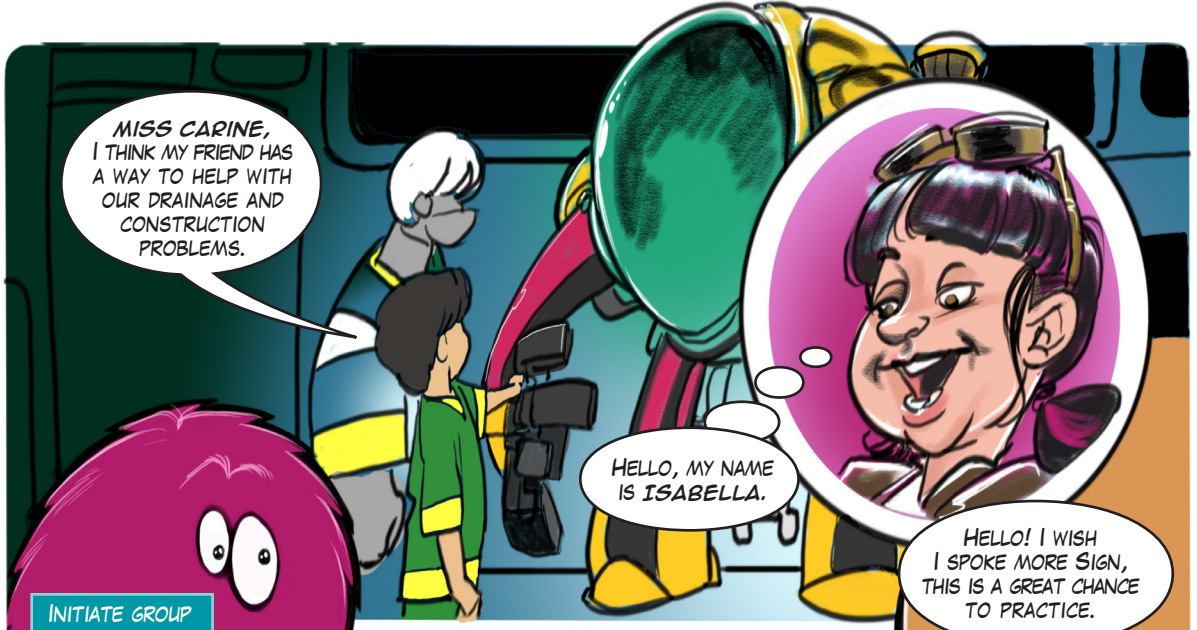


**Augmented strength!**

**3D prints construction materials in place!**

**Completely controlled by you and your N.E.P.I. A.I.!**





MISS CARINE,  
I THINK MY FRIEND HAS  
A WAY TO HELP WITH  
OUR DRAINAGE AND  
CONSTRUCTION  
PROBLEMS.

HELLO, MY NAME  
IS ISABELLA.

HELLO! I WISH  
I SPOKE MORE SIGN,  
THIS IS A GREAT CHANCE  
TO PRACTICE.

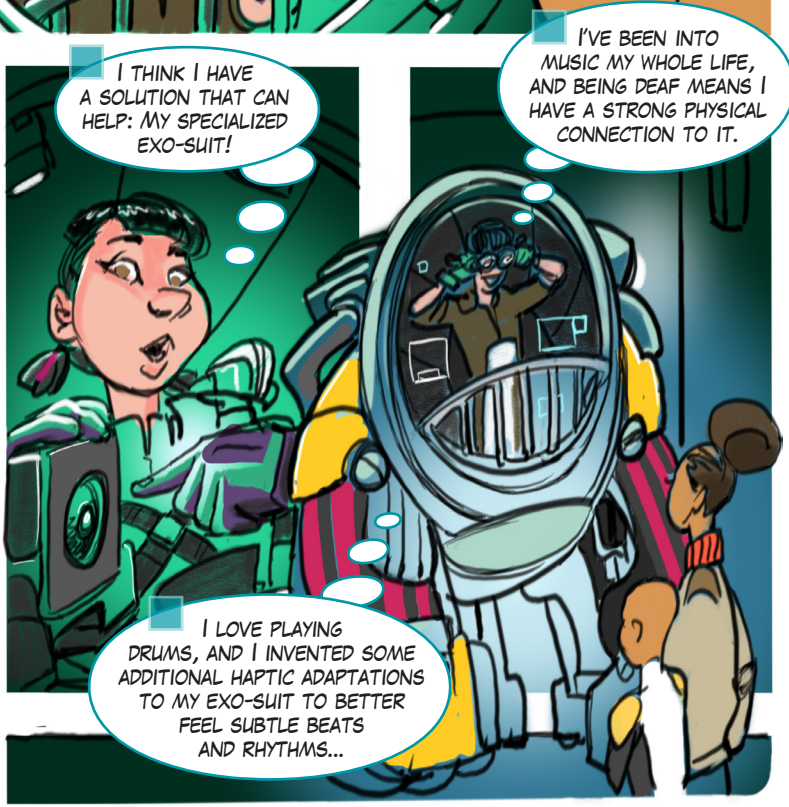
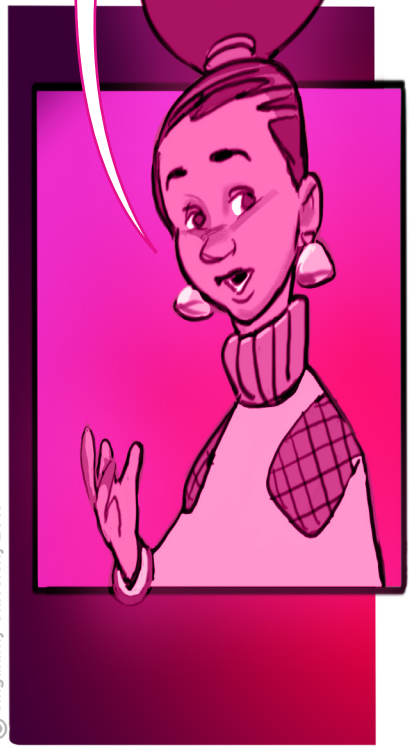
INITIATE GROUP  
TRANSLATION:

I'D LOVE  
TO HELP  
YOU PRACTICE  
YABI.

MISS CARINE,  
CARLO TELLS ME THERE  
MIGHT BE SOME PROBLEMS  
WITH PLACING THE NEW GROWN-  
BUILDINGS ON THE SCHOOL  
GROUNDS?




YES, WE'RE  
WORRIED ABOUT ALL THE  
SUBSURFACE DRAINAGE ON THE  
FIELDS. WITH THIS MUCH WATER, WE  
MAY HAVE PARTS OF THE GROUNDS  
THAT ARE UNSTABLE FOR NEW  
GROW-BUILDS.



I THINK I HAVE  
A SOLUTION THAT CAN  
HELP: MY SPECIALIZED  
EXO-SUIT!

I'VE BEEN INTO  
MUSIC MY WHOLE LIFE,  
AND BEING DEAF MEANS I  
HAVE A STRONG PHYSICAL  
CONNECTION TO IT.

I LOVE PLAYING  
DRUMS, AND I INVENTED SOME  
ADDITIONAL HAPTIC ADAPTATIONS  
TO MY EXO-SUIT TO BETTER  
FEEL SUBTLE BEATS  
AND RHYTHMS...



MY SUIT CAN SEND OUT LOW-LEVEL SOUND WAVES AND IT TRANSLATES THEIR RESPONSES TO HAPTIC PHYSICAL SIGNALS THAT I CAN FEEL.

I THINK WE CAN ADAPT THAT SONIC "FEELING" TO "LOOK" THROUGH THE GROUND.

WHAT A NOVEL IDEA, ISABELLA!

IN FACT, WE'RE STANDING ON A PART OF THE GROUNDS WITH A LOT OF SUBSURFACE DRAINAGE.


IN A REALLY SHORT SPACE OF TIME WE CAN MAKE SURE THAT NONE OF THE NEW DEVELOPMENT IS UNSTABLE, MAKING IT SAFER NOW AND IN THE FUTURE.

WE CAN USE YOUR DATA TO REINFORCE SOME PARTS OF THE GROUNDS, AND WE'LL CERTAINLY NEED TO CHANGE SOME OF OUR PLACEMENT SPOTS FOR NEW GROW-BUILDS.



I'M SO GLAD WE MET ISABELLA...

MY - NAME - IS - YABI.



YOU'RE GETTING REALLY GOOD YABI, WE'LL PRACTICE A LOT MORE WHILE YOU'RE HERE.

JUST 3 WEEKS LATER

I HAVE TO SAY, IT'S IMPRESSIVE HOW QUICKLY THE SCHOOL'S RESTORATION CAME TOGETHER.

IT WAS POSSIBLE BECAUSE THE STUDENTS AND PARENTS POOLED SKILLS AND LEARNING FROM EACH OTHER.

YES! WE HAD HELP, BUT WE ALSO HAD EACH OTHER.

