good morning and welcome to Johnson

Space Center and a special Facebook live event

I'm Brandi Dean from the public affairs office and in joining me today we have Kirk Charmin the program manager of the space station program thank you it's great to be here I'm excited to be part of this event we have an exciting event we're going to be talking soon with astronauts Joe acaba and paolo nespoli and they are going to be helping us kick off the year of education on the space station as you may know Joe is a former
teacher who taught in middle school and

math and science in Florida for several

years before coming to NASA and then

later this year one of his astronaut

classmates Ricky Arnold will also be

going to the International Space Station

he also has quite a bit of extensive

classroom experience so in recognition

of their special background as educators

this school year NASA and the crews

aboard the space station are going to be

using that special platform of the

station to really push hard to inspire

teachers and students here on the ground
maybe you can tell us a little bit about

why that seemed like a good idea for the

sure well we had a unique opportunity

this year to expand the u.s. crew

members from three to four and and then

in the in the selection of the crew

members to go fly those we we ended up

with with Joe acaba and Ricky Arnold and

of course I would say it was not chosen

that way but but but since they were

both had an educational background both

educators it just seemed like a great

fit what a great opportunity for us to
go put a renewed and perhaps a much
larger emphasis on education onboard the
International Space Station so it really
was a unique opportunity and unique
crewmembers said hey let's go do this so
I'm really excited about the opportunity
this year and I really hope that we'll
take full advantage and and have the
chance to touch many many kids and
educators across the nation
I think the way we're going to be do
that or a few of the ways when we do
that is I'm giving some extra time to
the crews to talk with students here on
the ground maybe even doubling what we
normally do and then also asking them to
do some special demonstrations that
recalling Dimon's
durations for stem the science
technology education engineering and
mathematics giving them a chance to show
what some of the science experiments
that we might want to do here on the
ground look like in space sure we you
know ISS is a fantastic laboratory it's
a laboratory like like no other and not
number one and of course we have
national labs across the United States
that do very unique things but but this
one in particular does things that are so out of the ordinary for all of us. It's just that the kid in all of us I think comes out when you get to see what goes on the International Space Station. So we grab people's attention because it's in space and then we can use that to really touch and inspire people to go to work on their education. So I think we have a really unique opportunity with this National Laboratory and with these educators this year so we'll see how it goes. I think that's got to be one of the best.
opportunities that we have to inspire

students I know I would have been amazed to have an opportunity like this when I was in school absolutely you know of course when I was in school we didn't have people living and working in space but but today we've had we've had people living and working in space for for 16 years coming up on actually coming up on 17 years and so there's there's people who were seniors in high school who've never known a time when humans weren't living and working in space and we want to
want to make sure that people know about

that and are inspired by that so this is

again it's a great opportunity and and

we have the ability we have the people

who have those skills onboard and and

we're going to take advantage of it I've

been with NASA since 1985 May 20th 1985

so you've seen a lot of changes over the

years and I'm sure the station's

involved evolved a lot under under your

leadership as well anything that you

think that would truly amaze students

that you're hoping they'll get out of

this you know the thing that's always

amazing to me anyway is the the you
think things work a certain way and it

turns out that they don't and so space

is a great opportunity to see it

certainly you can see very quickly that

certainly you can see very quickly that

they work differently up there than

they do here but even the ones

you can imagine how they work and it

turns out that they don't work that way

that's that's the really cool thing so I

I hope that we'll see that and then the

next question is well why does it work

differently than I expected and that's

where it really ties in to education

what is the physics behind what's going
on and how does that physics so that

knowledge of the physics did Allah apply
to two problems whether they're in space
or on the ground and allow us to build a
better world for all of us well we

should be hearing from the Capcom commit
calling up to the crew onboard the
station to start us off in just a second
now so we'll hold will standby for that

are you ready for the event Houston this

is station we are ready for the event

JSC PA oh this is Mission Control
Houston please call station for a voice
check Brandi Dean from Johnson Space
Center Public Affairs Office how do you hear me and this is the International Space Station we have you loud and clear.

great it is fantastic to be talking to you thank you so much for joining this morning and I just don't you know I'm also here with Kirk Shireman so we're both excited to be kicking off the year of Education in space with you guys.

we have a lot of people on Facebook live getting ready to send us in some questions and we'll be taking those and sending them up to you but first I thought I'd give Kirk a chance to say hi.
yeah good afternoon it's great to see

00:05:54,538 --> 00:06:02,279
you on board the ISS today how you guys

00:05:56,279 --> 00:06:06,929
doing how you doing Kirk we are doing

00:06:02,279 --> 00:06:09,089
great it's a you know really an honor

00:06:06,930 --> 00:06:10,410
and a privilege to be up here working on

00:06:09,089 --> 00:06:12,989
the space station we're getting a lot of

00:06:10,410 --> 00:06:15,200
science done and yeah we're having a

00:06:12,990 --> 00:06:15,199
great time

00:06:16,788 --> 00:06:22,228
excellent well thank you for being part

00:06:19,168 --> 00:06:24,299
of this you know Joe and Paolo part of

00:06:22,228 --> 00:06:26,098
the the emphasis this year on education

00:06:24,300 --> 00:06:29,490
is really because we have the expanded

00:06:26,098 --> 00:06:32,339
US OS crew and and certainly because of

00:06:29,490 --> 00:06:34,650
your skills and your unique skills and

00:06:32,339 --> 00:06:36,718
that fantastic laboratory that you have
up there so we're really excited about

the opportunities here and thank you for

being part of that

yes Kirk as you know because you managed

it this laboratory is an incredible

place outside the earth for the earth

and here we can do a lot of science a

lot of technology but a lot of education

and it's very good that we start this

year in space okay well we will jump

right into the questions we've got one

that's appropriate for the year of

Education kickoff it's coming from

pre-service teachers and faculty at the
University of Houston downtown and they

want to know as teachers and scientists

how can classroom teachers help their

students get a better understanding of

the nature of science and to do to grow

science in the classroom well that's

pretty cool we're working with the the

pre-service teachers especially having

those that are close to home there in

Houston and you know I think one of the

most important things that we can do as

educators when we're in the classroom is

to try to make things important to the

students but also tangible and so I'm
hoping that the work we can do together

will be these pre-service teachers coming up with great ideas of things

ey might want to use to inspire their students coming up with those ideas

sharing those with us and then letting us help you back in the classroom we have this here where we have some candies inside of a little plastic kind of a globe and there's lots of amazing things that you can do with something as simple as this so we're hoping that we can take advantage of the space station and your great ideas to help inspire
those students all right well we've got

00:08:23,319 --> 00:08:29,110
some questions coming in from students

00:08:25,180 --> 00:08:30,759
as well this one's from Jamil creme and

00:08:29,110 --> 00:08:33,190
they want to know how frequently you

00:08:30,759 --> 00:08:35,908
observe Aurora's and are they detectable

00:08:33,190 --> 00:08:35,909
in sunlight

00:08:40,299 --> 00:08:45,519
well Aurora's are very interesting this

00:08:43,570 --> 00:08:47,200
is my second long-duration mission and

00:08:45,519 --> 00:08:48,399
in the previous mission I was up here

00:08:47,200 --> 00:08:51,850
for about six months

00:08:48,399 --> 00:08:54,189
I think I saw twice to aurora's just a

00:08:51,850 --> 00:08:56,769
little bit faint in the horizon but this

00:08:54,190 --> 00:08:59,740
mission here is just incredible

00:08:56,769 --> 00:09:02,860
we had some incredible Aurora's lighting

00:08:59,740 --> 00:09:04,090
up the whole sky sky at night so from my
point of view they're a little bit in

unpredictable in fact they are a direct

function of the activity of the Sun and

what happened between the interaction of

the Sun and the Magnetic Earth at the

magnetic field of the earth and we saw

them with so many many many of them and

even today a little bit fainter if we go

outside in the evening almost every

night we can see some of them and have

y'all seen Aurora's from the ground if

so which do you recommend which view so

you know I'm a kid from SoCal and so we

don't get too many Aurora's down there
so it is you know one of my goal is to go somewhere where I could see it but one a pretty neat story is we were going to Kazakhstan to pick up a crew member and while we were flying we could actually see the aurora so that was pretty neat so I haven't seen it while I'm on earth I've seen it in a plane and I've seen it from here so one of my goals about you yeah I would say that I saw one in Sweden I had the occasion to be there and and and it was very peaceful to me watching this Aurora from the earth up here in space
to me it's a completely different

feeling we are spinning so fast and the

Aurora is moving so fast it changes

completely and it gives me a sense of of

something that is really active and a

little bit less peaceful to be to be

honest but spectacular for sure one of

the things I think is interesting in in

that is in the past I know some of your

crewmates have taken videos of this and

they put it to music and that's one of

the things I find fascinating is it's

really as you pointed out Paulo it's a

nomina caused by the sun which you have


to see in the darkness and yet people

272  
00:10:58,730 --> 00:11:03,080  
see art in that in that form as well so

273  
00:11:01,850 --> 00:11:05,860  
it really kind of ties everything

274  
00:11:03,080 --> 00:11:05,860  
together

275  
00:11:07,269 --> 00:11:12,049  
absolutely Kirk it's it's they're

276  
00:11:09,769 --> 00:11:14,509  
incredible the colors the shape the

277  
00:11:12,049 --> 00:11:17,149  
forms the way they go around the earth

278  
00:11:14,509 --> 00:11:19,669  
the way they spike up from Earth it's

279  
00:11:17,149 --> 00:11:23,000  
absolutely incredible we took a time

280  
00:11:19,669 --> 00:11:25,309  
lapses so we put a camera on on a window

281  
00:11:23,000 --> 00:11:27,889  
and then we let it take a picture every

282  
00:11:25,309 --> 00:11:31,099  
second and we can combine in this way

283  
00:11:27,889 --> 00:11:33,259  
thousand pictures and in in a minute or

284  
00:11:31,100 --> 00:11:35,450  
and a couple of minutes show what the

285  
00:11:33,259 --> 00:11:38,000  
camera captures in in about 15 minutes
and it's absolutely astonishing it's beautiful and if I can just add one more thing from this conversation is that for those teachers that are out there and those students that are out there you know we talk about art and a lot of times we think art is separate from the sciences and really they're not so for those people that you know feel like there are more on the artistic side you know don't be afraid of the sciences because it is an art and so it's neat when you can bring those two things together I don't know that it would
quiet count us art but it looks like

you all did an experiment recently that

thing is gonna capture a lot of schools

student attention and just to sit down

some video maybe over the weekend

but we've got a question about how does

a fidget spinner work in space so that

that may be inspired by the video you

sit down so a great question and I'm

glad we just we picked one up and a

video just went out on Friday so you can

see the space spinner that is out there

and what's really neat is of course is

wearing this microgravity environment
you can get a really cool spin going and

you can release it so you can see it'll

pretty much stay there and then if Paulo

imparts any a little bit of force on it

it will follow the vector of the force

that he's put on that so you can do all

tings and this is just a good

example of what the teachers can ask us

to do to help explain some of the

concepts that they're going to teach in

the classroom

the the little spinner it's fun and we

have a good time with it and if you

haven't seen the video yet it's pretty
fun well kind of reversing it a little

329  
00:13:18,149 --> 00:13:21,929  
bit we have a teacher Joe that wants to

330  
00:13:20,068 --> 00:13:23,219  
know what things you learned as a

331  
00:13:21,929 --> 00:13:29,399  
teacher that prepared you for being

332  
00:13:23,220 --> 00:13:32,759  
aboard the space station well I think

333  
00:13:29,399 --> 00:13:35,188  
being a school teacher is it's an

334  
00:13:32,759 --> 00:13:37,169  
awesome job but it prepares you very

335  
00:13:35,188 --> 00:13:39,719  
well maybe more than any other

336  
00:13:37,169 --> 00:13:41,639  
profession for being an astronaut as all

337  
00:13:39,720 --> 00:13:43,110  
of you teachers know you go when you

338  
00:13:41,639 --> 00:13:44,850  
start the day and you have a plan in

339  
00:13:43,110 --> 00:13:47,250  
place you think you know what you're

340  
00:13:44,850 --> 00:13:49,528  
gonna do every minute up here we start

341  
00:13:47,250 --> 00:13:51,600  
the day and we have a plan in place so

342  
00:13:49,528 --> 00:13:53,698  
it's very similar but then as soon as
those kids walk in the door and they do something or ask a question there goes your plan and so you have to be very flexible you have to be able to think on your feet and up here it's the same way where we think we have a plan and if it doesn't go quite right you have to learn how to fix it you have to work as a team and so you know being a teacher is I think I can say it might be harder than this job because we have all of Mission Control helping us and you teachers are in your classroom by yourselves and now you got to fix the problem so I think
being a teacher really prepared me for this job

Brenda Emma I am an engineer and I just look at Joe and I admire his patience because he has an enormous amount of patience with everything that happens and the capability of cope with almost anything and that's I think that comes from the dealing everyday with the situation with student with people that of course each one of them pushes you in every direction and if you're not flexible and patient you're not going anywhere seems like one of the one of
the traits to is to is to see to see

some phenomenon not through your own

eyes but through the eyes of a student

and then figure out how to explain

it so that they understand it from from

their perspective and and again I think

that ties into your life every day right

the rest of the world is down here on

the planet when you're

an experiment even with the principal

investigator you have to explain what it

means from from their perspective as

opposed from from your own and that's a

really unique skill yeah it's it's
really interesting you know as a teacher

00:15:38,089 --> 00:15:42,540
you know I think I was a terrible math
teacher for quite a few years because

00:15:40,828 --> 00:15:45,299
you know math came easy to me as a you

00:15:42,539 --> 00:15:47,759
know as a kid I liked math and you know

00:15:45,299 --> 00:15:49,498
it was pretty easy so I would I taught

00:15:47,759 --> 00:15:51,688
the kids the way I learned in the way I

00:15:49,499 --> 00:15:53,670
thought was simple to learn and it

00:15:51,688 --> 00:15:57,659
didn't work well for everybody so you

00:15:53,669 --> 00:15:57,659
really do have to look at who you're
talking to and saying it five times over

00:15:56,068 --> 00:16:01,289
again doesn't make it any clearer so we
do have to find different ways to

00:16:01,289 --> 00:16:05,099
express what we're trying to say and how
to get that concept across the thing
about that - it seems like at least for me as a student the applicability in other words what so you're learning something you're learning math or you're learning for me it was algebra you know what's the point what are we doing this for and and again I think the space station and you guys up there can really help say hey this this is why you're learning it this is why it's important it really does be able to describe the emotion of things or or the biological phenomena all these things apply and here's why so it's really the
application of the knowledge that you're gathering yeah Kirk that's exactly right and that's why we want to get the teachers involved so they can tell us what they need and we are happy to help them do that and being astronauts we are students we spend years in training to get up here and it's funny that you say that we're sometimes we're taught things and we want to step back and say okay now why do I need to know this so even as adults I think it's super important as we learn new things
alright well given the students a little
bit of taste of what it's like in space

we have a few questions on kind of
spaceflight 101 and the mala Fe school

wants to know what type of foods

astronauts eat in space

well I wish we would have a beautiful
kitchen here where we can prepare all

sorts of things I crave from it from a

pizza actually I like to have a pizza

Kirk can we have a pizza up here please

but but the truth is that it's very very
difficult to cook and to handle fluids

especially hot fluids in this kind of
but very very difficult and and

therefore the food that we have is

something that can be managed a little bit like the food that we use in the in

the military those are a meal

ready-to-eat food already prepared or a

TV what is it called a TV dinner

something like that so we have a thermo

stabilized food food we have relatable

food we have irradiated food mostly meat

and and what else whatever but

everything is contained in a bag so it's

a either you have to cut the bag open to

got to it
sometimes you suck out of the bag and

it's a it's a little bit different we're

looking forward to that pizza it's a

picnic for six months essentially but at

the end we have enough variety here so

each one of us can pick his own

preferred food and and it's actually

pretty good to tell you the truth at the

end I thought it would be worse but it's

actually not bad and I would say

tortillas are our friends up here we

don't have a lot of bread because of the

crumbs that they create but you'd

be surprised at what you can put on a
tortilla so try that at home you've been playing with your food a little bit if I think that the ball of candy in the background is any indication yeah we're astronauts and we're professionals but we're big kids as well and we like to have fun we play with food sometimes so sorry about that speaking of fun Hilary or her sixth-grade students want to know how gravity works differently in space and maybe you can give us a demonstration well there is gravity here in space but because we are falling falling down
towards the Earth and nothing is stopping us so the spacecraft is falling we are falling I'm falling everybody's falling the result is that essentially you don't feel the effect of gravity and and you can do a lot of things it's it's actually incredible what happens when you go up here in space because you come up here like a terrestrial person so with gravity in your mind and you start trying to walk but how can you walk in these conditions so so you have to to learn to walk with your hands and then when you go somewhere and you want to
stay stable you cannot use your hands

because otherwise you cannot work so you

have to use your feet and and so it's

kind of strange you walk with your hands

and stay still with your feet and not

only that you tend to walk with your

feet towards what we call the floor but

there is no floor and you have to learn

to move and to adapt and put yourself in

a way that you can actually work

effectively efficiently so you had to

become spider-man Superman you have to

become an extraterrestrial person and

it's actually fun it's one of the
discovery of space it takes few weeks I
have to say but once you manage this

it's absolutely incredible yeah Paolo

one of the things I find really

interesting too and just watching you

guys here in this this event is you know

this one of Newton's laws when you put

something in a body in motion will tend

to stay in motion and you know we know

that from school but you guys even just

holding that microphone and trying to

leave the microphone sitting in one

place you know any little tiny motion

you leave on that microphone before you

let go it stays and just drifts off
drifts often like the globe a minute ago

drifted off into another module so all

these really fundamental laws of physics

you guys live and breathe every day yeah

and there are unintended consequences

because you learn very quickly that you

just push yourself and you're going

where you want to go the fact that you

forget

that you have to stop and so at the

beginning you don't realize that and

when you hit the wall pretty fast and

you start hurting yourself you figure

out that Newton laws it's very important
here you better pay attention to it all

right we didn't close to the end of our time but one other question that did come in that we wanted to ask is anything you can tell us about your favorite teachers and subjects when you were in school well I you know I did like the sciences so that was always fun chemistry physics but my favorite class was actually my metal shop class in high school and so we could take electives and so I actually took four years of metal shop where we learned how to weld work on a lathe we were making mold we
were you know just you name it we got to

557
00:22:54,319 --> 00:22:59,509
do it and to do that as a high school

558
00:22:57,380 --> 00:23:02,419
student it was great it prepared me for

559
00:22:59,509 --> 00:23:05,210
the different jobs that I've had and as

560
00:23:02,419 --> 00:23:08,360
a teacher I reflect back on that and I

561
00:23:05,210 --> 00:23:11,808
wonder how mr. walters handled 30 high

562
00:23:08,359 --> 00:23:14,479
school kids with high powered tools with

563
00:23:11,808 --> 00:23:16,788
you know welding flames and things like

564
00:23:14,480 --> 00:23:19,610
that and you know he gave us a lot of

565
00:23:16,788 --> 00:23:19,849
responsibility as students and we loved

566
00:23:19,609 --> 00:23:22,548
that

567
00:23:19,849 --> 00:23:24,678
and we ran with it so it was a it was

568
00:23:22,548 --> 00:23:26,869
great as a student and as a teacher it

569
00:23:24,679 --> 00:23:34,850
was really neat to see to look back and

570
00:23:26,869 --> 00:23:35,899
see how he managed the classroom would
have made good astronauts

I think Mr. Walters would have been a great astronaut when you look at what we do up here every day you know a lot of it is doing repairs and it takes someone who can you know who can work with their hands who can understand a problem and find a way to to fix it but he might have been too good where he might have redone the whole space station so it's probably better that we kept them on Earth good advice

well last thing any anything you want to say or anybody have for the students
who'd be watching right now

well if you're watching we want to

thank you for coming on board and we

hope that we can share our experience

and show you how science is real how

science is fun and I would just tell any

student out there you know find that

subject those subjects that you really

love and run with them whether it's

science or not you know all of us that

are up here we have different

backgrounds but we all really enjoyed

our careers before we got here

and when you find something that you
love it's it's more enjoyable to do it
doesn't actually seem like work you get
paid and you know you may not always be
the smartest person out there like
someone has told me many times but you
can always be the one that works the
hardest so don't be afraid to work hard
and try new things I would I would take
kids that you know mad science research
these are not things for crazy people
but some of the people are crazy but but
not people out of the world we are not
you know Nobel Prize winner or geniuses
or anything we're just regular people
that have had the strength to to

have a dream and pursue it and

eventually be up here and if I made it

if Joe made it it means it's possible

everybody can do it so just just have a

dream and wake up after you had a dream

and just got it because you can actually

do it alright well thank you so much for

sharing your dream with us we look

forward to seeing a lot more as we go

through this great year of Education on

the station thank you so much yeah thank

you guys who appreciate it thanks for

joining us station this is Houston ACR

that concludes the event
station we are now resuming operational audio communications and certainly what we're trying to do on International Space Station is it's like that while we were talking to these guys they actually orbited about one third of the planet so so anyways just amazing to me that that they're seeing a third of the planet in these few minutes that we were at we were talking to them and and they can impact a third of the planet or more yeah it's amazing and amazing that they are able to take some time out for this knowing what all they won't know
what all else they've got going on sure

no Joe is getting ready for a spacewalk

that's right Friday we're gonna go

outside and and do some more work

outside it'll be the third of our of our

space looks the last one really that we

have planned until until next year so

we're looking forward to - Joe acaba and

and Randy Bresnik going outside on

Friday and I know you've also probably

got a lot of work to get back to but one

more question for you and these guys get

asked all the time you know how they

became an astronaut but how how did you
become a Space Station program manager

was that something that you had any idea

about when you were young yes absolutely

not of course when I was a kid I was

born was born in 1962 so people were

flying in space by then as a little kid

I got to see the first steps on the on

the moon which was really exciting

although you know it wasn't that that

said hey I need to go work for NASA my

in my case I was fascinated by airplanes

I loved airplanes from a small as a

small child even can remember five years

old building little balsa wood airplanes

00:27:34,538 --> 00:27:37,960

00:27:36,220 --> 00:27:40,058

00:27:37,960 --> 00:27:41,740

00:27:40,058 --> 00:27:45,220

00:27:41,740 --> 00:27:48,069

00:27:45,220 --> 00:27:50,950

00:27:48,069 --> 00:27:52,259

00:27:50,950 --> 00:27:54,970

00:27:52,259 --> 00:27:57,398

00:27:54,970 --> 00:27:59,620

00:27:57,398 --> 00:28:02,109

00:28:02,109 --> 00:28:06,129

00:28:04,179 --> 00:28:08,950

00:28:06,130 --> 00:28:11,289
and I wanted to build and fly airplanes

00:28:08,950 --> 00:28:12,700
that's what I wanted to do and so I went

00:28:11,288 --> 00:28:15,579
to school to be an engineer so I could

00:28:12,700 --> 00:28:16,870
build and fly airplanes and I had the

00:28:15,579 --> 00:28:18,369
opportunity to work on the space shuttle

00:28:16,869 --> 00:28:20,439
and so you know what better airplane

00:28:18,369 --> 00:28:22,239
then one that flies in space and on the

00:28:20,440 --> 00:28:24,759
ground and then from the Space Shuttle I

00:28:22,240 --> 00:28:26,829
I came to the space station so just one

00:28:24,759 --> 00:28:29,769
thing led to another but it's just but

00:28:26,829 --> 00:28:32,558
this I would say lifelong interest in

00:28:29,769 --> 00:28:34,028
flying and in machines that that took

00:28:32,558 --> 00:28:36,908
humans faster and higher than they've

00:28:34,028 --> 00:28:39,880
ever gone before it was my passion was

00:28:36,909 --> 00:28:41,440
my interest and I'm like like Joe and
Paolo said I guess it was really Paolo

said hey just find something that you're

passionate about and and and wake up

every day and pursue that passion

and really anything is possible it's

clear just watching you and watching

the guys alright well we are going to

wrap up now but of course you're gonna

want to keep up as we go out as we go on

with this year of Education on station a

few ways that you can do that is by

following us on Facebook you can look

for NASA JSC education and then on

Twitter right now with the with the crew
we've got on board several of them are on Twitter you can look for them at Astro acaba and that's Jericho's account or Astro underscore Paulo for Paolo Nespoli and Astro underscore Ricky who will be coming up to join with join the space station crew next year and again with a spacewalk coming up you're going to want to tune back into NASA TV for that we'll be beginning that spacewalk probably around 8:05 a.m. Eastern Time on Friday and you can watch as always you can keep up with what's
going on at the space station at

nasa.gov slash station thanks so much

for joining us thank you