



1

00:00:01,060 --> 00:00:04,930

GOOD MORNING, LADIES AND GENTLEMEN. I'M JACK DAILEY, DIRECTOR OF THE SMITHSONIAN NATIONAL

2

00:00:04,930 --> 00:00:13,060

SPACE MUSEUM. IT'S MY PLEASURE TO WELCOME YOU HERE TO THE FLAGSHIP BUILDING ON THE MALL.

3

00:00:13,060 --> 00:00:19,310

THE PROGRAM THIS MORNING IS A DOWNLINK WITH ASTRONAUTS ON THE INTERNATIONAL SPACE STATION

4

00:00:19,310 --> 00:00:25,079

IN RECOGNITION OF INTERNATIONAL EDUCATION WEEK. TODAY'S EVENT IS A COLLABORATIVE EFFORT

5

00:00:25,079 --> 00:00:30,759

AMONG THE SMITHSONIAN INSTITUTION, THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, THE

6

00:00:30,759 --> 00:00:37,020

U.S. DEPARTMENT OF EDUCATION AND THE STUDENT SPACE FLIGHT EXPERIMENTS PROGRAM OF THE NATIONAL

7

00:00:37,020 --> 00:00:42,570

CENTER FOR EARTH AND SPACE SCIENCE EDUCATION. IN ADDITION TO THE EAGER GROUP OF STUDENTS

8

00:00:42,570 --> 00:00:51,010

WE HAVE HERE IN THE MUSEUM, MORE THAN 9,557 STUDENTS WILL PARTICIPATE BY LIVE WEBCAST

9

00:00:51,010 --> 00:00:57,490

BEING MADE POSSIBLE BY NASA TELEVISION. WE HOPE THIS MEMORABLE EDUCATIONAL EXPERIENCE

10

00:00:57,490 --> 00:01:08,299

WILL INSPIRE MANY OF YOU IN THE PROGRAM. OUR LOCATION FOR TODAY'S PROGRAM, THE MOVING BEYOND

11

00:01:08,299 --> 00:01:14,720

EARTH GALLERY IS A PERFECT SETTING BECAUSE
IT EXPLORES THE HUMAN SPACE FLIGHT WITH SPECIAL

12

00:01:14,720 --> 00:01:22,560

ATTENTION TO THE SHUTTLE ERA. THIS IS ONE
OF THE MOST DYNAMIC GALLERIES IN OUR MUSEUM.

13

00:01:22,560 --> 00:01:28,549

ALONG WITH THE ARTIFACTS AND INTERACTIVE DISPLAYS,
IT SERVES AS A LOCATION FOR LIVE PERFORMANCES

14

00:01:28,549 --> 00:01:34,979

AS WELL AS TELEVISION BROADCASTS AND WEBCASTS
SUCH AS WE'RE DOING TODAY. THE SPONSOR OF

15

00:01:34,979 --> 00:01:40,560

THE MOVING BEYOND EARTH EXHIBITION IS THE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION.

16

00:01:40,560 --> 00:01:46,450

THE SMITHSONIAN INSTITUTION AND NASA HAVE
BEEN WORKING TOGETHER FOR DECADES. IN 1966,

17

00:01:46,450 --> 00:01:52,639

THE SPACE ACT AGREEMENT ESTABLISHED THE SMITHSONIAN
AS THE OFFICIAL REPOSITORY OF THE NATION'S

18

00:01:52,639 --> 00:02:00,259

SPACE ARTIFACTS. IN APRIL, NASA DELIVERED
THE SPACE SHUTTLE "DISCOVERY" TO OUR MUSEUM

19

00:02:00,259 --> 00:02:09,289

SITE AT DULLES AIRPORT. THE SMITHSONIAN INSTITUTION
HAS EMBARKED ON AN AMBITIOUS PLAN THAT PUTS

20

00:02:09,289 --> 00:02:17,400

ITS ORIGINAL MANDATE, THE INCREASE IN DIFFUSION
OF KNOWLEDGE IN A NEW LIGHT, EMPHASIZING EDUCATION.

21

00:02:17,400 --> 00:02:23,650

OUR PLAN ALSO PROMOTES THE BENEFITS OF COLLABORATION.
AND TODAY'S EVENT IS AN EXCELLENT EXAMPLE

22

00:02:23,650 --> 00:02:29,849

OF BOTH COLLABORATION AND EDUCATION. AND IT'S
OUR HONOR TO WORK WITH THE DEPARTMENT OF EDUCATION.

23

00:02:29,849 --> 00:02:35,640

IT IS NOW MY PLEASURE TO INTRODUCE THE DEPUTY
SECRETARY OF THE U.S. DEPARTMENT OF EDUCATION,

24

00:02:35,640 --> 00:02:47,269

MR. TONY MILLER.

25

00:02:47,269 --> 00:02:53,659

THANK YOU VERY MUCH. REALLY, IT IS MY PLEASURE
TO BE WITH YOU ALL THIS MORNING. MY NAME IS

26

00:02:53,659 --> 00:02:59,400

TONY MILLER AND I AM THE DEPUTY SECRETARY
AT THE DEPARTMENT OF EDUCATION. AND I HOPE

27

00:02:59,400 --> 00:03:05,260

YOU ALL ARE AS EXCITED AS I AM TO BE HERE.
I WANT TO THANK IN PARTICULAR THE JOHNSON

28

00:03:05,260 --> 00:03:10,659

SPACE CENTER, TEACHING FROM SPACE OFFICE WHO
WE PARTNERED WITH OVER THE LAST TEN YEARS

29

00:03:10,659 --> 00:03:16,019

AND WAS RESPONSIBLE TODAY FOR BRINGING US
THE DOWNLINK AND ALLOWING US TO PARTICIPATE.

30

00:03:16,019 --> 00:03:22,090

I ALSO WANT TO THANK THE AARON SPACE MUSEUM.
I CAN'T THINK OF A MORE FITTING PLACE THAN

31

00:03:22,090 --> 00:03:27,080

TO BE HERE FOR TODAY'S EVENT. NOW, IN JUST
A FEW MINUTES, WE'LL BE TALKING WITH THE SPACE

32

00:03:27,080 --> 00:03:33,069

STATION COMMANDER, SUNITA WILLIAMS. SHE HOLDS
THE WORLD RECORD FOR THE WOMAN WHO HAS SPENT

33

00:03:33,069 --> 00:03:39,290

THE MOST TIME IN SPACE. WE'LL ALSO BE TALK,
NASA ASTRONAUT KEVIN FORD. SO I HOPE YOU HAVE

34

00:03:39,290 --> 00:03:46,170

YOUR QUESTIONS READY. WHILE WE'RE STILL WAITING
FOR THE SPACE STATION TO BEGIN, THEY NEED

35

00:03:46,170 --> 00:03:51,290

TO GET IN RANGE THAT WE CAN COMMUNICATE FOR
THOSE OF YOU WHO UNDERSTAND THE SPACE COMMUNICATION

36

00:03:51,290 --> 00:03:55,799

THAT WE'LL LEARN ABOUT TODAY. I WANT TO USE
THE NEXT FEW MOMENTS TO TALK TO THE STUDENTS

37

00:03:55,799 --> 00:04:00,930

IN THE ROOM AND ALMOST THE 10,000 STUDENTS
IN THEIR COMMUNITIES IN THE UNITED STATES

38

00:04:00,930 --> 00:04:08,959

AND CANADA WHO ARE JOINING US ONLINE. NOW,
WHEN I WAS YOUR AGE, WHICH WAS CLEARLY A LITTLE

39

00:04:08,959 --> 00:04:15,439

WHILE AGO, I REMEMBER WATCHING STAR TREK AND
SEEING THE LATEST JAMES BOND MOVIE AND I WOULD

40

00:04:15,439 --> 00:04:19,299

SEE ALL THESE AMAZING GADGETS. AND I WOULD
WONDER, WOW, WILL THOSE THINGS EVER BE REAL?

41

00:04:19,299 --> 00:04:26,300

WILL I BE ABLE TO DO THE KINDS OF THINGS I
SEE IN MOVIES AND ON TV INSPECT NOW IT'S REMARKABLE

42

00:04:26,300 --> 00:04:30,919

THAT I TAKE FOR GRANTED SOME OF THOSE VERY
THINGS THAT SEEMS TO BE SO WAY OUT THERE AND

43

00:04:30,919 --> 00:04:36,080

FUTURISTIC WHEN I WAS YOUR AGE. THINGS LIKE
PERSONAL COMPUTERS, PERSONAL ENTERTAINMENT

44

00:04:36,080 --> 00:04:41,910

DEVICES. SO THINK ABOUT IT AND ASK YOURSELF,
WHAT ARE THE THINGS TODAY THAT YOU THINK ABOUT

45

00:04:41,910 --> 00:04:49,520

SEEMED WAY FUTURISTIC, ALMOST HARD TO IMAGINE?
THINK ABOUT THOSE THINGS. WHICH ONES OF THOSE

46

00:04:49,520 --> 00:04:55,330

DO YOU THINK WILL BE A REGULAR PART OF YOUR
LIFE WHEN YOU'RE AN ADULT? I BRING THIS UP

47

00:04:55,330 --> 00:05:00,350

BECAUSE IT'S VERY LIKELY THAT SOME OF YOU,
SOME OF YOU RIGHT HERE IN THIS ROOM WILL BE

48

00:05:00,350 --> 00:05:06,080

THE ONES TO CREATE THE EQUIVALENT OF THE NEXT
CELL PHONE, CREATE THE INTERNET, TO CREATE

49

00:05:06,080 --> 00:05:12,620

THE NEXT TABLET TO BRING ABOUT SCIENTIFIC
ADVANCES THAT WILL HELP US SOLVE GLOBAL PROBLEMS

50

00:05:12,620 --> 00:05:18,430

FOR BEAM PEOPLE ALL OVER THE WORLD. YOU'RE
GROWING UP IN AN EXCITING TIME, BUT ALSO A

51

00:05:18,430 --> 00:05:22,360

TIME WHEN WE ARE FACING SOME BIG CHALLENGES
THAT ARE GOING TO REQUIRE THE BEST THINKING

52

00:05:22,360 --> 00:05:31,570

INTELLECTUALLY, THE BEST THINKING CREATIVELY,
AND FRANKLY, A REAL SENSE OF HUMANITY. AND

53

00:05:31,570 --> 00:05:36,830

I WANT TO STRESS TO YOU, THEN, THE IMPORTANCE
OF YOUR EDUCATION. AND THE NEED TO BE PHYSICALLY

54

00:05:36,830 --> 00:05:42,810

FIT. BECAUSE BEING A HEALTHY CITIZEN IS A
COMBINATION OF A HEALTHY BODY AND A STRONG

55

00:05:42,810 --> 00:05:52,780

MIND. SO SINCE TAKING MY CURRENT ROLE HERE,
I HELPED TO LEAD THE IMPROVEMENT OF THE U.S.

56

00:05:52,780 --> 00:05:57,980

EDUCATION SYSTEM. NOW, IN THAT ROLE, I'VE
HAD THE PLEASURE OF MEETINGS WITH MY COLLEAGUES

57

00:05:57,980 --> 00:06:03,000

FROM COUNTRIES FROM ALL AROUND THE WORLD.
THE CONVERSATIONS WE'VE HAD HAVE SHOWN ME

58

00:06:03,000 --> 00:06:11,780

THAT THE CHALLENGES WE FACE, THEY'RE THE SAME
IN THE U.S., IN CHINA, IN BRAZIL AND RUSSIA.

59

00:06:11,780 --> 00:06:16,080

WE ALL AGREE THAT IT'S EDUCATION THAT WILL
LEAD KIDS OUT OF POVERTY AND THAT WILL GIVE

60

00:06:16,080 --> 00:06:23,430

YOU A CHANCE. WE RECOGNIZE THAT WHETHER YOU
WANT TO BE AN ASTRONAUT OR A DOCTOR OR A TEACHER

61

00:06:23,430 --> 00:06:30,300

OR A TECHNICIAN, WHATEVER INSPIRES YOU, THAT
YOU MUST VALUE YOUR EDUCATION AND YOUR HEALTH

62

00:06:30,300 --> 00:06:36,330

AND THE ROLE THAT BOTH WILL PLAY IN OPENING
UP OPPORTUNITIES FOR YOU TO FOLLOW YOUR PASSION.

63

00:06:36,330 --> 00:06:41,820

AND AS THE DEPUTY SECRETARY OF EDUCATION,
FRANKLY AS A FATHER, I HAVE THE SAME HOPE

64

00:06:41,820 --> 00:06:50,139

FOR YOU THAT I HAVE FOR MY OWN SON. AND THAT'S
BOTH YOU AND HE CAN GROW INTO THE GLOBAL CITIZENS

65

00:06:50,139 --> 00:06:57,139

WHO ARE ABLE TO PURSUE THEIR DREAMS AT HOME
AND ABROAD OR, FRANKLY, EVEN IN OUTER SPACE.

66

00:06:57,139 --> 00:07:01,330

I HOPE YOU'LL TAKE SOME TIME TO THANK YOUR
TEACHERS. I'M SURE BOTH OF THESE ASTRONAUTS

67

00:07:01,330 --> 00:07:07,099

WILL TELL YOU THAT THEY HAD SOME PRETTY ENGAGING
MATH AND SCIENCE TEACHERS WHO INSPIRED THEM

68

00:07:07,099 --> 00:07:12,970

TO PURSUE CAREERS IN SCIENCE AND TECHNOLOGY,
ENGINEERING AND MATH, WHAT WE CALL S.T.E.M.

69

00:07:12,970 --> 00:07:16,660

SO IT'S IMPORTANT THAT THE ROLE THAT THE TEACHERS
AND YOUR PARENTS HAVE BEEN PLAYING. THEY PLAY

70

00:07:16,660 --> 00:07:24,120

A VERY IMPORTANT ROLE. AND I HOPE THAT YOU
WILL BE ENCOURAGED AS YOU PURSUE YOUR CAREERS

71

00:07:24,120 --> 00:07:29,430
IN S.T.E.M. AND THINK ABOUT BECOMING THE NEXT
SET OF TEACHERS TO INSPIRE FUTURE GENERATIONS

72
00:07:29,430 --> 00:07:36,409
OF INNOVATORS AND DREAMERS. SPEAKING OF INNOVATORS,
AN EXCITING PART OF TODAY'S EVENT IS THAT

73
00:07:36,409 --> 00:07:41,610
THIS YEAR WE'RE WORKING WITH THE NATIONAL
CENTER FOR EARTH AND SPACE SCIENCE EDUCATION

74
00:07:41,610 --> 00:07:49,300
TO SEE STUDENTS WORK ACTUALLY IN ACTION. THIS
UNIQUE SPACE FLIGHT EXPERIMENTAL PROGRAM GIVES

75
00:07:49,300 --> 00:07:53,570
STUDENTS AROUND THE WORLD A CHANCE TO BRING
THEIR SCIENCE EXPERIMENTS TO MICROGRAVITY

76
00:07:53,570 --> 00:08:01,229
INTO OUTER SPACE. SO I WANT TO THANK YOU TODAY
FOR ALLOWING ME TO SHARE THIS MOMENT WITH

77
00:08:01,229 --> 00:08:16,860
YOU. NOW, LET ME HEAR, WHO IS READY TO TALK
WITH THE SPACE STATION? ARE YOU READY?

78
00:08:16,860 --> 00:08:35,990
STATION, THIS IS HOUSTON. ARE YOU READY FOR
THE EVENT?

79
00:08:35,990 --> 00:08:39,740
YES, WE ARE READY.

80
00:08:39,740 --> 00:08:44,870
HOUSTON, THIS IS STATION. WE ARE READY FOR
THE EVENT.

81
00:08:44,870 --> 00:08:51,250

GREAT. NATIONAL AIR AND SPACE MUSEUM, THIS
IS MISSION CONTROL HOUSTON. PLEASE CALL STATION

82

00:08:51,250 --> 00:08:57,710

FOR A VOICE CHECK.

83

00:08:57,710 --> 00:09:04,580

STATION? THIS IS DEPUTY SECRETARY TONY MILLER
ALONG WITH STUDENTS, SCIENTISTS PARTICIPATING

84

00:09:04,580 --> 00:09:12,500

IN THE STUDENT SPACE FLIGHT EXPERIMENT PROGRAM.
HOW DO YOU HEAR ME?

85

00:09:12,500 --> 00:09:24,410

WE HEAR YOU LOUD AND CLEAR ABOARD THE INTERNATIONAL
SPACE STATION. WELCOME ABOARD. I WOULD TELL

86

00:09:24,410 --> 00:09:29,300

YOU MY COMMANDER IS UPSIDE DOWN, BUT PERHAPS
IT'S THE CAMERA THAT WAS UPSIDE DOWN AND ME.

87

00:09:29,300 --> 00:09:37,880

IT IS VERY EXCITE TO GO BE HERE AND WE'RE
REALLY LOOKING FORWARD TO HAVING OUR STUDENTS

88

00:09:37,880 --> 00:09:42,310

TALK WITH YOU AND LEARN ABOUT WHAT IT'S LIKE
TO BE IN SPACE AND THEY CAN ASK YOU SOME OF

89

00:09:42,310 --> 00:09:45,120

THEIR QUESTIONS.

90

00:09:45,120 --> 00:09:53,191

IT'S GREAT TO BE HERE AT THE SMITHSONIAN WITH
YOU AND WHEN YOU'RE UPSIDE DOWN OR RIGHT SIDE

91

00:09:53,191 --> 00:09:55,310

UP, YOUR HAIR STILL SANDS ON END.

92

00:09:55,310 --> 00:10:00,850

SUNI, THIS IS LELAND. YOU AT LEAST HAVE SOME
HAIR.

93

00:10:00,850 --> 00:10:03,810

HEY, KEVIN.

94

00:10:03,810 --> 00:10:05,290

OKAY.

95

00:10:05,290 --> 00:10:16,800

I KNOW YOU WEREN'T TALKING ABOUT ME, LELAND.
I THINK YOU WERE TALKING ABOUT YOURSELF, RIGHT?

96

00:10:16,800 --> 00:10:22,870

DEFINITELY, KEVIN.

97

00:10:22,870 --> 00:10:30,940

IS THERE A TIME LIMIT THAT YOU'RE ALLOWED
TO STAY IN SPACE?

98

00:10:30,940 --> 00:10:34,589

THAT'S A VERY INTERESTING QUESTION. YOU KNOW,
USUALLY WE'RE UP HERE ABOUT SIX MONTHS BECAUSE

99

00:10:34,589 --> 00:10:39,290

THAT'S THE LIFETIME\h-- PRESIDENT LIFETIME
OF THE SAWYER SPACECRAFT WHICH IS HOW WE GOT

100

00:10:39,290 --> 00:10:45,220

UP HERE AND THE WAY WE'RE GETTING HOME. BUT
WE'RE THINKING ABOUT NOW IN THE NEAR FUTURE

101

00:10:45,220 --> 00:10:51,070

HAVING PEOPLE STAY UP FOR LONGER, POSSIBLY
A YEAR,\h.THEN WE CAN DO ALL SORTS OF LONG-TERM

102

00:10:51,070 --> 00:10:55,870

SCIENCE EXPERIMENTS ON THEM AND HAVE THEM

BE VERY EXPERIENCED WHEN THEY'RE UP HERE,

103

00:10:55,870 --> 00:11:02,579

SORT OF LEADING DOWN THE PATH IN OUR NEXT
STEP, LEAVING LOW EARTH ORBIT. SO YES AND

104

00:11:02,579 --> 00:11:11,120

NO I THINK IS THE ANSWER TO YOUR QUESTION.

105

00:11:11,120 --> 00:11:18,380

THANK YOU, ISS. OUR NEXT QUESTION COMES FROM
CALLOWAY AND PLEASANTTON, NEBRASKA. NEBRASKA,

106

00:11:18,380 --> 00:11:21,430

GO AHEAD WITH YOUR QUESTION.

107

00:11:21,430 --> 00:11:25,890

WE READ THAT BEING IN SPACE CAUSES FLUID TO
SWELL IN YOUR BRAIN AND INCREASES PRESSURE

108

00:11:25,890 --> 00:11:33,209

ON YOUR EYES. CAN YOU DESCRIBE THIS FEELING
FOR US?

109

00:11:33,209 --> 00:11:39,279

ABSOLUTELY, IT'S TRUE. YOU'RE SO USED TO BEING
IN THE ONE GRAVITY ENVIRONMENT THAT YOU'RE

110

00:11:39,279 --> 00:11:45,029

ON IN EARTH. AND YOUR MUSCLES AND YOUR VASCULAR
SYSTEM COMPENSATES FOR THAT AND KEEPS THE

111

00:11:45,029 --> 00:11:48,220

BLOOD PRESSURE USUALLY HIGH IN YOUR HEAD.
SO WHEN YOU LOSE THE GRAVITY AND WHEN YOU

112

00:11:48,220 --> 00:11:53,160

COME TO SPACE, THE BLOOD PRESSURE NATURALLY
INCREASES IN YOUR HEAD BECAUSE IT DOESN'T

113
00:11:53,160 --> 00:11:56,870
HAVE TO PUMP AGAINST GRAVITY ANY MORE. SO
FOR THE FIRST COUPLE OF WEEKS, I'VE BEEN HERE

114
00:11:56,870 --> 00:12:04,380
ABOUT MAYBE THREE OR 5 1/2 WEEKS OR SOMETHING
LIKE THAT, IN SPACE, THAT IS. WHEN I FIRST

115
00:12:04,380 --> 00:12:08,630
GOT HERE, I FELT THE SWELLING IN MY HEAD AND
I FELT A LITTLE BIT OF CONGESTION. IT GOES

116
00:12:08,630 --> 00:12:13,600
AWAY WITH A FEW WEEKS' TIME, THOUGH, AND YOUR
BODY ADAPTS TO IT VERY WELL. IT'S ONE OF THOSE

117
00:12:13,600 --> 00:12:19,610
THINGS THAT ARE INITIALLY WITH YOU DURING
YOUR SPACE FLIGHT AND THE BODY COMPENSATES.

118
00:12:19,610 --> 00:12:30,699
OKAY. THANK YOU, ISS. OUR NEXT QUESTION COMES
FROM PRECIDIO, TEXAS. GO AHEAD WITH YOUR QUESTION.

119
00:12:30,699 --> 00:12:43,470
WHAT ADVICE CAN YOU GIVE YOUNG KIDS LIKE ME
ABOUT FULFILLING OUR DREAMS?

120
00:12:43,470 --> 00:12:47,410
ISS, DID YOU COPY?

121
00:12:47,410 --> 00:12:53,700
THE QUESTION WAS WHAT TO TELL KIDS LIKE YOU
WHO WANT TO LIVE AND FULFILL YOUR DREAMS.

122
00:12:53,700 --> 00:12:56,639
IS THAT CORRECT?

123
00:12:56,639 --> 00:12:58,760

THAT IS CORRECT.

124
00:12:58,760 --> 00:13:06,459
OKAY. WELL, LET ME JUST TELL YOU A QUICK LITTLE
STORY ABOUT MYSELF. I SORT OF FELT THAT I

125
00:13:06,459 --> 00:13:11,260
WAS A LITTLE BIT IN SECOND PLACE MY WHOLE
LIFE, YOU KNOW, SWIMMING, I DIDN'T GET INTO

126
00:13:11,260 --> 00:13:17,339
A COLLEGE THAT I WANTED TO, MY FIRST CHOICE.
I DIDN'T GET TO FLY JETS, I FLEW HELICOPTERS.

127
00:13:17,339 --> 00:13:23,380
SO I DIDN'T ALWAYS GET TO DO EXACTLY WHAT
I WANTED. BUT YOU KNOW WHAT? THE PATH THAT

128
00:13:23,380 --> 00:13:28,230
I ENDED UP TAKING GOT ME REALLY INTERESTED
IN LEARNING ABOUT HOW HELICOPTERS WORKED WHICH

129
00:13:28,230 --> 00:13:32,910
SENT ME TO TEST PILOT SCHOOL WHICH GOT ME
INTERESTED IN BEING AN ASTRONAUT. SO THE POINT

130
00:13:32,910 --> 00:13:37,860
OF MY STORY IS HERE AND WHAT TO TELL KIDS
ABOUT LIVING THEIR DREAMS IS, YOU KNOW, YOU'RE

131
00:13:37,860 --> 00:13:41,240
GOING TO BE DIS APPOINTED ALONG THE WAY, BUT
THAT'S OKAY BECAUSE IT'S GOING TO OPEN NEW

132
00:13:41,240 --> 00:13:46,670
DOORS AND NEW THINGS FOR YOU TO THINK ABOUT
AND LEARN ABOUT. JUST HAVE YOUR EYES WIDE

133
00:13:46,670 --> 00:13:50,600
OPEN AND GET READY FOR ALL THOSE CHALLENGES.

BECAUSE THEY'LL BE OUT THERE AND THEY'LL BE

134

00:13:50,600 --> 00:13:57,880

FUN. THE REWARDS ARE GREAT IF YOU TRY HARD,
WORK HARD AND DO YOUR BEST.

135

00:13:57,880 --> 00:14:05,450

THANK YOU, ISS. OKAY. UP NEXT, OUR QUESTION
COMES FROM VALLEY CENTER, KANSAS. VALLEY CENTER,

136

00:14:05,450 --> 00:14:06,450

GO AHEAD WITH YOUR QUESTION.

137

00:14:06,450 --> 00:14:16,660

THANK YOU. MY QUESTION IS, WAS THERE ANYTHING
YOU WERE NOT PREPARED FOR WHEN YOU FIRST WENT

138

00:14:16,660 --> 00:14:18,240

INTO SPACE?

139

00:14:18,240 --> 00:14:25,060

WELL, THE FIRST TIME I CAME INTO SPACE, THE
ONE THING I REALLY WASN'T PREPARED FOR AND

140

00:14:25,060 --> 00:14:29,949

I'M NOT SURE ANYBODY CAN BE TOTALLY PREPARED
FOR IT IS THAT YOU ARE IN A PLACE NOW WHERE

141

00:14:29,949 --> 00:14:34,890

THERE IS NO UP AND DOWN. YOUR ENTIRE LIFE,
EVEN WHEN YOU WAKE UP IN THE MORNING BEFORE

142

00:14:34,890 --> 00:14:38,899

YOU OPEN YOUR EYES, YOU KNOW WHICH WAY IS
UP AND WHICH WAY IS DOWN. EVERYTHING IN YOUR

143

00:14:38,899 --> 00:14:45,640

HOUSE IS BUILT FOR UP AND DOWN, YOUR WALLS,
THE WAY YOUR FAUCETS WORK. EVERYTHING IS BASED

144
00:14:45,640 --> 00:14:50,410
AROUND GRAVITY. UP HERE, YOU CAN BE IN ANY
ORIENTATION, YOU CAN GET USED TO FLYING THROUGH

145
00:14:50,410 --> 00:14:54,949
A MODULE USING THE CEILING AS A FLOOR OR THE
WALL AS A FLOOR IF YOU'D LIKE TO TO GET YOUR

146
00:14:54,949 --> 00:15:02,650
ORIENTATIONS. MANY TIMES, YOU'LL FIND YOURSELF
LOST. IF YOU DROP SOMETHING, INSTEAD OF GOING

147
00:15:02,650 --> 00:15:07,820
TO THE FLOOR, IT CAN GO IN SIX DIFFERENT DIRECTIONS
AND IT'S HARD TO FIND AND KEEP TRACK OF THINGS.

148
00:15:07,820 --> 00:15:11,620
I WOULD SAY THAT'S THE ONE MOST CONFUSING
THINGS I WASN'T PREPARED FOR WHEN I CAME TO

149
00:15:11,620 --> 00:15:15,079
SPACE THE FIRST TIME.

150
00:15:15,079 --> 00:15:26,110
THANK YOU, ISS. OKAY. UP NEXT IS HILO, HAWAII.
HILO, GO AHEAD WITH YOUR QUESTION, PLEASE.

151
00:15:26,110 --> 00:15:34,340
ALOHA. WHAT ARE SOME OF THE ADVANCEMENTS MADE
IN ENGINEERING AND SCIENCE USED IN RESEARCH

152
00:15:34,340 --> 00:15:42,150
CONDUCTED ABOARD THE INTERNATIONAL SPACE STATION
AND WHO PROFITS FROM THESE?

153
00:15:42,150 --> 00:15:46,190
THAT'S A GREAT QUESTION AND I WILL GIVE YOU
TWO EXAMPLES. YOU KNOW, WE HAVE A WATER PROCESSING

154

00:15:46,190 --> 00:15:54,850

SYSTEM HERE WHICH IN SHORT TERMS ESSENTIALLY
TURNS PEE BACK INTO DRINKING WATER. SO, YOU

155

00:15:54,850 --> 00:16:00,029

KNOW, IT'S REALLY PUTTING IT THROUGH THE PACES
TO TRY TO MAKE NOT SO NICE WATER TURNED INTO

156

00:16:00,029 --> 00:16:05,160

CLEAN DRINKING WATER. SOME OF THAT TECHNOLOGY
HAS BEEN USED ALL OVER THE WORLD, PARTICULARLY

157

00:16:05,160 --> 00:16:10,550

IF PLACES WHERE WE'VE HAD NATURAL DISASTERS,
A SMALLER VERSION TO CLEAN THE WATER SO PEOPLE

158

00:16:10,550 --> 00:16:15,699

COULD HAVE REALLY NICE, GOOD, CLEAN DRIPPINGING
WATER AND HELPING THEM OUT IN A MORE AFFORDABLE

159

00:16:15,699 --> 00:16:20,680

WAY TO BE ABLE TO DO THAT. OTHER THINGS WE'RE
DOING UP HERE THAT ARE GOING TO HELP US IN

160

00:16:20,680 --> 00:16:25,050

THE SCIENCE AND SPACE FIELD, OF COURSE, ARE
THINGS LIKE CAPILLARY FLOW WHICH ARE GOING

161

00:16:25,050 --> 00:16:32,220

TO HELP US MAKE BETTER ENGINES, MAYBE THE
ENGINES THAT DON'T NEED PUMPS THAT TAKE ADVANTAGE

162

00:16:32,220 --> 00:16:36,420

OF THE CAPILLARY FLOW AND MICROGRAVITY. SO
THAT'S JUST A COUPLE OF THINGS THAT WE'RE

163

00:16:36,420 --> 00:16:41,600

DOING ON BOARD THE SPACE STATION THAT BENEFIT
FOLKS BACK ON THE GROUND AS WELL AS ADVANCEMENTS

164

00:16:41,600 --> 00:16:47,540
IN TECHNOLOGY AND SCIENCE IN SPACE.

165
00:16:47,540 --> 00:16:54,450
THANK YOU, ISS. UP NEXT IS PORTLAND, OREGON.
PORTLAND, PLEASE GO AHEAD WITH YOUR QUESTION.

166
00:16:54,450 --> 00:17:03,149
THANK YOU. OUR QUESTION, HOW MUCH CONTROL
DO YOU HAVE OVER THE SPACE STATION? FOR EXAMPLE,

167
00:17:03,149 --> 00:17:11,010
DO YOU USE ROCKETS TO MOVE THE STATION TO
PROTECT YOU FROM SPACE DEBRIS?

168
00:17:11,010 --> 00:17:15,640
YOU KNOW, THAT'S A GREAT QUESTION. IN GENERAL,
WE DON'T REALLY HAVE TO DO MUCH AT ALL. THE

169
00:17:15,640 --> 00:17:19,070
SPACE STATION SORT OF TAKES CARE OF ITSELF
AS WELL AS THE GROUND CONTROLLERS WHO ARE

170
00:17:19,070 --> 00:17:24,440
ALWAYS WATCHING THE SPACE STATION TELEMETRY
AND MAKING SURE WE'RE ALL OKAY UP HERE. WHAT

171
00:17:24,440 --> 00:17:29,380
THEY DO ALSO ON THE GROUND IS TRACK BIG SPACE
DEBRIS OR SPACE DEBRIS THAT'S ABOUT A SOFTBALL

172
00:17:29,380 --> 00:17:34,660
SIZE. AND WE, OF COURSE, DON'T WANT TO GET
HIT BY THAT. AND SO WE CAN ACTUALLY CHANGE

173
00:17:34,660 --> 00:17:40,060
THE ATTITUDE OF THE SPACE STATION TO AVOID
THAT. AND WE ALSO CAN DO A REBOOST, WHICH

174
00:17:40,060 --> 00:17:45,801

WILL BRING US TO A HIGHER ALTITUDE SO WE CAN
AVOID THAT DEBRIS, AS WELL. HERE ON THE SPACE

175

00:17:45,801 --> 00:17:52,170

STATION OURSELVES, YOU KNOW, IF WE HAD TO,
IF WE NEEDED TO, WE ARE TRAINED ON THE GUIDANCE,

176

00:17:52,170 --> 00:17:57,730

NAVIGATION AND CONTROL SYSTEMS WHICH MONITOR
AND CAN DO SOME OF THOSE THINGS. BUT IN GENERAL,

177

00:17:57,730 --> 00:18:02,130

WE HAVE ENOUGH TIME. WE CAN PREDICT WHERE
THESE THINGS ARE HAPPENING AND THE FOLKS ON

178

00:18:02,130 --> 00:18:08,720

THE GROUND PUT THE ALGORITHMS TOGETHER AND
THEY START THOSE MANEUVERS. SO IN GENERAL,

179

00:18:08,720 --> 00:18:14,200

WE DON'T DO TOO MUCH MANEUVERING UP HERE,
BUT IF WE HAD TO, WE CAN.

180

00:18:14,200 --> 00:18:38,570

THANK YOU, ISS. UP NEXT IS CICERO, ILLINOIS.
CICERO, GO AHEAD WITH YOUR QUESTION. CICERO,

181

00:18:38,570 --> 00:18:46,190

DO YOU COPY? OKAY. WE'RE GOING TO MOVE ON
TO WILLIS, TEXAS. WILLIS, TEXAS, GO AHEAD

182

00:18:46,190 --> 00:18:49,250

WITH YOUR QUESTION.

183

00:18:49,250 --> 00:18:57,900

WHAT WOULD YOU DO IF AN ASTRONAUT HAD A SERIOUS
MEDICAL EMERGENCY WHILE ON THE INTERNATIONAL

184

00:18:57,900 --> 00:19:02,280

SPACE STATION?

185
00:19:02,280 --> 00:19:11,400
WELL, IT'S A POSSIBILITY, OF COURSE, JUST
LIKE IT IS ON EARTH THAT ANYTHING CAN HAPPEN

186
00:19:11,400 --> 00:19:17,800
AT ANY TIME. SO WE HAVE A MEDICAL TRAINING
STAFF IN HOUSTON THAT TEACHES US ABOUT ALL

187
00:19:17,800 --> 00:19:24,440
THE MOST LIKELY MEDICAL EVENTS THAT COULD
HAPPEN. AND THEY GIVE US\h-- AND WE'RE NOT

188
00:19:24,440 --> 00:19:28,190
ALL DOCTORS. WE DO HAVE SOME DOCTORS WHO ARE
ASTRONAUTS, SO YOU MIGHT WANT TO GO DOWN THAT

189
00:19:28,190 --> 00:19:35,440
TRACK SOME DAY IF YOU'D LIKE TO BE AN ASTRONAUT
AND THEN A DOCTOR. NONE OF US ON BOARD RIGHT

190
00:19:35,440 --> 00:19:40,180
NOW ARE DOCTORS, BUT WE GET SOME TRAINING.
ONE OF THE THINGS, FOR EXAMPLE, THEY TEACHES

191
00:19:40,180 --> 00:19:46,630
IS CPR, SOMETHING EVERYBODY SHOULD LEARN AS
EARLY AS THEY CAN. UP HERE, IF WE WERE TO

192
00:19:46,630 --> 00:19:50,800
DO CPR, WE HAVE OUR BOARD RIGHT BEHIND US.
SUNI WAS JUST LOOKING AT IT. WE HAVE A BOARD

193
00:19:50,800 --> 00:19:55,570
BACK HERE READY FOR AN EMERGENCY AT ANY TIME.
WE COULD STRAP A PERSON DOWN IF THEY WERE

194
00:19:55,570 --> 00:20:01,040
HAVING SOME KIND OF CONVULSIONS OR SOMETHING
LIKE THAT, MAYBE IF THEY GOT\h-- MAYBE THEY

195

00:20:01,040 --> 00:20:05,870

GOT SOME GAS OR SOME KIND OF POISON OR SOMETHING FROM AN EVENT, AND YOU COULD STRAP THEM DOWN.

196

00:20:05,870 --> 00:20:10,290

SUNI IS SHOWING HOW YOU WOULD DO THE CPR ON SOMEBODY. BECAUSE IF YOU WERE TO PUSH ON SOMEBODY

197

00:20:10,290 --> 00:20:22,690

ON THE BOARD, WHEN YOU PUSH DOWN ON THEM, YOU WOULD FLY ACROSS THE MODULE. BUT WE ALSO

198

00:20:22,690 --> 00:20:29,770

GET TRAINED IN HOW TO DO STITCHES, HOW TO DO SOME BASIC DENTAL WORK AND JUST TAKE CARE

199

00:20:29,770 --> 00:20:34,400

OF EACH OTHER, MEDICATIONS. WE DO A LOT OF DIAGNOSTICS, EYE EXAMS, EAR EXAMS AND THOSE

200

00:20:34,400 --> 00:20:38,630

KINDS OF THINGS AND WE REPORT TO THE DOCTORS. ULTIMATELY ON THE GROUND, WE HAVE DOCTORS

201

00:20:38,630 --> 00:20:43,570

WHO ARE ALWAYS ON CALL FOR US. THEY CAN BE READY TO TALK TO US IN AN INSTANT AT ANY TIME

202

00:20:43,570 --> 00:20:47,430

AND HELP US WITH ANY CREW MEMBER WHO HAS ANY KIND OF MEDICAL EMERGENCY. THAT'S A REALLY

203

00:20:47,430 --> 00:20:49,830

GREAT QUESTION.

204

00:20:49,830 --> 00:20:57,720

THANK YOU, ISS. UP NEXT IS RUSSELL COUNTY, VIRGINIA. RUSSELL COUNTY,ing WITH YOUR QUESTION.

205

00:20:57,720 --> 00:21:07,390

THANK YOU. WHILE IN SPACE, HOW DO YOU COMMUNICATE WITH YOUR FAMILY?

206

00:21:07,390 --> 00:21:10,710

THAT'S ANOTHER GREAT QUESTION BECAUSE IT'S REALLY IMPORTANT TO STAY IN TOUCH WITH FOLKS

207

00:21:10,710 --> 00:21:15,170

BACK ON THE GROUND. I THINK FOR BOTH US UP HERE AND OUR FRIENDS AND FAMILY ON THE GROUND

208

00:21:15,170 --> 00:21:21,050

WHO ARE, OF COURSE, WORRYING AND THINKING ABOUT US. SO WE HAVE AN IP PHONE, AN INTERNET

209

00:21:21,050 --> 00:21:27,470

PROTOCOL PHONE. WHEN THE SATELLITE IS LINED UP WITH A SATELLITE OUT INh-- AND THE ANTENNAS

210

00:21:27,470 --> 00:21:32,110

ARE LINED UP WITH THE SATELLITE IN SPACE, WE HAVE THE ABILITY TO MAKE A PHONE CALL.

211

00:21:32,110 --> 00:21:38,340

IT HAPPENS TO BE THE SAME COMMUNICATION WHY WE HAVE VIDEO RIGHT NOW. OTHER THINGS WE HAVE,

212

00:21:38,340 --> 00:21:43,580

OF COURSE, ARE E-MAIL. WE DON'T HAVE INSTANT MESSAGING, UNFORTUNATELY. WE HAVE SYNC'ed

213

00:21:43,580 --> 00:21:48,260

E-MAIL. SO EVERY COUPLE OF HOURS, OUR E-MAIL GETS SYNCHRONIZED WITH THE GROUND AND THEN

214

00:21:48,260 --> 00:21:54,680

WE GET E-MAIL BACK AND FORTH. WE ALSO HAVE VIDEO CONFERENCES ONCE A WEEK, ON THE WEEKEND.

215
00:21:54,680 --> 00:21:59,170
I GET TO SEE MY DOG BECAUSE I CAN'T TALK TO
HIM ON THE PHONE. SO HE'S ACTUALLY WITH MY

216
00:21:59,170 --> 00:22:04,900
PARENTS AND I GET TO SEE HIM ON THE VIDEO
CONFERENCE.

217
00:22:04,900 --> 00:22:12,360
THANK YOU, ISS. UP NEXT, SAN MARINO, CALIFORNIA.
SAN MARINO, PLEASE GO AHEAD WITH YOUR QUESTION.

218
00:22:12,360 --> 00:22:18,410
ARE THERE ANY DEVELOPMENTS INVOLVING SPACE
EXPLORATION THAT CAN CONTRIBUTE TO COMMENTING

219
00:22:18,410 --> 00:22:25,950
PROBLEMS ON EARTH TODAY, SUCH AS RENEWABLE
ENERGY SOURCES OR GLOBAL WARMING?

220
00:22:25,950 --> 00:22:35,890
WELL, THE ENERGY WE USED HERE THAT LIGHTS
UP INSIDE THE LABORATORY AND POWERS THIS MICROPHONE

221
00:22:35,890 --> 00:22:41,440
AND CAMERA YOU'RE LOOKING AT IS ALL COMING
FROM THE SUN. SO THE SOLAR POWER CELLS THAT

222
00:22:41,440 --> 00:22:46,270
WE HAVE OUT HERE ARE PART OF, REALLY, KIND
OF THE DEVELOPMENT, ENGINEERING DEVELOPMENT

223
00:22:46,270 --> 00:22:50,820
OF FUTURE SPACE VEHICLES AND, OF COURSE, THESE
THINGS CAN ALL BE APPLIED TO EARTH BASED,

224
00:22:50,820 --> 00:22:57,930
AS WELL. ALSO, WE DO~~h~~h-- CREW EARTH OBSERVATIONS,
WHEN YOU TALK ABOUT THE CLIMATE AND THAT SORT

225

00:22:57,930 --> 00:23:02,630

OF THING, WE CAN HELP WITH PHOTOS AND OBSERVATIONS FROM SPACE, NOT ONLY FROM THE SPACE STATION,

226

00:23:02,630 --> 00:23:07,820

BUT OTHER SPACE VEHICLES, AS WELL, TO TRY TO TRACK WHAT'S GOING ON, MAKE IT OUT SO WE

227

00:23:07,820 --> 00:23:15,070

CAN HOPEFULLY FIND OUT EXACTLY WHAT KIND OF IMPACTS PERHAPS WE'RE HAVING AND MAKE ADVANCEMENTS

228

00:23:15,070 --> 00:23:19,210

THERE AND JUST STUDY THE PROBLEM.

229

00:23:19,210 --> 00:23:25,640

THANK YOU, ISS. UP NEXT IS TRAVERSE CITY, MICHIGAN. TRAVERSE CITY, GO AHEAD WITH YOUR

230

00:23:25,640 --> 00:23:26,990

QUESTION.

231

00:23:26,990 --> 00:23:44,930

WHAT'S YOUR FAVORITE PART ABOUT BEING A PART OF THE SSEP?

232

00:23:44,930 --> 00:23:48,300

THE LAST PART OF THE QUESTION WAS THE FAVORITE PART ABOUT BEING PART OFh-- CAN YOU REPEAT

233

00:23:48,300 --> 00:23:51,340

THE LAST PART OF THE QUESTION?

234

00:23:51,340 --> 00:23:58,760

YES. THAT WAS WHAT IS YOUR FAVORITE PART ABOUT BEING INVOLVED IN THE STUDENT SPACE FLIGHT

235

00:23:58,760 --> 00:24:00,650

EXPERIMENTS PROGRAM?

236
00:24:00,650 --> 00:24:08,280
YEAH. WELL, YOU KNOW, I THINK THAT'S A BIG
PART OF THE WHOLE REASON WHY WE'RE UP HERE

237
00:24:08,280 --> 00:24:12,140
IN THE FIRST PLACE. YOU KNOW, WE'RE ON THE
INTERNATIONAL SPACE STATION. IT'S ORBITING

238
00:24:12,140 --> 00:24:18,380
THE PLANET. BUT THE NEXT GENERATION OF EXPLORERS
IS OUT THERE THE. IT'S YOU GUYS. WE'RE UP

239
00:24:18,380 --> 00:24:23,460
HERE HOPEFULLY BEING PART OF THIS PROGRAM
TO INSPIRE YOU, FOR YOU TO SEE HOW MUCH FUN

240
00:24:23,460 --> 00:24:28,681
IT IS, HOW COOL IT IS TO BE AN ASTRONAUT AND
BE INVOLVED IN DEVELOPING THE NEXT GENERATION

241
00:24:28,681 --> 00:24:34,030
OF SPACECRAFT AND THE THINGS THAT THAT SPACECRAFT
WILL DO, WHICH IS PROBABLY GOING TO BE GOING

242
00:24:34,030 --> 00:24:39,120
BEYOND LOW EARTH ORBIT. SO I FEEL PRETTY HONORED
TO BE A PART OF IT. I HOPE WE'RE GETTING YOU

243
00:24:39,120 --> 00:24:45,650
GUYS PSYCHED UP. YOUR FUTURE IS HUGE. I'M
ENVIIOUS. I WISH I WAS ABOUT 20 YEARS YOUNGER

244
00:24:45,650 --> 00:24:50,250
SO I COULD BE IN YOUR SHOES, DOING THE THINGS
THAT YOU'RE GOING TO BE DOING WITH REGARDS

245
00:24:50,250 --> 00:24:56,090
TO SPACE AND SPACE TRAVEL. VERY HONORED AND
PSYCHED TO BE PART OF THIS PROGRAM SO THANK

246

00:24:56,090 --> 00:24:59,680

YOU FOR INVITING US.

247

00:24:59,680 --> 00:25:07,150

THANK YOU, ISS. UP NEXT IS LAKE COUNTY, INDIANA.

LAKE COUNTY, GO AHEAD WITH YOUR QUESTION.

248

00:25:07,150 --> 00:25:13,540

THANK YOU. -- SPACE STATION AND WHAT DO YOU

DO WITH THAT TIME?

249

00:25:13,540 --> 00:25:23,780

WELL, GREETINGS. YOU'RE IN MY HOME STATE THERE.

I GREW UP IN INDIANA SO IT'S GREAT TO HEAR

250

00:25:23,780 --> 00:25:30,690

FROM YOU UP IN LAKE COUNTY. IN OUR SPARE TIME,

WE CATCH UP ON OUR COMMUNICATIONS WITH FRIENDS

251

00:25:30,690 --> 00:25:36,790

AND FAMILY AT HOME FIRST SO THAT WE CAN KEEP

THOSE RELATIONSHIPS GOING, GO AHEAD. AND THEN

252

00:25:36,790 --> 00:25:42,242

WE GO TO THE WINDOW AS OFTEN AS WE CAN. OCCASIONALLY,

I'LL GO TO THE WINDOW REALLY EARLY IN THE

253

00:25:42,242 --> 00:25:47,540

MORNING OR LATE AT NIGHT AND I'LL FIND ANOTHER

ASTRONAUT THERE LOOKING OUT BECAUSE IT'S A

254

00:25:47,540 --> 00:25:55,970

GREAT WAY TO FAMILIARIZE YOURSELF WITH OUR

BEAUTIFUL PLANET. SOME OF US HAVE LITTLE THINGS

255

00:25:55,970 --> 00:26:00,550

WE LIKE TO DO IN THE ZERO GRAVITY BECAUSE

WE KNOW WE WON'T BE HERE LONG. IT'S A LITTLE

256
00:26:00,550 --> 00:26:06,240
BIT LIKE A DREAM BEING HERE. SO THERE'S THINGS
TO PLAY WITH AND SPIN AROUND. I HAVE A LITTLE

257
00:26:06,240 --> 00:26:12,100
TOY IN MY POCKET AND IT'S FUN TO GET THOSE
OUT. THIS IS A MODEL OF THE SPACECRAFT WE

258
00:26:12,100 --> 00:26:17,510
FLEW UP IN. AND WE SPIN AS WE COME IN HERE,
SO I CAN MAKE THIS SPIN JUST LIKE MY SPACECRAFT

259
00:26:17,510 --> 00:26:22,981
DID ON THE WAY. IT'S JUST KIND OF FUN TO SEE
HOW THINGS REACT AND THE DYNAMICS. THERE ARE

260
00:26:22,981 --> 00:26:27,070
SOME UNEXPECTED THINGS UP HERE. SO WE PLAY
AROUND IN THE ZERO GRAVITY AND WE LOOK AT

261
00:26:27,070 --> 00:26:31,490
OUR MOTHER EARTH MOST OF THE TIME.

262
00:26:31,490 --> 00:26:54,110
THANK YOU, ISS. UP NEXT, INWOOD, NEW YORK,
GO AHEAD WITH YOUR QUESTION, PLEASE. OKAY.

263
00:26:54,110 --> 00:27:07,050
THE QUESTION FROM INWOOD, NEW YORK, ISS, IS
WHAT WAS YOUR FIRST AH-HA MOMENT IN SPACE?

264
00:27:07,050 --> 00:27:12,540
I THINK ON MY FIRST AH-HA MOMENT, OF COURSE,
IS WHEN YOU GET TO SPACE. IT ONLY TAKES ABOUT

265
00:27:12,540 --> 00:27:18,280
8:30 OR SO TO TAKE THE ROCKET RIDE UP INTO
SPACE. .THEN, YOU KNOW, THE ENGINES ON THE

266

00:27:18,280 --> 00:27:23,920

VEHICLE SHUT OFF. I WAS ON A SHUTTLE FOR MY FIRST FLIGHT. AND THEN YOU'RE READY TO TAKE

267

00:27:23,920 --> 00:27:28,330

YOUR HELMET OFF AND YOUR GLOVES OFF. AND WHEN YOU DO, IT DOESN'T WEIGH ANYTHING AND IT STARTS

268

00:27:28,330 --> 00:27:33,280

TO FLOAT AWAY AND YOUR GLOVES START TO FLOAT AWAY AND LITERALLY YOUR ARMS START TO FLOAT.

269

00:27:33,280 --> 00:27:37,920

I EARTH, WE DON'T REALIZE IT, BUT GRAVITY IS HOLDING YOUR ARMS DOWN. JUST LIKE WHEN

270

00:27:37,920 --> 00:27:42,780

YOU SLEEP IN SPACE, IF YOU DON'T THINK ABOUT IT, YOUR ARMS WILL START TO FLOAT BACK UP

271

00:27:42,780 --> 00:27:47,580

AGAIN. SO I THINK, OF COURSE, THAT HAD TO BE THE BIGGEST AH-HA MOMENT. IT WAS INCREDIBLE.

272

00:27:47,580 --> 00:27:56,680

IT MAKES YOU LAUGH BECAUSE IT'S JUST LIKE REALLY COOL. NUMBER TWO, ON A SPACE WALK UP

273

00:27:56,680 --> 00:28:02,310

ON TOP OF THE SPACE STATION ON A SOLAR ARRAY WATCHING THE AURORA HIT THE EARTH AND WHEN

274

00:28:02,310 --> 00:28:07,640

YOU SEE THIS GREEN ENERGY HITTING THE PLANET, YOU SORT OF REALIZE THAT, YOU KNOW, THERE'S

275

00:28:07,640 --> 00:28:12,000

A WHOLE LOT OF ENERGY IN THE UNIVERSE THAT'S PRETTY MUCH UNCAPPED AND WE HAVE A LOT MORE

276

00:28:12,000 --> 00:28:23,270

TO DISCOVER AND LEARN ABOUT. SO THAT REALLY
HIT HOME, WAS A HUGE AH-HA MOMENT.

277

00:28:23,270 --> 00:28:29,460

THANK YOU, ISS. WE HAVE TIME FOR ONE MORE
QUICK QUESTION FROM EL PASO, TEXAS. EL PASO,

278

00:28:29,460 --> 00:28:31,680

PLEASE GO AHEAD WITH YOUR QUESTION.

279

00:28:31,680 --> 00:28:38,840

THANK YOU. HAVE YOU EVER SEEN ANYTHING IN
SPACE THAT SURPRISED OR SCARED YOU?

280

00:28:38,840 --> 00:28:47,470

WELL, I'LL TAKE IT THAT JUST SHORTLY AND I'LL
PASS IT OFF TO SUNI. EVERYTHING SURPRISES

281

00:28:47,470 --> 00:28:53,100

YOU IN SPACE. FROM THE TIME YOU GET UP, CRUISING
THROUGH A LAB AT NIGHTTIME WITH EVERYTHING

282

00:28:53,100 --> 00:28:59,580

SLEEPING AND FLOATING DOWN A DARK AISLE TO
JUST WHEN YOU LOSE CONTROL MAYBE OF YOUR DRINK

283

00:28:59,580 --> 00:29:03,350

OR YOUR WATER BAG AND THE WATER PARTICLES
GO EVERY DIRECTION INSTEAD OF FALLING ON THE

284

00:29:03,350 --> 00:29:07,920

FLOOR, SO IT'S SURPRISING. I HAVEN'T FORTUNATELY
BEEN SCARED YET. THERE ARE SOMETIMES WHEN

285

00:29:07,920 --> 00:29:12,880

THINGS REALLY GET YOUR ATTENTION. I REMEMBER
COMING UP IN THIS LAST FLIGHT ON THE RENDEZVOUS

286

00:29:12,880 --> 00:29:18,640

DAY. OUR RENDEZVOUS WAS AGGRESSIVE AND WE
CAME AT THE STATION REALLY FAST. THERE'S A

287
00:29:18,640 --> 00:29:22,940
LOT OF THINGS THAT MAKE YOUR HEARTBEAT QUICKLY
SOMETIMES, BUT NOTHING THAT WAS REALLY, REALLY

288
00:29:22,940 --> 00:29:26,900
SCARY FOR ME. SINCE THAT WAS THE LAST QUESTION,
I'LL HAND IT BACK OVER TO THE COMMANDER OF

289
00:29:26,900 --> 00:29:41,300
EXPEDITION THREE FOR FINAL WORDS.

290
00:29:41,300 --> 00:29:46,290
SO WE WANTED TO JUST SAY THANK YOU, IF THAT
WAS THE LAST QUESTION, FOR LETTING US PARTICIPATE

291
00:29:46,290 --> 00:29:52,640
IN THIS EVENT WITH YOU. IT'S BEEN GREAT. THE
SMITHSONIAN IS A WONDERFUL PLACE. THE ISS

292
00:29:52,640 --> 00:29:59,860
IS A WONDERFUL PLACE, AGAIN, AN HONOR TO BE
A PART OF IT. AND WE'RE HOPING, AGAIN, THAT

293
00:29:59,860 --> 00:30:05,410
WE ARE INSPIRING THE NEXT GENERATIONS OF EXPLORERS
BECAUSE THIS IS JUST A STEPPING STONE. ISS

294
00:30:05,410 --> 00:30:09,610
IS GREAT, BUT IT'S JUST A STEPPING STONE.
YOU GUYS ARE THE NEXT ONES WHO ARE GOING TO

295
00:30:09,610 --> 00:30:14,660
TAKE THE NEXT BIG STEP. SO GET PSYCHED OUT
THERE AND WE'RE LOOKING FORWARD TO WATCHING

296
00:30:14,660 --> 00:30:18,450
YOU GUYS IN THE FUTURE.

297
00:30:18,450 --> 00:30:36,090
THANK YOU, ISS. LET'S HEAR IT FOR COMMANDER
WILLIAMS AND COLONEL FORD. OKAY. WE ARE GOING

298
00:30:36,090 --> 00:30:42,330
TO CONTINUE THE QUESTIONING. OUR NEXT SPEAKER
IS THE ASSOCIATE ADMINISTRATOR FOR EDUCATION

299
00:30:42,330 --> 00:30:47,790
AT NASA, LELAND MELVIN. LELAND IS RESPONSIBLE
FOR THE DEVELOPMENT AND IMPLEMENTATION OF

300
00:30:47,790 --> 00:30:53,160
THE AGENCY'S EDUCATION PROGRAM. LELAND IS
A VETERAN OF TWO SPACE SHUTTLE MISSIONS TO

301
00:30:53,160 --> 00:31:00,020
THE INTERNATIONAL SPACE STATION SERVING AS
MISSION SPECIALIST ON STS-122 IN 2008 AND

302
00:31:00,020 --> 00:31:09,500
STS-129 IN 2009. LADIES AND GENTLEMEN, ASSOCIATE
ADMINISTRATOR AND ASTRONAUT, LELAND MELVIN.

303
00:31:09,500 --> 00:31:25,700
OKAY. HOW IS EVERYONE DOING? DID YOU GUYS
HAVE A GOOD TIME? WELL, IT'S JUST STARTING,

304
00:31:25,700 --> 00:31:29,800
OKAY? SO WE HAVE A FEW MORE QUESTIONS OUT
THERE. I THINK WE HAVE LINCOLNWOOD, ILLINOIS.

305
00:31:29,800 --> 00:31:37,100
DID YOU WANT TO ASK YOUR QUESTION?

306
00:31:37,100 --> 00:31:47,320
WHEN I COMES TO MISSIONS AND TRAVEL, DOES
NASA WORK WELL AND COOPERATE WITH THE OTHER

307
00:31:47,320 --> 00:31:53,710
AGENCIES ABOARD THE INTERNATIONAL SPACE STATION
SUCH AS THE EUROPEAN SPACE AGENCY, RUSSIA,

308
00:31:53,710 --> 00:31:54,980
CANADA AND

309
00:31:54,980 --> 00:31:59,100
THAT'S A VERY GOOD QUESTION. WE WORK WITH
ALL OF THOSE AGENCIES. AND WHEN I THINK ABOUT

310
00:31:59,100 --> 00:32:03,870
THE STUDENTS IN HERE AND THE STUDENTS OUT
THERE IN THE INTERNETLAND, YOU KNOW, WE HAVE

311
00:32:03,870 --> 00:32:08,070
TO WORK TOGETHER AS ONE BIG TEAM. BECAUSE
IF WE'RE GOING TO GO TO MARS ONE DAY AS A

312
00:32:08,070 --> 00:32:11,550
CIVILIZATION, IT TAKES ALL OF US TO WORK TOGETHER.
WE'RE WORKING TOGETHER WITH ALL OF THESE COUNTRIES

313
00:32:11,550 --> 00:32:17,190
AND WE'LL WORK WITH EVEN MORE IN THE FUTURE.
VERY GOOD QUESTION. NEXT QUESTION IS FROM

314
00:32:17,190 --> 00:32:19,050
NEW JERSEY.

315
00:32:19,050 --> 00:32:33,440
HOW LONG ARE YOU OH, OKAY. HOW LONG ARE
YOU IN MICROGRAVITY BEFORE YOU STARTS TO NOTICE

316
00:32:33,440 --> 00:32:37,710
CHANGES IN YOUR BODY OR HEALTH AND WHAT ARE
THOSE CHANGES?

317
00:32:37,710 --> 00:32:44,490

THAT'S A VERY GOOD QUESTION. I WAS ONLY IN SPACE FOR ABOUT 14 DAYS MAXIMUM. ONCE YOU

318
00:32:44,490 --> 00:32:49,160
GET THERE, YOUR BODY DOES START TO FEEL THE EFFECTS OF MICROGRAVITY AND CHANGES. BUT FOR

319
00:32:49,160 --> 00:32:53,961
THE LONG DURATION OF FLIGHT MEMBERS, THEY'RE THERE FOR SIX MONTHS AT A TIME. SO IF THEY

320
00:32:53,961 --> 00:33:00,790
DON'T WORK OUT AND DO RESISTANCE EXERCISES, PUSH-UPS AND RESISTIVE THINGS, THEIR MUSCLES

321
00:33:00,790 --> 00:33:06,110
WILL ATROPHY AND THEIR BONES WILL LEACH OUT THE CALCIUM. THEIR BONES WILL GET WEAKER.

322
00:33:06,110 --> 00:33:11,230
SO IT'S VERY IMPORTANT FOR LONG DURATION SPACE FLIGHTS THAT YOU DO CARDIO WORKOUTS AS WELL

323
00:33:11,230 --> 00:33:17,380
AS THE RESISTIVE EXERCISE. VERY GOOD QUESTION. NEXT, GALVAHOSTIN, IOWA. WHAT'S YOUR QUESTION?

324
00:33:17,380 --> 00:33:37,190
WHAT DO YOU THINK OF THE STUDENT SPACE FLIGHT EXPERIMENT PROGRAM AND WHAT IT DOES FOR STUDENTS?

325
00:33:37,190 --> 00:33:42,530
WELL, FOR THE SPACE FLIGHT PROGRAM FOR STUDENTS, I THINK IT'S AN OPPORTUNITY TO THINK ABOUT

326
00:33:42,530 --> 00:33:47,560
THEMSELVES AS BEING RESEARCHERS AND SCIENTISTS. YOU KNOW, WHEN I WAS A LITTLE BOY, I MIXED

327
00:33:47,560 --> 00:33:52,350

CHEMICALS TOGETHER AND CREATED AN EXPLOSION
IN MY MOM'S LIVING ROOM. AND I DON'T WANT

328

00:33:52,350 --> 00:33:57,280

YOU GUYS TO DO THAT, BUT I THINK ABOUT YOU
BEING LITTLE PRINCIPAL INVESTIGATORS THAT

329

00:33:57,280 --> 00:34:01,221

WILL SEND YOUR EXPERIMENTS TO THE SPACE STATION.
SUNI IS BRINGING BACK 23 EXPERIMENTS WHEN

330

00:34:01,221 --> 00:34:05,950

SHE COMES BACK HOME ON SUNDAY AND WE'LL SEE
THE RESULTS OF THOSE EXPERIMENTS. BUT THIS

331

00:34:05,950 --> 00:34:10,700

SETS THE TONE TO GET YOU GUYS READY TO BE
THE NEXT INVENTORS, EXPLORERS AND SCIENTISTS.

332

00:34:10,700 --> 00:34:16,880

IT'S A GREAT OPPORTUNITY FOR YOU TO DO THAT
IN THAT PROGRAM. GOOD QUESTION. NEXT WE HAVE

333

00:34:16,880 --> 00:34:19,770

GILLFORD COUNTY, NORTH CAROLINA.

334

00:34:19,770 --> 00:34:27,680

WHAT ARE THE CHALLENGES AND ADVANTAGES OF
WORKING WITH ASTRONAUTS FROM OTHER COUNTRIES?

335

00:34:27,680 --> 00:34:33,750

I THINK KIND OF LIKE WHAT I MENTIONED EARLIER,
THE BIGGEST, I THINK, CHALLENGE THAT WE HAVE

336

00:34:33,750 --> 00:34:37,300

IS SOMETIMES THE LANGUAGE BARRIER. YOU KNOW,
WHEN WE'RE IN RUSSIA, WE LEARN RUSSIAN. WHEN

337

00:34:37,300 --> 00:34:43,830

WE'RE IN THE OTHER COUNTRIES, WE TRY TO LEARN

SOME OF THOSE LANGUAGES. BUT I THINK EVERYONE

338

00:34:43,830 --> 00:34:51,110

COMES TOGETHER AS A TEAM BECAUSE WE HAVE THIS
OUTPOST OF 240 MILES UP, TRAVELING AT 23,715

339

00:34:51,110 --> 00:34:57,380

MILES PER HOUR AND WORK WORKING TOGETHER TO
ADVANTAGE OURSELVES FOR PEACEFUL PURPOSES.

340

00:34:57,380 --> 00:35:04,460

SO THE CHALLENGES ARE USUALLY LANGUAGE, BUT
THE BENEFITS ARE HELPING EVERYONE ON THE PLANET

341

00:35:04,460 --> 00:35:13,330

ADVANCE AS ONE CIVILIZATION. GOOD QUESTION.
NEXT WE HAVE ODOBOL IN IDA GROVE, IOWA. WHAT'S

342

00:35:13,330 --> 00:35:14,940

YOUR QUESTION?

343

00:35:14,940 --> 00:35:19,710

YEAH. HOW DOES IT FEEL TO BE WEIGHTLESS AND
WHAT WAS SOMETHING THAT YOU LIKED TO DO IN

344

00:35:19,710 --> 00:35:23,380

MICROGRAVITY THAT WAS NOT AS EASILY DONE ON
EARTH?

345

00:35:23,380 --> 00:35:29,810

INTERESTING QUESTION. WEIGHTLESSNESS WAS AWESOME.
YOU COULD ACTUALLY BALL YOURSELF UP IN A BALL

346

00:35:29,810 --> 00:35:36,730

AND BE BOWLED DOWN AND KNOCK OVER OTHER ASTRONAUTS.
SO THAT'S SOMETHING YOU CAN'T DO ON THE GROUND.

347

00:35:36,730 --> 00:35:39,540

PLAYING WITH YOUR FOOD IN SPACE IS PRETTY
COOL. I'LL SHOW A VIDEO ABOUT THAT A LITTLE

348

00:35:39,540 --> 00:35:45,350

LATER. BUT IT'S WORKING TOGETHER IN THIS ENVIRONMENT
TO SEE THE ADVANCES FOR THE FUTURE, FOR HELPING

349

00:35:45,350 --> 00:35:49,810

PEOPLE HERE ON THE PLANET. AND I THINK THAT'S
THE BIGGEST PART OF MICROGRAVITY THAT'S THE

350

00:35:49,810 --> 00:35:55,240

BENEFICIAL PIECE OF THE EXPERIMENTS, THE WORKING
TOGETHER, THE THINKING ABOUT THE FUTURE OF

351

00:35:55,240 --> 00:36:01,480

EXPLORATION. GOOD QUESTION. NEXT WE HAVE SANTA
MONICA, CALIFORNIA. WHAT'S YOUR QUESTION?

352

00:36:01,480 --> 00:36:20,760

WHAT IS THEh-- YOU ADAPT TO WHEN YOU GET
TOh-- AND WHEN YOU RETURN TO EARTH ON THE

353

00:36:20,760 --> 00:36:21,760

ISS?

354

00:36:21,760 --> 00:36:27,640

GOOD QUESTION. THE MOST DIFFICULT THING TO
ADAPT TO. HMMM. I WOULD SAY THAT'S GOING TO

355

00:36:27,640 --> 00:36:36,380

THE BATHROOM. BECAUSE IN SPACE, EVERYTHING
FLOATS. NUMBER ONE IS NOT SO BAD, BUT NUMBER

356

00:36:36,380 --> 00:36:47,260

TWO, THAT'S THE PROBLEM. GOOD QUESTION. WE'LL
TALK ABOUT THAT MORE LATER. NEXT WE HAVE CHICAGO,

357

00:36:47,260 --> 00:36:49,550

ILLINOIS. WAS YOUR QUESTION?

358

00:36:49,550 --> 00:36:57,480

CAN YOU SEE HURRICANES AND OTHER WEATHER ACTIVITY FROM SPACE? AND IF SO, WHAT DO THEY LOOK LIKE?

359

00:36:57,480 --> 00:37:04,440

I WASN'T UP THERE, BUT I'M SURE THAT BOTH SUNI AND KEVIN SAW THE HURRICANE SANDY FROM

360

00:37:04,440 --> 00:37:08,790

SPACE. AND IT LOOKS, YOU KNOW, LIKE THE WEATHER SATELLITES THAT HE SHOW YOU THE PICTURE ON

361

00:37:08,790 --> 00:37:13,930

THE WEATHER CHANNEL, IT LOOKS SIMILAR TO THAT. BUT WE CAN TRACK IT FOR MUCH LONGER TIMES.

362

00:37:13,930 --> 00:37:20,620

WE HAVE OUR VIDEO CAMERAS, WE HAVE OUR WIDE ANGLE LENSES AND LONG ZOOM LENSES. SO YOU

363

00:37:20,620 --> 00:37:26,880

CAN SEE PRETTY MUCH EVERYTHING FROM THAT VANTAGE POINT WITH DIFFERENT LENSES. GREAT QUESTION.

364

00:37:26,880 --> 00:37:33,650

OKAY. NEXT WE'RE GOING TO HAVE STONEWALL MANITOBA, CANADA. WHAT'S YOUR QUESTION?

365

00:37:33,650 --> 00:37:42,200

THANK YOU. HELLO. MY QUESTION IS, IS THE CANADIAN ARM HELPFUL, USEFUL IN SPACE?

366

00:37:42,200 --> 00:37:49,570

OKAY. IS THE CANADIAN ARM HELPFUL? WELL, WHEN I WENT TO SPACE, I WAS THE ROBOTIC ARM OPERATOR.

367

00:37:49,570 --> 00:37:55,660

AND I USED CANADA ARM ONE AND CANADA ARM TWO TO INSTALL THE EUROPEAN SPACE AGENCY'S LABORATORY.

368

00:37:55,660 --> 00:37:59,970

SO IT WAS EXTREMELY HELPFUL AND IT WAS THE ONLY WAY THAT WE COULD ACTUALLY INSTALL THESE

369

00:37:59,970 --> 00:38:04,650

MODULES ON TO THE SPACE STATION. SO, YES, OUR CANADIAN FRIENDS CAME THROUGH WITH A GREAT

370

00:38:04,650 --> 00:38:11,900

DEVICE. GOOD QUESTION. NEXT QUESTION IS FROM NEW YORK CITY. WHAT IS YOUR QUESTION FROM

371

00:38:11,900 --> 00:38:21,150

NEW YORK? [hINAUDIBLE\h].

372

00:38:21,150 --> 00:38:39,310

THE SSEP WEBSITE\h-- PERSONS ARE ALLOWED ON THE ISS. WHY IS THAT?

373

00:38:39,310 --> 00:38:46,300

I WOULD THINK PERFUMES ARE NOT ALLOWED BECAUSE THE ALCOHOL CAN OUTGAS AND MAKE GET ON DIFFERENT

374

00:38:46,300 --> 00:38:51,260

EQUIPMENT. YOU WANT TO MAKE SURE THAT THE THINGS THAT YOU TAKE UP DON'T COME OUT OF

375

00:38:51,260 --> 00:38:56,700

THEIR SOLUTION AND GET DEPOSITED ON THE EQUIPMENT ON THE SPACE STATION. SO THAT IS WHAT I THINK.

376

00:38:56,700 --> 00:39:05,580

BUT THAT'S A VERY GOOD QUESTION. AND OUR LAST QUESTION IS FROM EASTLIME, CONNECTICUT. WHAT'S

377

00:39:05,580 --> 00:39:24,540

YOUR QUESTION? IS EASTLIME OUT THERE? OKAY. WE'RE GOING TO GO BACK TO CICERO. DOES CICERO

378

00:39:24,540 --> 00:39:26,460

HAVE ANOTHER QUESTION?

379

00:39:26,460 --> 00:39:35,120

HOW IS LIFE IN IN SPACE DIFFERENT FROM LIFE ON EARTH?

380

00:39:35,120 --> 00:39:41,450

HOW IS LIFE DIFFERENT ON SPACE THAN LIFE ON EARTH? WELL, WHEN SUNI COMES BACK ON SUNDAY,

381

00:39:41,450 --> 00:39:47,640

SHE IS GOING TO PROBABLY HAVE THIS MOMENT WHERE SHE GRABS HER PLATE, PUTS FOOD ON HER

382

00:39:47,640 --> 00:39:54,020

PLATE AND THEN SHE PROBABLY TURNS AND THINKS THAT THE PLATE IS GOING TO KEEP FLOATING AND

383

00:39:54,020 --> 00:40:00,410

IT DOESN'T, IT HITS THE GROUND. SO THINKING ABOUT HOW YOU DO THINGS IN A ONE G ENVIRONMENT

384

00:40:00,410 --> 00:40:06,560

ON THE PLANET, THERE'S GRAVITATIONAL PULL, AND HOW YOU CAN DO THINGS DIFFERENTLY IN SPACE,

385

00:40:06,560 --> 00:40:11,380

A LOT OF THAT HAS TO DO WITH THE PHYSIOLOGICAL THINGS THAT CAN HAPPEN WHEN YOU'RE EATING,

386

00:40:11,380 --> 00:40:17,410

USING THE BATHROOM, AS I MENTIONED, FLYING AND FLOATING AROUND. BUT ALSO WITH EXPERIMENTS.

387

00:40:17,410 --> 00:40:21,810

LIKE IF YOU'RE DOING AN EXPERIMENT ON CRYSTAL GROWTH, YOU CAN GROW SINGLE CRYSTALS AT A

388

00:40:21,810 --> 00:40:28,690

MUCH LARGER SIZE THAN YOU CAN ON THEh-- WHEN

GRAVITATIONAL PULL ON THE PLANET. SO DOING

389

00:40:28,690 --> 00:40:35,050

EXPERIMENTS AND THINGS LIKE THAT CAN UTILIZE
THE BENEFITS OF MICROGRAVITY. VERY GOOD QUESTION.

390

00:40:35,050 --> 00:40:52,340

ALL RIGHT. OKAY. IS EASTLIME ON THE LINE?
EAST LIME, ARE YOU THERE? GOING ONCE. OKAY.

391

00:40:52,340 --> 00:41:07,300

ALL RIGHT. WELL, THANK YOU FOR ALL THOSE FANTASTIC
QUESTIONS. SUNI IS BRINGING BACK. THANK YOU.

392

00:41:07,300 --> 00:41:12,760

SUNI IS BRINGING BACK THE EXPERIMENTS ON SUNDAY,
AS I MENTIONED, AND YOU'LL GET TO SEE THE

393

00:41:12,760 --> 00:41:20,310

RESULTS OF THAT WORK THAT'S BEEN DONE. I'M
GOING TO TURN ON MY WIRELESS MIKE REAL QUICK.

394

00:41:20,310 --> 00:41:26,590

I'M TURNING ON THE WIRELESS MIKE. DID YOU
GUYS LIKE THAT? OH, COME ON, YOU CAN DO BETTER

395

00:41:26,590 --> 00:41:34,080

THAN THAT. DID YOU GUYS LIKE THAT? ARE YOU
GUYS AWAKE? ALL RIGHT. WELL, HOW MANY OF YOU

396

00:41:34,080 --> 00:41:41,140

DREAM? ANY DREAMERS IN HERE? WHAT DO YOU DREAM
ABOUT? ARE YOU A DREAMER? STAND UP. YOU DON'T

397

00:41:41,140 --> 00:41:48,270

WANT TO STAND UP? OKAY. WHAT IS YOUR DREAM?
SHE DREAMS ABOUT\h-- WHAT'S YOUR NAME? CALEN,

398

00:41:48,270 --> 00:41:54,330

SHE DREAMS ABOUT HER FUTURE. IS YOUR FUTURE

BRIGHT? IT'S VERY BRIGHT. HOW MANY OF YOU

399

00:41:54,330 --> 00:42:00,390

DREAM ABOUT YOUR FUTURE AND WHAT YOU'RE GOING TO DO, SCIENTIST, ENGINEER, BALL PLAYER, WHATEVER

400

00:42:00,390 --> 00:42:06,610

YOU WANT TO BE? BUT IT STARTS WITH YOU LIVING YOUR DREAMS RIGHT NOW. WHAT DOES THAT MEAN

401

00:42:06,610 --> 00:42:18,960

TO YOU, LIVING YOUR DREAMS? ANYONE WANT TO HELP ME? YES. EXACTLY. SHE SAID WORK HARD

402

00:42:18,960 --> 00:42:23,330

NOW SO YOUR DREAMS CAN COME TRUE. BUT WHEN I WAS A LITTLE BOY, I DIDN'T KNOW WHAT I WANTED

403

00:42:23,330 --> 00:42:31,480

TO DO. WHEN I WAS IN MIDDLE SCHOOL, I HAD TO CLUE. AND IF YOU LOOK AT THE SLIDES, IF

404

00:42:31,480 --> 00:42:38,790

THEY'RE TURNING ORh-- DO YOU WANT TO HELP ME HERE, VIRTUAL CLICK? GO TO THE NEXT SLIDE.

405

00:42:38,790 --> 00:42:44,800

I HAD TO CLUE. I LOVED SPORTS AND I LOVED SCIENCE. OKAY? AND AS I MENTIONED EARLIER,

406

00:42:44,800 --> 00:42:53,220

I HAD A CHANCE TO MAKE THIS MOST INCREDIBLEh-- I'M TELLING YOU, INCREDIBLE EXPLOSION. BUT

407

00:42:53,220 --> 00:43:00,180

FIRST, I MADE A SKATEBOARD. HOW MANY OF YOU ARE SKATEBOARDERS IN HERE? SKATEBOARDERS?

408

00:43:00,180 --> 00:43:12,370

ANY FOOTBALL PLAYERS? BASKETBALL PLAYERS?

TENNIS? HOCKEY? ICE-SKATING? SOCCER? VOLLEYBALL?

409

00:43:12,370 --> 00:43:20,610

WHAT ELSE? OKAY. SO I LOVED SPORTS AS A KID,
BUT MY DAD, I ASKED MY DAD FOR A SKATEBOARD

410

00:43:20,610 --> 00:43:23,800

WHEN I WAS A LITTLE BOY. HE SAID, WE DON'T
HAVE THE MONEY TO BUY YOU ONE. SO WHAT DID

411

00:43:23,800 --> 00:43:30,010

I DO? I DIDN'T GIVE UP. I USED MY BRAIN. AT
DUNNBAR MIDDLE SCHOOL, I WENT TO THE WOOD

412

00:43:30,010 --> 00:43:36,370

SHOP AND I GOT A PIECE OF WOOD AND I MADE
THE BOARD IN THE SHOP. SO I HAD HALF THE SOLUTION

413

00:43:36,370 --> 00:43:42,060

WITH MY BOARD. THE NEXT SOLUTION WAS THE TRUCKS
AND THE WHEELS. SO I GOT A JOB DELIVERING

414

00:43:42,060 --> 00:43:47,650

PAPERS, DOING ODD THINGS. MADE THE MONEY AND
I CREATED MY OWN SKATEBOARD. SO USING YOUR

415

00:43:47,650 --> 00:43:53,710

BRAIN, USING YOUR HANDS, USING YOUR INNOVATION
AND CURIOSITY, IT'S VERY IMPORTANT TO GETTING

416

00:43:53,710 --> 00:43:58,250

THE THINGS THAT YOU WANT. SO STARTED THAT
WITH SKATEBOARDING. THEN MY MOM GAVE ME MY

417

00:43:58,250 --> 00:44:03,130

CHEMISTRY SET. I MADE THIS HUGE EXPLOSION
IN THE LIVING ROOM WHICH FUELED MY CURIOSITY.

418

00:44:03,130 --> 00:44:09,970

I BECAME A CHEMISTRY MAJOR FROM THAT AND SPORTS

WAS VERY IMPORTANT. WHERE DID THAT LEAD ME?

419
00:44:09,970 --> 00:44:16,980
THAT LED ME TO BEING A SNOWBOARDER. THAT LED
ME TO BEING A CHEMIST. WHAT YOU SEE HERE IS

420
00:44:16,980 --> 00:44:23,440
A MAD SCIENTIST IN THE CHEMISTRY LAB AND IT
ALSO LED ME TO THE NFL. YES. HOW MANY OF YOU

421
00:44:23,440 --> 00:44:31,560
WANT TO PLAY IN THE NFL? ALL RIGHT. OKAY.
BUT THE KEY IS, IF THAT DOESN'T WORK OUT,

422
00:44:31,560 --> 00:44:36,550
YOU HAVE TO HAVE YOUR EDUCATION. I WENT TO
TRAINING CAMP. I WAS DRAFTED IN THE 11th ROUND

423
00:44:36,550 --> 00:44:41,930
WITH THE DETROIT LIONS. I PULLED A HAMSTRING
IN THE SECOND WEEK OF TRAINING CAMP. THAT

424
00:44:41,930 --> 00:44:48,120
WAS THE END OF MY FOOTBALL CAREER, BUT I HAD
MY EDUCATION TO FALL BACK ON, WHICH ALLOWED

425
00:44:48,120 --> 00:44:53,440
ME TO THEN BECOME AN ASTRONAUT. SO, AGAIN,
YOU CAN DO WHATEVER YOU WANT TO IF YOU PUT

426
00:44:53,440 --> 00:44:58,720
YOUR MIND TO IT, BUT YOU HAVE TO HAVE YOUR
EDUCATION. OUR DEPUTY SECRETARY BELIEVES IN

427
00:44:58,720 --> 00:45:04,300
THAT. YOU HAVE TO HAVE YOUR EDUCATION. WE
WORK TOGETHER AS A TEAM WITH THE SMITHSONIAN,

428
00:45:04,300 --> 00:45:09,270
WITH TONY MILLER IN EDUCATION TO MAKE SURE

YOU HAVE ALL THE TOOLS PUP NEED TO DO ANYTHING

429

00:45:09,270 --> 00:45:15,480

YOU WANT TO DO, ANYTHING YOU PUT YOUR MINDS TO. NEXT SLIDE. WAIT A MINUTE, SOMEBODY SNUCK

430

00:45:15,480 --> 00:45:18,990

THIS PICTURE IN HERE. THESE ARE MY DOGS WHO I TRIED TO GET TO SPACE, BUT THEY WOULDN'T

431

00:45:18,990 --> 00:45:32,760

TAKE THEM. ANY DOG OWNERS IN HERE? THAT'S JAKE AND SCOUT. NEXT SLIDE. I FLEW ON TWO

432

00:45:32,760 --> 00:45:36,340

FLIGHTS, STS-122 AND STS-129. BOTH SUNI AND KEVIN AND I TRAINED TOGETHER. SUNI WAS IN

433

00:45:36,340 --> 00:45:41,860

MY CLASS IN THE 1998 ASTRONAUT CLASS. SO I GOT A DEGREE IN CHEMISTRY, I WENT AND GOT

434

00:45:41,860 --> 00:45:46,820

A MASTER DEGREE IN MATERIAL SCIENCE ENGINEERING. I WORKED AS AN ENGINEER FOR 11 YEARS AT NASA

435

00:45:46,820 --> 00:45:53,880

LANGLEY AND THEN I GOT INTO THE ASTRONAUT COURSE. MY FIRST FLIGHT WAS IN 2008. WE TOOK

436

00:45:53,880 --> 00:45:59,920

UP THE EUROPEAN SPACE AGENCY'S LABORATORY. NEXT SLIDE. AND I THINK THE MOST INCREDIBLE

437

00:45:59,920 --> 00:46:04,661

PART OF THIS MISSION WAS WE HAD OUR FRIENDS FROM CANADA TALKING ABOUT CANADA ARM. IF YOU

438

00:46:04,661 --> 00:46:11,421

LOOK AT THAT TOP WHITE PIECE, THAT'S THE CANADA

ARM. HOW MANY OF YOU PLAY VIDEO GAMES? MOST

439
00:46:11,421 --> 00:46:16,720
OF YOU, RIGHT? SO IF YOU CAN PLAY VIDEO GAMES,
IF YOU'RE EXPERTS AT PLAYING VIDEO GAMES,

440
00:46:16,720 --> 00:46:23,420
YOU CAN FLY THE ROBOTIC ARM. ALL OF OUR TRAINING
IS DONE IN A SIMULATOR, JUST LIKE YOUR VIDEO

441
00:46:23,420 --> 00:46:30,740
GAMES ARE SIMULATED, RIGHT? NINTENDO, XBOX,
PLAY STATION, WII, WHAT ELSE? PS2, PS3. OKAY.

442
00:46:30,740 --> 00:46:37,980
ALL YOUR GAMES THAT YOU PLAY, YOU WILL BE
EXPERT ROBOTIC ARM OPERATORS IF YOU CAN WORK

443
00:46:37,980 --> 00:46:43,380
THAT GAME. SO THAT'S WHAT I DID. I INSTALLED
THIS ON TO THE INTERNATIONAL SPACE STATION.

444
00:46:43,380 --> 00:46:49,940
WE GREW THE SPACE STATION BY ANOTHER MODULE.
NEXT SLIDE. AFTER THIS INSTALLATION, WE HAD

445
00:46:49,940 --> 00:46:55,110
THIS WONDERFUL MEAL. IF YOU LOOK AT THIS PICTURE,
WE HAVE PEOPLE FROM ALL AROUND THE WORLD,

446
00:46:55,110 --> 00:47:00,570
AFRICAN-AMERICAN, ASIAN AMERICAN, FRENCH,
GERMAN, RUSSIAN, THE FIRST FEMALE COMMANDER

447
00:47:00,570 --> 00:47:05,470
OF THE INTERNATIONAL SPACE STATION. SO AS
YOU SAW, SUNI IS NOW THE FEMALE COMMANDER

448
00:47:05,470 --> 00:47:09,400
OF THE INTERNATIONAL SPACE STATION. THE FIRST

ONE WAS DR. PEGGY WITTMER. AND WE'RE HAVING

449

00:47:09,400 --> 00:47:17,500

THIS MEAL TRAVELING AROUND THE PLANET AT 17,500 MILES PER HOUR. EVERY 90 MINUTES THERE IS

450

00:47:17,500 --> 00:47:25,480

A SUNRISE AND A SUNSET EVERY 45 MINUTES. THAT'S WHAT SPACE IS LIKE. YOU SEE THINGS FROM BLUE

451

00:47:25,480 --> 00:47:32,020

LAGOONS TO VOLCANOS ERUPT TO GO BROWN MOUNTAIN TOES BEAUTIFUL, BEAUTIFUL LANDSCAPES. AND

452

00:47:32,020 --> 00:47:38,110

SO THIS PICTURE HERE, WE'RE HAVING A MALE. DAN IS FLYING UP LIKE A BAT. ON THE LEFT OF

453

00:47:38,110 --> 00:47:44,160

THE SCREEN, YOU SEE THERE SOME HOT SAUCE. HOW MANY PEOPLE LIKE HOT SAUCE? BECAUSE IN

454

00:47:44,160 --> 00:47:51,780

SPACE, YOUR TASTE BUDS AREN'T AS SENSITIVE. SO WE SPACE THE FOOD UP A LITTLE BIT. NEXT

455

00:47:51,780 --> 00:47:57,200

SLIDE. AND I TOOK MY DETROIT LIONS JERSEY TO SPACE. IT WAS FLOATING AROUND, PLAYED FOOTBALL

456

00:47:57,200 --> 00:48:02,350

IN SPACE. HOW MANY OF YOU HAVE PLAYED FOOTBALL BEFORE? SOME OF YOU? TRY TO PLAY THAT IN SPACE.

457

00:48:02,350 --> 00:48:07,270

THE THING IS, YOU HAVE TO PUSH OFFh.FLOAT AND TACKLE PEOPLE AND YOU KEEP FLOATING UNTIL

458

00:48:07,270 --> 00:48:15,360

YOU HIT SOMETHING LIKE A WALL. IT'S NOT GOOD.

NEXT SLIDE. MY SECOND MIDDLE, STS-129. WE

459

00:48:15,360 --> 00:48:23,420

FLEW UP WITH A CREW, A COUPLE OF MARINES.
BUTCH IS IN FRONT. IF YOU LOOK IN THE BACK

460

00:48:23,420 --> 00:48:32,790

RIGHT, THAT'S DR. PEGGY WITTEN, WHO IS THE
CHIEF OF THE ASTRONAUT OFFICE. LADIES, AS

461

00:48:32,790 --> 00:48:37,450

YOU KNOW, YOU CAN DO IT JUST LIKE THE MEN,
RIGHT? I'M GOING TO SHOW YOU A QUICK MOVIE

462

00:48:37,450 --> 00:48:42,710

ABOUT WHAT IT'S LIKE TO LIVE AND WORK IN SPACE.
SUNI AND KEVIN WERE DOING SOME FLIPS AND SHOWING

463

00:48:42,710 --> 00:48:47,860

YOU A FEW THINGS, BUT I'M GOING TO SHOW YOU
WHAT IT'S LIKE TO FLY ALONG IN SPACE. KILL

464

00:48:47,860 --> 00:48:55,470

THE SOUND ON THAT. ABOUT 3 1/2 HOURS BEFORE
WE LAUNCH, WE ARE SITTING IN THIS VEHICLE.

465

00:48:55,470 --> 00:49:00,060

AND I'M\h-- YOU SEE THAT WINDOW ON THE RIGHT?
I'M AT THE BOTTOM, THE BOTTOM OF THE WINDOW.

466

00:49:00,060 --> 00:49:05,511

I'M STRAPPED IN. I'M ON MY BACK AND WE'RE
WAITING TO ACTUALLY LAUNCH INTO SPACE. SO

467

00:49:05,511 --> 00:49:12,480

AS SUNI SAID, IT TAKES ABOUT 8:30 IN SPACE.
THE TIME THAT YOU'RE PREPARING, ABOUT A YEAR

468

00:49:12,480 --> 00:49:17,680

IN ADVANCE TO GET YOU READY. ALL THESE PEOPLE,

THOUSANDS OF PEOPLE FROM AROUND THE WORLD

469

00:49:17,680 --> 00:49:23,640

ARE FOCUSING AND WORKING TO HELP YOU GET READY TO GO TO SPACE. IT ONLY TAKES YOU 8:30 TO

470

00:49:23,640 --> 00:49:29,320

GO THERE. AND WE HAD WE HAD THIS SPARE PARTS IN THE PAYLOAD BAY. WE HAD TO USE THE

471

00:49:29,320 --> 00:49:33,400

ROBOTIC ARM. WE HAD A NUMBER OF OTHER THINGS WE WERE GOING TO DO. WE WERE GOING TO BRING

472

00:49:33,400 --> 00:49:41,720

BACK OUR COLLEAGUE, NICOLE, BECAUSE SHE WAS IN SPACE. I THINK WE'RE HAVING SOME TECHNICAL

473

00:49:41,720 --> 00:49:47,250

DIFFICULTIES SO YOU ALWAYS HAVE TO BE PREPARED FOR YOUR BACKUP PLAN, RIGHT? WAS YOUR BACK-UP

474

00:49:47,250 --> 00:49:52,800

PLAN? DO YOU HAVE A BACKUP PLAN? THINK ABOUT YOUR BACKUP PLAN. IF ONE THING DOESN'T WORK

475

00:49:52,800 --> 00:49:57,930

OUT, YOU'LL BE READY FOR SOMETHING ELSE. LAUNCH DIRECTORS IN HOUSTON, I MEAN, IN FLORIDA GETTING

476

00:49:57,930 --> 00:50:06,290

US READY. THE COUNTDOWN, 3, 2, 1, LIFTOFF. WE'VE GOT A NUMBER OF PEOPLE AROUND THE AREA

477

00:50:06,290 --> 00:50:14,240

TAKING PICTURES, GETTING THE ORBITER READY. AS YOU SEE, SPACE SHUTTLE "ATLANTIS" IS SITTING

478

00:50:14,240 --> 00:50:23,770

ON THE RUNWAY. IT'S RETIRED NOW. WE'RE DOWNING

DOWN, TEN, NINE, EIGHT, SEVEN, SIX, FIVE,

479
00:50:23,770 --> 00:50:34,960
FOR, THREE, TWOh-- I'M A LITTLE EARLY, HUH?
HERE WE GO. HELP ME COUNT. THREE, TWO, ONE,

480
00:50:34,960 --> 00:50:43,430
LIFTOFF! IF YOU LOOK AT THIS PICTURE, I'M
IN THE BACK ON THE RIGHT AND YOU SEE MY WRIST,

481
00:50:43,430 --> 00:50:48,090
I'M HOLDING MY WRIST UP IN THE AIR. I'VE GOT
A MIRROR ON MY WRIST AND I'M ACTUALLY LOOKING

482
00:50:48,090 --> 00:50:54,050
OUT THE WINDOW, THE OVERHEAD WINDOW AND I
CAN SEE BACK DOWN TO THE GROUND. AND IT MAKES

483
00:50:54,050 --> 00:50:58,240
A CONNECTION TO THE GROUND, NEXT TO US AND
I CAN SEE WHERE MY FAMILY AND FRIENDS ARE

484
00:50:58,240 --> 00:51:05,240
SITTING DOWN ON THE GROUND. IT'S AN INCREDIBLE
MOMENT. AFTER 2:30, THE SOLID ROCKET BOOSTERS

485
00:51:05,240 --> 00:51:13,240
HAVE JETISON. 8:30 LATER WE ARE NOW IN SPACE.
THE EXTERNAL TANK, THE ORANGE TANK FALLS BACK

486
00:51:13,240 --> 00:51:19,050
DOWN TO EARTH, IT BURNS UP, FALLS INTO THE
OCEAN. NOW WE START DOING OUR WORK. SO WE

487
00:51:19,050 --> 00:51:25,020
HAD A LOT OF SPARE PARTS TO ADD TO THE SPACE
STATION. AS YOU KNOW, THE SPACE SHUTTLE HAS

488
00:51:25,020 --> 00:51:31,271
RETIRED. SO WE USE THE ROBOTIC ARM. MOSTLY

CANADA ARM ONE AND TWO. ONE IS ON THE SHUTTLE.

489

00:51:31,271 --> 00:51:35,760

THE OTHER IS ON THE SPACE STATION. SO WE'RE USING THAT TO PUT THESE SPARE PARTS UP THERE

490

00:51:35,760 --> 00:51:41,380

SO WHEN THE SHUTTLE RETIRES, WE CAN USE THE ARM IN SPACE TO ATTACH THESE PARTS TO THE

491

00:51:41,380 --> 00:51:46,390

SPACE STATION. THAT'S WHAT YOU SEE THERE. THIS SIDE IS ON THE ROBOTICS STATION ON THE

492

00:51:46,390 --> 00:51:52,070

STATION SIDE AND THIS IS CANADA ARM ONE ON THE SHUTTLE SIDE. WE USE TARGETS JUST LIKE

493

00:51:52,070 --> 00:51:59,560

YOU DO IN YOUR VIDEO GAMES. HERE IS MY FOOTBALL GAME IN SPACE. BOOM! I TOOK A HIT, YOU KNOW?

494

00:51:59,560 --> 00:52:05,830

STUPID ASTRONAUT TRICKS FOR EATING OUR FOOD. IN SPACE, YOU TRANSFER THINGS WITH YOUR FEET.

495

00:52:05,830 --> 00:52:12,530

IF YOU'RE USING YOUR HANDS TO HOLD SOMETHING IN BOTH HANDS, AS SOON AS YOU GET TO A PLACE,

496

00:52:12,530 --> 00:52:18,550

YOU HAVE TO SLOW YOURSELF DOWN. HERE IS RANDY DOING THE SUPER MANITOBA UNIVERSITY. LOOK,

497

00:52:18,550 --> 00:52:24,630

MA, NO HANDS. WE ALLOWED OUR COLLEAGUES FROM AROUND THE WORLD SHARING THEIR DELICACIES

498

00:52:24,630 --> 00:52:29,580

FROM AROUND THE WORLD. WE HAD OUR RUSSIAN

COLLEAGUES, HERE IS NICOLE IN THE PURPLE SHIRT.

499
00:52:29,580 --> 00:52:35,619
WE BROUGHT HER HOME. THERE'S ME FLOWING FOOD
TO MY MOUTH, AS USUAL. THERE'S BOBBY, THERE'S

500
00:52:35,619 --> 00:52:40,220
RANDY FLOATING FOOD TO HIS MOUTH. THOSE ARE
THE KINDS OF THINGS YOU CAN DO WITH YOUR FOOD

501
00:52:40,220 --> 00:52:47,220
IN SPACE. MIKE AND EVERYONE ELSE IS SAYING,
MM-MMMM, GOOD. NICOLE WAS THE LAST TRANSFER

502
00:52:47,220 --> 00:52:53,660
ITEM. SHE WAS ITEM NUMBER 414. I ASKED THE
GROUND HOW MUCH SHE WAS SUPPOSED TO WEIGH.

503
00:52:53,660 --> 00:52:59,520
THEY SAID YOU DON'T ASK THAT. HERE IS PLAYING
WITH YOUR FOOD IN SPACE. M&Ms AND WATER BUBBLES.

504
00:52:59,520 --> 00:53:04,520
THIS IS CHEMISTRY. THIS IS SURFACE TENSION.
THIS IS PHYSICS AND CHEMISTRY AT WORK AND

505
00:53:04,520 --> 00:53:08,470
PLAY. THE GRAVITY STARTS TO BUILD BACK UP
WHEN WE COME HOME. SO I'M DROPPING MY BOOK.

506
00:53:08,470 --> 00:53:13,790
MY ARMS FEEL REALLY, REALLY HEAVY. I HAVE
BEEN IN MICROGRAVITY ALL THIS TIME AND NOW

507
00:53:13,790 --> 00:53:20,350
THE GRAVITATIONAL PULL OF THE EARTH AND THE
Gs WE'RE PULLING MAKE IT REALLY HARD TO MOVE

508
00:53:20,350 --> 00:53:26,700
YOUR ARMS AND TO FLIP THE SWITCHES. AT ABOUT

300 KNOTS, BUTCH WILLMORE, HE'S THE PILOT,

509
00:53:26,700 --> 00:53:33,210
HIS REALLY IMPORTANT JOB IS TO FLIP THE SWITCH
TO LET THE LANDING GEAR DOWN. AS YOU SEE,

510
00:53:33,210 --> 00:53:39,140
HE DID A GREAT JOB. WE CAME HOME. WE HAD BEEN
IN SPACE FOR ABOUT 13 DAYS. AS YOU SEE ON

511
00:53:39,140 --> 00:53:43,410
THE INSET ON THE RIGHT, THE WHEELS EAT UP
QUITE A BIT. BECAUSE ALL THAT ENERGY THAT

512
00:53:43,410 --> 00:53:48,850
WE WERE IN SPACE WITH HAS TO BE DISSIPATED
DOWN ON THE GROUND. PARACHUTE COMES OUT, HELPS

513
00:53:48,850 --> 00:53:56,020
US ROLL BACK ON TO THE TARMAC THERE. WE HAD
BEEN IN SPACE FOR 13 DAYS AND TRAVELED OVER

514
00:53:56,020 --> 00:54:04,850
4.9 MILLION MILES. SO IF I COULD ONLY HAVE
HALF OF THOSE FREQUENT FLYER MILES, I WOULD

515
00:54:04,850 --> 00:54:10,080
BE SET, RIGHT? LET'S GO TO THE NEXT SLIDE.
AFTER A COUPLE HOURS, WE KIND OF DECONDITION

516
00:54:10,080 --> 00:54:16,050
OURSELVES. YOU KNOW, YOU TAKE A LOT OF FLUIDS,
USE THE BATHROOM, THOSE KINDS OF THINGS. GET

517
00:54:16,050 --> 00:54:21,400
YOUR SEA LEGS BACK AND WALK AROUND. HERE IS
THE SPACE STATION ASSEMBLY COMPLETE. SUNI

518
00:54:21,400 --> 00:54:29,610
WAS TALKING TO YOU FROM I THINK THE U.S. LABORATORY.

SO THAT'S BACK ON THE OTHER SIDE. NEXT SLIDE.

519
00:54:29,610 --> 00:54:34,720
THIS IS THE\h-- THIS IS THE ATMOSPHERE THAT
KEEPS US ALIVE ON THE PLANET. THIS IS CALLED

520
00:54:34,720 --> 00:54:43,220
THE EARTH LIMB. YOU SEE A SUNSET HERE, NEXT
SLIDE. HERE IS SUNI. BIG HAIR AND EATING CHICKEN

521
00:54:43,220 --> 00:54:49,030
WITH CHOPSTICKS. NEXT SLIDE. SUNI AND I\h--
SHE MENTIONED HER DOG, GORBI. SUNI AND I HAD

522
00:54:49,030 --> 00:54:57,300
TWO DOGS, YOU SEE SUNI THERE WITH HER DOG
AND THERE'S MY DOG, SCOUT. AND WE WERE TRYING

523
00:54:57,300 --> 00:55:04,690
TO GET THEM TO GET ALONG ON THE GROUND. NEXT
SLIDE. NASA IS A PLACE FOR EVERYONE. HOW MANY

524
00:55:04,690 --> 00:55:14,790
OF YOU HAVE DONE ROBOTICS BEFORE? ROBOTICS
ARE VERY IMPORTANT. WE HAVE THIS ROVER ON

525
00:55:14,790 --> 00:55:19,710
MARS RIGHT NOW. THINK ABOUT TRYING TO DO THINGS
WITH YOUR HANDS, BUILDING AND CREATING. LIKE

526
00:55:19,710 --> 00:55:24,890
I MADE THAT SKATEBOARD. THINK ABOUT THE THINGS
THAT YOU CAN BUILD TO HELP SOCIETY. NEXT SLIDE.

527
00:55:24,890 --> 00:55:31,460
LEGOS, WE HAVE LEGOS IN SPACE RIGHT NOW. WE
HAVE ASSEMBLED LEGOS IN CURRICULUM FOR TEACHERS

528
00:55:31,460 --> 00:55:39,580
TO ACTUALLY TEACH SPACE PHYSICS USING LEGOS.

NEXT SLIDE. OH, WAIT, WHO HAS A SMARTPHONE?

529
00:55:39,580 --> 00:55:44,760
HOW MANY OF YOU HAVE A SMARTPHONE? THERE'S
AN APP CALLED THE ASTRO APP THAT MY NIECE,

530
00:55:44,760 --> 00:55:49,880
SIERRA, WHEN I CAME HOME, SHE SHOWED ME THAT
SHE'S GOING TO BE AN ASTRONAUT. SHE BELIEVES

531
00:55:49,880 --> 00:55:54,540
ONE DAY SHE'S GOING TO BE AN ASTRONAUT SO
SHE PUT HERSELF IN THIS ASTRONAUT UNIFORM.

532
00:55:54,540 --> 00:55:59,980
THE THINGS YOU WANT TO DO IN YOUR LIVES, FIND
THE PEOPLE THAT ARE DOING THEM NOW AND TRY

533
00:55:59,980 --> 00:56:05,990
TO UNDERSTAND WHAT THEIR PATH WAS AND MAKE
THAT PATH YOUR OWN. NEXT SLIDE. CURIOSITY

534
00:56:05,990 --> 00:56:12,470
ON MARS. HOW MANY OF YOU KNOW ABOUT CURIOSITY
ON MARS? OATS A ROVER THAT IS LOOKING FOR

535
00:56:12,470 --> 00:56:18,920
PAST SIGNS OF LIFE ON MARS. HAS A ROBOTIC
ARM, ALL KINDS OF SENSORS FOR TAKING MEASUREMENTS.

536
00:56:18,920 --> 00:56:28,030
NEXT SLIDE. HOW MANY OF YOU PLAY ANGRY BIRDS?
MOST OF YOU, OKAY. SO IF YOU PLAY ANGRY BIRDS,

537
00:56:28,030 --> 00:56:32,710
THINK ABOUT THIS. THIS IS ONE THING I WANT
TO LEAVE YOU WITH. I HAVE A SMARTPHONE. I

538
00:56:32,710 --> 00:56:39,190
HAVE ANGRY BIRDS ON THIS PHONE. ANGRY BIRDS

SPACE IN THREE DAYS, LISTEN TO THIS, THREE

539

00:56:39,190 --> 00:56:48,320

DAYS SOLD 10 MILLION COPIES. FOR 99 CENTS.
SO IF h-- WHAT'S YOUR NAME? STEVEN? JAVON.

540

00:56:48,320 --> 00:56:55,420

IF JAVON HAD DEVELOPED ANGRY BIRDS SPACE,
YOU WOULD BE A MULTI MILLIONAIRE. THINK ABOUT

541

00:56:55,420 --> 00:57:03,680

IT. SO INSTEAD OF BEING A USER OF THE TECHNOLOGY,
BE A DEVELOPER. CREATE THE TECHNOLOGY AND

542

00:57:03,680 --> 00:57:09,480

YOU WILL NOT ONLY HELP ADVANCE OUR CIVILIZATION,
YOU WILL GET PAID, TOO. AND YOU CAN TAKE ALL

543

00:57:09,480 --> 00:57:16,420

OF US TO DISNEY WORLD. BUT SERIOUSLY, THOUGH,
YOU'RE PLAYING THESE GAMES. YOU'RE EXPERTS.

544

00:57:16,420 --> 00:57:21,370

THINK ABOUT HOW YOU CAN BE CREATORS AND DEVELOPERS
OF THIS TECHNOLOGY. HOW MANY OF YOU KNOW WILL

545

00:57:21,370 --> 00:57:29,450

I. AM? HE HE WROTE A SONG CALLED "REACH FOR
THE STARS." WE BEAMED THE SONG TO THE ROVER

546

00:57:29,450 --> 00:57:36,490

ON MARS AND BEAMED IT BACK TO LET STUDENTS
NOW ABOUT HOW THESE SATELLITES AND HOW THIS

547

00:57:36,490 --> 00:57:44,350

DEEP SPATE NETWORK CAN SEND THINGS LIKE MUSIC
FROM ANOTHER PLANET. SO THAT IS ALL SCIENCE

548

00:57:44,350 --> 00:57:49,440

AND PHYSICS AND MATH. SO IF YOU KNOW THOSE

THINGS, IF YOU WANT TO BE A PHYSICIAN, YOU

549

00:57:49,440 --> 00:57:53,869

HAVE TO KNOW DIGITAL SIGNAL, PROCESSING AND ALL THESE THINGS THAT WHEN YOU MAKE YOUR MUSIC

550

00:57:53,869 --> 00:58:01,700

AND YOUR MP3 FILES, THAT'S ALL TECHNOLOGY. THAT'S FINE. INTERNATIONAL SPACE STATION EDUCATION,

551

00:58:01,700 --> 00:58:06,010

WE HAVE APPS THAT YOU CAN DOWNLOAD, DATA COMING DIRECTLY FROM SPACE STATION. SO THE THINGS

552

00:58:06,010 --> 00:58:12,560

THAT SUNI AND KEVIN ARE DOING IN SPACE, YOU CAN MONITOR THEM ON THE GROUND ON YOUR SMARTPHONE.

553

00:58:12,560 --> 00:58:19,220

NEXT SLIDE. S.T.E.M., SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS, IT'S VERY IMPORTANT.

554

00:58:19,220 --> 00:58:24,630

THAT'S THE FUTURE OF ENSURING THAT WE HAVE A STRONG ECONOMY, THAT WE HAVE A CREATIVE

555

00:58:24,630 --> 00:58:29,340

CIVILIZATION THAT'S GOING TO ALLOW US TO BE THE NEXT GENERATION OF EXPLORERS. YOU GUYS,

556

00:58:29,340 --> 00:58:34,510

AS SUNI MENTIONED, ARE THOSE NEXT GENERATION OF EXPLORERS. DO YOU BELIEVE THAT? OH, COME

557

00:58:34,510 --> 00:58:36,920

ON, THAT'S WEAK. DO YOU BELIEVE THAT?

558

00:58:36,920 --> 00:58:37,920

YES.

559

00:58:37,920 --> 00:58:40,490

I STILL CAN'T HEAR. DO YOU BELIEVE THAT?

560

00:58:40,490 --> 00:58:41,490

YES!

561

00:58:41,490 --> 00:58:43,900

WHO IS GOING TO MARS ONE DAY?

562

00:58:43,900 --> 00:58:45,040

ME.

563

00:58:45,040 --> 00:58:46,900

WHAT DOES IT TAKE TO GET TO MARS?

564

00:58:46,900 --> 00:58:49,090

HARD WORK.

565

00:58:49,090 --> 00:59:01,390

WHAT ELSE? OKAY. WHAT ELSE? DEDICATION. WHAT ELSE? TEAM WORK. WHAT ELSE? YOU SAY EAT YOUR

566

00:59:01,390 --> 00:59:08,320

GREEN BEANS? YEAH. TONY MENTIONED YOU'VE GOT TO BE HEALTHY. YOU HAVE TO BE STRONG. IF YOU'RE

567

00:59:08,320 --> 00:59:14,890

NOT STRONG AND HEALTHY, WHEN YOU GET TO SPACE, IN THE SHADE IT'S MINUS 250 DEGREES. IN THE

568

00:59:14,890 --> 00:59:22,230

SUN, IT'S POSITIVE 250 DEGREES. YOUR BODY IN YOUR SPACE SUIT HAS TO BE ABLE TO HANDLE

569

00:59:22,230 --> 00:59:27,690

ALL THESE DIFFERENT THINGS. SO YOUR HEALTH IS VERY IMPORTANT IN SPACE. AS IT IS ON THE

570

00:59:27,690 --> 00:59:34,320

GROUND, TOO. NEXT SLIDE. SO WE TALKED ABOUT THE STUDENT SPACE FLIGHT EXPERIMENT PROGRAM.

571

00:59:34,320 --> 00:59:39,170

SUNI IS GOING TO BRING BACK THESE EXPERIMENTS. THE STUDENTS THAT HAVE WORKED ON THIS ARE

572

00:59:39,170 --> 00:59:43,430

GOING TO BE FUTURE SCIENTISTS AND ENGINEERS, ASTRONAUTS, WHATEVER IT IS YOU WANT TO BE,

573

00:59:43,430 --> 00:59:49,380

BUT IT STARTS WITH RIGHT NOW. GETTING EXACTLY WHAT YOU NEED RIGHT NOW TO BE THE NEXT GENERATION

574

00:59:49,380 --> 00:59:55,240

OF EXPLORERS. NEXT SLIDE. HOW MANY PEOPLE HAVE EVER SAID SOMETHING TO YOU LIKE THIS,

575

00:59:55,240 --> 01:00:01,550

THAT YOU CAN'T DO SOMETHING? HAS ANYONE EVER TOLD YOU THAT YOU CAN'T DO SOMETHING? PEOPLE

576

01:00:01,550 --> 01:00:06,900

HAVE TOLD ME THAT MY WHOLE LIFE. THEY HAVE TOLD ME I CAN'T DO THIS. YOU CAN'T PLAY IN

577

01:00:06,900 --> 01:00:12,130

THE NFL. YOU CAN'T BE A FOOTBALL PLAYER. YOU CAN'T BE A SCIENTIST. YOU CAN'T BE AN ENGINEER.

578

01:00:12,130 --> 01:00:17,260

I'VE BEEN TOLD THAT. YOU KNOW WHAT THE PROBLEM WITH YOU CAN'T? WHAT'S THE PROBLEM WITH YOU

579

01:00:17,260 --> 01:00:29,210

CAN'T? IT'S Ah-- IF YOU TAKE AWAY THE APOST FEE AND THE T, IT BECOMES YOU CAN. DON'T LET

580

01:00:29,210 --> 01:00:36,200

ANYONE BULLY YOU. DON'T LET ANYONE TELL YOU
THAT YOU CAN'T ACHIEVE YOUR DREAMS BECAUSE

581

01:00:36,200 --> 01:00:41,940

YOU CAN DO ANYTHING YOU PUT YOUR MIND TO.
DO YOU BELIEVE THAT? OH, DO YOU BELIEVE THAT?

582

01:00:41,940 --> 01:00:42,940

YEAH.

583

01:00:42,940 --> 01:00:48,480

ALL RIGHT. NEXT SLIDE. SO LIVE YOUR DREAMS.
I APPRECIATE WHAT YOU'RE DOING. I WANT TO

584

01:00:48,480 --> 01:00:53,260

SEE SOME OF YOU WALK ON THE MARTIAN SURFACE
ONE DAY. I WANT TO THANK GENERAL DALEY FROM

585

01:00:53,260 --> 01:01:00,570

THE SMITHSONIAN, TONY MILLER FROM THE DEPARTMENT
OF EDUCATION. WE HAVE SOME OTHER PEOPLE HERE

586

01:01:00,570 --> 01:01:06,710

FROM DISCOVERY EDUCATION, KELLY JENSON, BUT
I WANT TO THANK EVERYONE FOR HAVING AN INVESTMENT

587

01:01:06,710 --> 01:01:15,240

IN YOUR FUTURE BECAUSE YOU ARE TRULY THE FUTURE
OF OUR CIVILIZATION. THANK YOU VERY MUCH.

588

01:01:15,240 --> 01:01:20,270

GOD BLESS.

589

01:01:20,270 --> 01:01:29,109

ALL RIGHT. UP NEXT IS THE DIRECTOR FOR THE
NATIONAL CENTER FOR EARTH AND SPACE SCIENCE

590

01:01:29,109 --> 01:01:34,780

EDUCATION, DR. JEFF GOLDSTEIN. DR. JEFF IS

RESPONSIBLE FOR OVERSEEING THE DELIVERY AND

591

01:01:34,780 --> 01:01:41,750

EDUCATION FOR THE NATIONAL SCIENCE AND EDUCATION
INITIATIVE WITH A FOCUS ON EARTH AND SPACE.

592

01:01:41,750 --> 01:01:46,369

IN ADDITION, HIS PLAN TEAR SCIENCE RESEARCH
INCLUDES THE DEVELOPMENT OF TECHNIQUES FOR

593

01:01:46,369 --> 01:01:51,859

MEASURING GLOBAL WINDS ON OTHER PLANETS USING
LARGE TELESCOPES HERE ON EARTH. LADIES AND

594

01:01:51,859 --> 01:01:58,810

GENTLEMEN, DR. JEFF GOLDSTEIN.

595

01:01:58,810 --> 01:02:11,460

HELLO TO ALL OF THE STUDENTS ACROSS THE COUNTRY
AND IN CANADA. CAN I HEAR YOU? IT'S A VIRTUAL

596

01:02:11,460 --> 01:02:16,250

CHEER, RIGHT? IT'S A VIRTUAL CHEER. I THOUGHT
I WOULD TAKE A FEW MINUTES TO TALK ABOUT THE

597

01:02:16,250 --> 01:02:20,410

STUDENT SPACE FLIGHT EXPERIMENT PROGRAM. WE'RE
VERY PROUD OF THIS INITIATIVE. AND I THINK

598

01:02:20,410 --> 01:02:26,550

THE BEST WAY TO START IS SAY IT WAS ALL BASED
ON SOMETHING VERY FUNDAMENTAL, WHICH IS THAT

599

01:02:26,550 --> 01:02:34,520

WE HUMANS ARE BORN TO EXPLORE. WE HUMANS ARE
BORN CURIOUS. AND JUST TO MAKE THAT POINT,

600

01:02:34,520 --> 01:02:40,640

EVERY PARENT REMEMBERS THAT VERY MAGICAL TIME
WHEN THEIR CHILD WAS JUST CAPABLE OF EXPRESSING

601
01:02:40,640 --> 01:02:46,950
THEMSELVES, JUST CAPABLE OF SPEAKING. AND
EVERY PARENT REMEMBERS THE QUESTIONS STARTED

602
01:02:46,950 --> 01:02:54,090
AT THAT MOMENT. QUESTION AFTER QUESTION, AN
UNENDING STREAM OF QUESTIONS FROM THAT CHILD.

603
01:02:54,090 --> 01:02:59,359
WHICH IS SOMETHING THAT CHILDREN ARE WIRED
TO DO. WE ARE BORN TO ASK THOSE QUESTIONS.

604
01:02:59,359 --> 01:03:06,210
WE ARE BORN CURIOUS. JUST AS AN ASIDE, THE
NEXT TIME A CHILD COMES TO YOU WITH THIS BARRAGE

605
01:03:06,210 --> 01:03:13,960
OF QUESTIONS, TAKE IT AS A GIFT BECAUSE THEY
CHOSE YOU. AND SO NOT ONLY ARE WE BORN CURIOUS,

606
01:03:13,960 --> 01:03:19,640
BUT WE ALSO HAVE ANOTHER CAPACITY AS HUMAN
WHICH IS THAT WE'RE BORN EVIDENCE-BASED LEARNERS.

607
01:03:19,640 --> 01:03:25,870
EVER SINCE WE ARE CAPABLE OF INTERACTING WITH
OUR CORNER OF THE UNIVERSE, OUR WORLD, WE

608
01:03:25,870 --> 01:03:31,940
LIKE TO POKE IT AND SEE WHAT HAPPENS. AND
WE LOOK AT EVIDENCE OF THAT INTERACTION BECAUSE

609
01:03:31,940 --> 01:03:39,710
THAT ALLOWS US TO LEARN. EVIDENCE ALLOWS US
TO LEARN HOW THE WORLD WORKS. SO CURIUSTY

610
01:03:39,710 --> 01:03:46,369
AND EVIDENCE-BASED LEARNING ARE INNATELY HUMAN.
WE ARE BORN THAT WAY. HOW DOES THAT HOOK UP

611
01:03:46,369 --> 01:03:52,600
WITH SCIENCE AS PRACTICED BY PROFESSIONAL
SCIENTISTES AND ENGINEERING USING AN INQUIRY

612
01:03:52,600 --> 01:03:57,360
APPROACH TO THE WORLD WHICH WE CALL THE SCIENTIFIC
METHOD? WELL, IT'S KIND OF INTERESTING BECAUSE

613
01:03:57,360 --> 01:04:04,630
SCIENCE, AS PRACTICED BY PROFESSIONALS, IS
NOTHING BUT ORGANIZED CURIOSITY. AND SCIENCE

614
01:04:04,630 --> 01:04:10,810
IS EVIDENCE-BASED LEARNING FOR THE ENTIRE
HUMAN RACE. SCIENCE, AS IT IS PRACTICED BY

615
01:04:10,810 --> 01:04:19,590
PROFESSIONALS GROWS ORGANICALLY FROM WHAT
IT MEANS TO BE HUMAN. AND SO IF WHAT WE ARE

616
01:04:19,590 --> 01:04:25,110
GROWS INTO SCIENCE NATURALLY, THAT SPEAKS
TO WHAT SCIENCE EDUCATION OUGHT TO BE IN THE

617
01:04:25,110 --> 01:04:32,800
21st CENTURY. WE BELIEVE THAT WE'VE GOT TO
STOP TEACHING SCIENCE WITH A FOCUS ON THE

618
01:04:32,800 --> 01:04:38,190
BOOK OF KNOWLEDGE. BECAUSE IF SCIENCE EDUCATION
IS ABOUT INTRODUCING OUR NEXT GENERATION TO

619
01:04:38,190 --> 01:04:44,700
SCIENCE, WE HAVE TO RECOGNIZE THAT SCIENCE
WAS NEVER A BOOK OF KNOWLEDGE. SCIENCE HAS

620
01:04:44,700 --> 01:04:52,359
ALWAYS BEEN A JOURNEY. IT'S A PROCESS. IT'S
A WONDROUSLY HUMAN EMOTIONAL JOURNEY. AND

621

01:04:52,359 --> 01:04:58,440

IT ALL STARTS WITH THE GIFT OF A QUESTION.
AND THE SCIENTIST WILL HONE THIS ART FORM

622

01:04:58,440 --> 01:05:03,590

IN TERMS OF HOW TO GET FROM A QUESTION IN
SEARCH OF AN ANSWER BY NAVIGATING THROUGH

623

01:05:03,590 --> 01:05:09,460

THE NOISE OF THE UNIVERSE AROUND US. AND IF
YOU ASK THAT GIFT OF A QUESTION AND YOU GET

624

01:05:09,460 --> 01:05:15,710

TO AN ANSWER WHICH MAY\h-- WHICH IS AKIN TO
PULLING BACK THE VEIL OF NATURE AND SEEING

625

01:05:15,710 --> 01:05:22,580

SOMETHING HOLY NEW, IT MIGHT BE WHOLLY NEW
TO US AND WHOLLY NEW TO THE HUMAN RACE, BUT

626

01:05:22,580 --> 01:05:28,830

REGARDLESS, THAT ACT OF EXPLORATION IS WONDER
RUSS AND YOU CAN'T HELP BUT HAVE A SMILE BREAK

627

01:05:28,830 --> 01:05:35,290

ACROSS YOUR FACE. AND IT PROPELS YOU TO ASK
MORE QUESTIONS BECAUSE THIS IS A LIFELONG

628

01:05:35,290 --> 01:05:44,650

EXPERIENCE. SO IF SCIENCE IS PROCESSED AND
SCIENCE EDUCATION OUGHT NOT TO FOCUS ON THE

629

01:05:44,650 --> 01:05:50,250

BOOK OF KNOWLEDGE OF SCIENCE BECAUSE THAT'S
A MISCONCEPTION THAT WE'RE PROVIDING THE PUBLIC,

630

01:05:50,250 --> 01:05:57,650

SCIENCE EDUCATION ALSO OUGHT NOT BE ABOUT
TALKING AT SCIENCE, TALKING ABOUT SCIENCE,

631

01:05:57,650 --> 01:06:03,910

BECAUSE OUR STUDENTS, OUR CHILDREN ARE PERFECTLY
CAPABLE OF BEING RESEARCHERS RIGHT NOW. THEY

632

01:06:03,910 --> 01:06:10,920

DO IT EVERY DAY. THEY SURVIVE ON A DAILY BASIS
THE WORLD AROUND THEM. THEY ARE CAPABLE OF

633

01:06:10,920 --> 01:06:16,350

BEING IMMERSSED IN THE JOURNEY, IN SCIENCE,
AND THAT'S WHAT SCIENCE EDUCATION OUGHT TO

634

01:06:16,350 --> 01:06:22,360

BE IN THE 21st CENTURY. SO THAT'S HOW THIS
PROGRAM GOT ITS START FROM A PHILOSOPHICAL

635

01:06:22,360 --> 01:06:28,520

VANTAGE POINT. SO TO PUT THE RUBBER ON THE
ROAD, THE QUESTION WAS WHAT COULD WE OFFER

636

01:06:28,520 --> 01:06:34,480

TO THE UNITED STATES? WHAT COULD WE OFFER
INTERNATIONALLY TO GIVE THIS OPPORTUNITY TO

637

01:06:34,480 --> 01:06:40,359

OUR CHILDREN? AND WE WANTED SOME OPPORTUNITY
THAT WOULD BE SO POWERFUL, SO HIGH VISIBILITY,

638

01:06:40,359 --> 01:06:45,030

SO OUT OF THIS WORLD THAT IT WOULD GRAB KIDS
BY THE COLLAR AND TEACHERS BY THE COLLAR AND

639

01:06:45,030 --> 01:06:50,350

SAY HOW COULD YOU NOT DO THIS? AND SO WHAT
WE DID WAS WE WORKED WITH A COMPANY CALLED

640

01:06:50,350 --> 01:06:56,170

NANORACKS WHICH IS WORKING WITH A SPACE ACT
AGREEMENT WITH NASA TO UTAH LIKE THE INTERNATIONAL

641
01:06:56,170 --> 01:07:01,730
SPACE STATION AS A NATIONAL LABORATORY AND
OPEN UP COMMERCIAL ACCESS. AND WE'RE ABLE

642
01:07:01,730 --> 01:07:06,730
TO SAY TO A COMMUNITY, A SCHOOL DISTRICT,
WE'RE GOING TO GIVE YOU A REAL MICROGRAVITY

643
01:07:06,730 --> 01:07:17,260
RESEARCH LABORATORY AND ALL LAUNCH SERVICES
TO GET IT TO THE INTERNATIONAL SPACE STATION.

644
01:07:17,260 --> 01:07:23,450
SO THE SCHOOL AND THE MINI LAB CAN CONTAIN
A SINGLE EXPERIMENT. AND THE SCHOOL DISTRICT

645
01:07:23,450 --> 01:07:29,290
NOW HAS THIS WONDERFUL, PROFESSIONAL, VALUABLE
BUT LIMITED RESOURCE. AND SO THE SCHOOL SYSTEM

646
01:07:29,290 --> 01:07:35,780
SAYS TO HUNDREDS OF STUDENTS ACROSS THE DISTRICT,
BREAK INTO TEAMS LIKE REAL RESEARCHERS. EACH

647
01:07:35,780 --> 01:07:40,990
TEAM DESIGN YOUR OWN RESEARCH PROGRAM, A REAL
EXPERIMENT WHICH COULD BE OVER A WIDE RANGE

648
01:07:40,990 --> 01:07:47,070
OF DISCIPLINES. IT COULD BE MICROBIAL. IT
COULD BE PROTEIN CRYSTAL GROWTH, FOOD PRESERVATION,

649
01:07:47,070 --> 01:07:53,310
MICROAQUATIC LIFE. IT'S THEIR RESEARCH. THEY
OWN IT. THEY'RE EMPOWERED TO ASK THE QUESTIONS

650
01:07:53,310 --> 01:07:58,450
THEY WANT TO SEE AN ANSWER TO AND THEY DESIGN
A REAL EXPERIMENT CONSTRAINED BY THE OPERATION

651

01:07:58,450 --> 01:08:04,270

OF THAT MINI LAB WHICH IS USED BY PROFESSIONAL RESEARCHERS AND CONSTRAINED BY FLIGHT OPERATIONS

652

01:08:04,270 --> 01:08:11,040

TO AND FROM LOW EARTH ORBIT SO WE WORK DIRECTLY WITH NASA THROUGH NANORACKS. AND EACH OF THESE

653

01:08:11,040 --> 01:08:17,870

TEAMS WRITES A REAL PROPOSAL, A FORMAL PROPOSAL FOR WHAT THEY WANT TO DO JUST LIKE PROFESSIONAL

654

01:08:17,870 --> 01:08:23,839

RESEARCHERS. THEY GO THROUGH A FORMAL TWO-STEP PROPOSAL REVIEW PROCESS, JUST LIKE PROFESSIONAL

655

01:08:23,839 --> 01:08:28,770

RESEARCHERS, AND ONE OF THOSE EXPERIMENTS IS SELECTED FOR FLIGHT. IT GOES THROUGH A

656

01:08:28,770 --> 01:08:33,970

NASA FLIGHT SAFETY REVIEW, A TAX COMING AT JOHNSON SPACE CENTER AND THE ENTIRE COMMUNITY

657

01:08:33,970 --> 01:08:39,910

RALLIES BEHIND THE TEAM THAT'S GOING INTO SPACE ON BEHALF OF THAT COMMUNITY. SO RIGHT

658

01:08:39,910 --> 01:08:47,330

NOW, THERE ARE 23 EXPERIMENTS ABOARD THE INTERNATIONAL SPACE STATION THAT HAVE BEEN OVERSEEN BY COMMANDER

659

01:08:47,330 --> 01:08:53,540

WILLIAMS THAT GOT THERE ON THE SPACEX DRAGON VEHICLE AND THOSE 23 EXPERIMENTS REPRESENT

660

01:08:53,540 --> 01:09:01,230

OVER 7,000 STUDENTS FULLY IMMERSSED IN EXPERIMENT DESIGN AND PROPOSAL WRITING ACROSS THE U.S.

661

01:09:01,230 --> 01:09:09,980

WE RECEIVED FOR THIS PARTICULAR FLIGHT OPPORTUNITY
OVER 2,000 PROPOSALS. AND RIGHT NOW, IN 24

662

01:09:09,980 --> 01:09:16,830

OF THE 55 SSEP COMMUNITIES ACROSS THE COUNTRY
AND IN CANADA, 24 OF THOSE COMMUNITIES ARE

663

01:09:16,830 --> 01:09:27,089

TUNED INTO THIS VIDEO CONFERENCE AND THERE
ARE 9,557, JACK? 9,557 STUDENTS OUT THERE.

664

01:09:27,089 --> 01:09:33,960

AND SO ON BEHALF OF ALL OF THOSE STUDENTS,
TO ALL OF THE TEACHER FACILITATORS THAT MADE

665

01:09:33,960 --> 01:09:40,230

THIS HAPPEN IN ALL OF THOSE COMMUNITIES, TO
ALL OF THE ADMINISTRATORS, TO THE OVER 280

666

01:09:40,230 --> 01:09:45,850

PARTNER ORGANIZATIONS THAT MADE THIS HAPPEN,
INCLUDING 26 SPACE GRANT LEAD INSTITUTIONS

667

01:09:45,850 --> 01:09:51,120

TO NASA, TO NANORACKS, SO THE NATIONAL AIR
AND SPACE MUSEUM AND THE SMITHSONIAN, TO THE

668

01:09:51,120 --> 01:09:56,180

CENTER FOR ADVANCEMENT OF SCIENCE AND SPACE,
OUR INTERNATIONAL PARTNERS, ON BEHALF OF THOSE

669

01:09:56,180 --> 01:10:05,330

STUDENTS, THANK YOU.

670

01:10:05,330 --> 01:10:16,050

ALL RIGHT. OUR FINAL GUEST IS ASSISTANT SECOND
FOR EDUCATION AND ACCESS FOR THE SMITHSONIAN

671

01:10:16,050 --> 01:10:28,270

INSTITUTION, CLAUDINE BROWN. CLAUDINE IS RESPONSIBLE FOR THE SMITHSONIAN'S EDUCATIONAL PROGRAM.

672

01:10:28,270 --> 01:10:40,240

SHE COORDINATES 32 EDUCATION-BASED OFFICES AND MUSEUMS AND SCIENCE CENTERS. LADIES AND

673

01:10:40,240 --> 01:10:45,739

GENTLEMEN, ASSISTANT SECRETARY CLAUDINE BROWN.

674

01:10:45,739 --> 01:10:57,940

I WOULD LIKE TO SAY THANK YOU TO THE AUDIENCE. AND I'D LIKE FOR YOU TO GIVE YOURSELF A ROUND

675

01:10:57,940 --> 01:11:08,530

OF APPLAUSE, ALL OF YOU. AND I'D LIKE TO TRILLION YOU A LITTLE BIT ABOUT WHAT I'VE LEARNED FROM

676

01:11:08,530 --> 01:11:15,690

YOU AND ABOUT YOU TODAY THAT MAKE YOU PRETTY SPECTACULAR. FIRST OF ALL, YOU ASKED IMPRESSIVE

677

01:11:15,690 --> 01:11:21,270

QUESTIONS AND YOU ASKED THEM FOR YOURSELF AND YOU ASKED THEM FOR YOUR PEERS. AND WE

678

01:11:21,270 --> 01:11:28,240

ALL LEARNED FROM WHAT YOU HAD TO ASK. SO THANK YOU FOR EVERY SCHOOL, EVERY STUDENT WHO CAME

679

01:11:28,240 --> 01:11:34,640

UP WITH QUESTIONS TO ASK OF THE ASTRONAUTS WHO WERE WITH US TODAY. THE SECOND THING THAT

680

01:11:34,640 --> 01:11:40,910

I'D LIKE TO THANK YOU FOR IS INFORMATION ABOUT YOURSELF. WHEN LELAND SPOKE, HOW MANY OF YOU

681

01:11:40,910 --> 01:11:48,100

SAID THAT YOU PLAYED SPORTS? CAN YOU RAISE YOUR HANDS AGAIN? THANK YOU. SO HERE IS WHAT

682

01:11:48,100 --> 01:11:54,000

WE KNOW ABOUT THAT. WE KNOW THAT THOSE OF YOU WHO PLAYED SPORTS KNOW HOW TO BEHAVE AS

683

01:11:54,000 --> 01:12:00,210

A TEAM. YOU KNOW HOW TO SUPPORT ONE ANOTHER. YOU KNOW HOW TO BLOCK FOR ONE ANOTHER AND

684

01:12:00,210 --> 01:12:06,130

YOU KNOW HOW TO FACILITATE SOMEONE ELSE'S SUCCESSES BECAUSE ONE PERSON'S SUCCESS IS

685

01:12:06,130 --> 01:12:12,719

A SUCCESS FOR EACH OF YOU. AND THAT IS A SKILL SET THAT YOU WILL USE IN THE SCIENCES AS WELL

686

01:12:12,719 --> 01:12:18,900

AS IN SPORTS. SO WE COMMEND YOU FOR THAT AND WE ENCOURAGE YOU TO KNOW AND UNDERSTAND THAT

687

01:12:18,900 --> 01:12:25,440

VERY LITTLE OF WHAT YOU LEARN IS NOT GOING TO BE USEFUL. SO LELAND MENTIONED THE FACT

688

01:12:25,440 --> 01:12:32,300

THAT MANY OF YOU PLAYED VIDEO GAMES. CAN YOU RAISE YOUR HANDS IF YOU'RE PLAYING VIDEO GAMES?

689

01:12:32,300 --> 01:12:38,840

SO WHAT DOES THAT HAVE TO DO WITH TODAY? AGAIN, YOU ARE MASTERING SKILLS THAT CAN PLAY A PART

690

01:12:38,840 --> 01:12:44,190

IN YOUR LIVES AS SCIENTISTS AND THAT IS THE DIRECTION YOU CHOOSE TO MOVE IN. BUT WHEN

691

01:12:44,190 --> 01:12:49,739
YOU PLAY VIDEO GAMES, YOU GO FROM ONE LEVEL
TO THE NEXT. YOU KNOW WHEN YOU'VE MADE ACHIEVEMENTS

692
01:12:49,739 --> 01:12:54,940
AND YOU ASPIRE TO MOVE TO THE NEXT HIGHEST
LEVEL. AND THAT, TOO, WILL BE A PART OF THE

693
01:12:54,940 --> 01:13:00,630
WORK THAT YOU DO IN THE FUTURE. AND EVEN THOUGH
IT MAY SEEM LIKE PLAY, WHEN YOU LOVE YOUR

694
01:13:00,630 --> 01:13:06,739
WORK, YOUR WORK FEELS LIKE PLAY. SO WE WANT
YOU TO KNOW THAT WHEN YOU PURSUE CAREERS IN

695
01:13:06,739 --> 01:13:14,520
THE SCIENCES, IT WILL ALSO BE FUN AS WAS EXHIBITED
FOR US TODAY. AND THE FINAL THING THAT I WOULD

696
01:13:14,520 --> 01:13:22,430
SAY TO YOU THAT MANY OF YOU ARE HERE TODAY
BECAUSE YOU ARE A PART OF THE SSEP EXPERIMENTS.

697
01:13:22,430 --> 01:13:27,770
WHICH MEANS THAT YOU ARE REALLY PURSUING YOUR
DREAMS. YOU'RE DOING EXPERIMENTS AND YOU HAVE

698
01:13:27,770 --> 01:13:33,800
THOUGHT OF EXPERIMENTS THAT WERE DONE IN SPACE
AND WE WILL ALL LEARN FROM YOUR QUESTIONS.

699
01:13:33,800 --> 01:13:41,340
SO WE WANT TO THANK YOU FOR COMING UP WITH
GREAT EXPERIMENTS. SO ON BEHALF OF THE SECRETARY

700
01:13:41,340 --> 01:13:48,260
OF THE SMITHSONIAN INSTITUTION AND GENERAL
JACK DAILEY, DIRECTOR OF THIS MUSEUM, AND

701

01:13:48,260 --> 01:13:53,989

ALL OF THE TEACHERS WHO WORK WITH YOU AND
OUR COLLEAGUES FROM NASA, WE WANT TO THANK

702

01:13:53,989 --> 01:14:00,130

YOU FOR HELPING US TO LEARN FROM YOU AND WE
WANT TO THANK YOU FOR SUPPORTING YOUR FRIENDS

703

01:14:00,130 --> 01:14:24,520

AND PEERS IN THEIR PURSUIT. I THINK THAT YOU'RE
PRETTY AWESOME. THANK YOU FOR BEING HERE.

704

01:14:24,520 --> 01:14:29,420

LADIES AND GENTLEMEN, THAT CONCLUDES OUR PROGRAM
FOR TODAY. I'D LIKE TO THANK YOU OUR PARTICIPANTS,

705

01:14:29,420 --> 01:14:39,130

GENERAL JACK DAILEY, COMMANDER SUNI WILLIAMS,
COLONEL JEFF FORD, LELAND MELVIN, SENATE DIRECTOR

706

01:14:39,130 --> 01:14:45,860

JEFF GOLDSTEIN AND CLAUDINE BROWN. I'D LIKE
TO THANK NASA, THE NATIONAL CENTER FOR EARTH

707

01:14:45,860 --> 01:14:52,270

AND SPACE SCIENCE EDUCATION, THE U.S. DEPARTMENT
OF EDUCATION AND ALL OF THE WONDERFUL SSEP