1
GOOD MORNING.

2
I AM BRENDA MANUEL THE ASSOCIATE ADMINISTRATOR FOR DIVERSITY AND EQUAL OPPORTUNITY HERE AT NASA.

3
AND I WOULD LIKE TO WELCOME YOU TO THE VERY FIRST MISSIONSTEM SUMMIT 2016.

5
WE ARE PLEASED TO HAVE SO MANY REPRESENTATIVES FROM OUR GRANTEE INSTITUTIONS WITH US THIS MORNING.

6
BOTH HERE AND PERSON AS WELL AS VIRTUALLY.

7
AS MANY OF YOU MAY KNOW, NASA HAS FOR MANY YEARS CONDUCTED COMPLIANT REVIEW PROGRAMS TO BETTER ENSURE THAT OUR GRANTEES ARE OFFERING EQUAL OPPORTUNITIES TO THEIR BENEFICIARIES OF THESE BE STUDENTS IN NASA FUNDED SCIENCE, TECHNOLOGY ENGINEERING AND MATH OR STEM VISITORS TO VISIT VISITOR PLANETARIUMS ACROSS THE
NATION.

AS OUR PROGRAMMING CHORES, WE SOUGHT TO HEIGHTEN OUR EFFORTS BY PROVIDING A MECHANISM FOR TOUCHING ALL OF OUR GRANTEES.

Thus the creation of the MissionSTEM website.

MISSIONSTEM IS UNDER THE NATION'S CIVIL RIGHTS LAWS AND TO ENHANCE THEIR DIVERSITY AND INCLUSION EFFORTS.

OVER THE PAST FOUR YEARS, THE MISSIONSTEM WEBSITE HAS SERVED AS MANY THINGS. AMONG THEM, A CATALYST FOR CHANGE, A VEHICLE FOR HIGHLIGHTING BEST PRACTICES, AND A CLEARINGHOUSE FOR INFORMATION CRITICAL TO EQUAL OPPORTUNITY AND DIVERSITY.
TODAY WE BRING YOU OUR GRANT RECIPIENTS, TOGETHER TO BRING – AND TO BEGIN AN INTERACTIVE DIALOGUE WITH NASA THAT WE BELIEVE IS THE NEXT LOGICAL STEP IN OUR EFFORTS TO CREATE DIVERSITY IN STEM AND TO PROVIDE MORE INCLUSIVE STEM PROGRAM ENVIRONMENTS. WE WANT THIS TO BE A RICH AND THOUGHTFUL CONVERSATION THAT CAN LEAD US TO REAL-WORLD PRACTICAL SOLUTIONS TO THE CHALLENGES CONFRONTING US IN STEM. IT IS OUR INTENTION TO OFFER VALUABLE INFORMATION ON NASA'S WORKFORCE OF THE FUTURE, NASA GRANTS AND CONTRACTS, AND THE SPECIFIC WAYS IN WHICH CIVIL-RIGHTS COMPLIANCE PLAYS A CRITICAL ROLE IN EFFORTS TO CREATE A
MORE DIVERSE AND INCLUSIVE STEM COMMUNITY.

WE ALSO WANT THIS TO BE A SHOWCASE FOR ALL THE GOOD WORK AND THE MANY PROMISING PRACTICES THAT YOUR INSTITUTIONS AND OTHER STAKEHOLDERS ARE ALREADY ENGAGING IN.

THIS IS AN OPPORTUNITY FOR IDEA GENERATION, THROUGH AN INTENTIONAL AND DELIBERATE FOCUS ON EQUAL OPPORTUNITY AND DIVERSITY AND INCLUSION IN THE STEM FIELD.

THIS IS WHY WE ARE HERE TODAY AND THIS IS THE WORK THAT ANY OF US HAVE BEEN DOING FOR A LONG TIME AND THIS IS A SETTING FOR COLLABORATIVE AGREEMENT.

IT IS TIME FOR US TO TAKE BOLD STEPS TOGETHER.

AGAIN, I WELCOME YOU TO THE MISSION STEM SUMMIT AND AT
THIS TIME, WE WILL HEAR FROM THE NASA ADMINISTRATOR, CHARLIE ODEN.

>> WELCOME TO THE FIRST EVER MISSIONSTEM SUMMIT.

I WANT TO SAY HOW PROUD I AM OF THE WORK THAT NASA HAS BEEN DOING IN THE FIELDS OF EQUAL OPPORTUNITY, DIVERSITY AND INCLUSION IN STEM AND ALSO HOW SAD I AM AND SORRY THAT I CANNOT BE HERE TODAY BECAUSE I THINK IT IS GOING TO BE INCREDIBLE.

WE ARE MAKING GREAT STRIDES, BUT WE RECOGNIZE THAT THERE IS STILL MUCH TO DO.

TODAY, WE ARE TAKING ANOTHER IMPORTANT STEP IN OUR SHARED JOURNEY TOWARD MORE DIVERSE STEM ACADEMIC AND WORKPLACE ENVIRONMENTS.

THIS BENEFITS NASA.
OUR MANY GRANT RECIPIENT INSTITUTIONS AND OUR ENTIRE NATION.

WE SEEK THIS DIVERSITY AND THE INCLUSIVE PRACTICE TO SUPPORT IT BECAUSE THEY ARE CRITICAL TO THE NATION.

SCIENTIFIC AND ECONOMIC FUTURE.

WE MUST ENSURE THAT EQUAL OPPORTUNITIES ARE AFFORDED REGARDLESS OF ONE'S RACE, GENDER, OR OTHER LEGALLY PROTECTED STATUS.

THE NATIONAL SCIENCE FOUNDATION DATA TELLS US THAT WOMEN ACCOUNT FOR ONLY 19 PERCENT OF ALL ENGINEERING AND PHYSICS DEGREES.

AFRICAN AMERICANS ACCOUNT FOR ONLY FOUR PERCENT OF ALL ENGINEERING AND 2.4 PERCENT OF PHYSICS DEGREES.

THESE DISPARITIES ARE OF GREAT CONCERN.
AND WE, AS A NATION, CAN AND MUST DO BETTER.

WE MUST NURTURE AND EMBRACE ALL OF THE TALENT THAT WE HAVE AVAILABLE TO US, BOTH TAPPED AND UNTAPPED.

AS A WORLD LEADER IN SCIENCE, AERONAUTICS, SPACE

EXPLORATION AND TECH KNOWLEDGE HE, NASA CANNOT AFFORD TO DO ANYTHING LESS.

THIS AWESOME AND UNPRECEDENTED NATURE OF THE MISSIONS WE UNDERTAKE DEMANDS TALENT FROM EVERY CORNER OF THE COUNTRY.

TALENT THAT REFLECTS A VAST DIVERSITY OF DISCIPLINE AND THOUGHT.
WITHOUT THESE, WE CAN NEVER ACHIEVE THE KIND OF COMPLEX

SOLUTIONS TO TECHNICAL PROBLEMS THAT WE NEED.

TODAY, NASA IS ON A JOURNEY TO MARS THAT WILL PLACE

HUMAN BEINGS ON ANOTHER BODY IN OUR SOLAR SYSTEM FOR

ONLY THE SECOND TIME IN HISTORY.

AFTER MORE THAN 40 YEARS WITHOUT HUMAN SPACE LIFE

BEYOND OUR BORDERS.

WE ARE EXTENDING THE HUMAN PRESENCE TO THE FARTHEST

REACHES OF OUR SOLAR SYSTEM WITH ROBOTIC ASIANS TO

JUPITER, EUROPA AND PLUTO TO NAME A FEW.

RIGHT HERE AT HOME WE ARE INVOLVED IN A HOST OF EFFORTS

TO BETTER LIFE ON EARTH FROM GATHERING DATA ABOUT

CLIMATE CHANGE TO DEVELOPING SAFER AIR TRAVEL
TO HELP

00:06:03,449 --> 00:06:05,509
FIGHTING FOREST FIRES.

100
00:06:05,509 --> 00:06:09,180
TO DO ALL THESE AMAZING THINGS, OUR NATION NEEDS A

101
00:06:09,180 --> 00:06:12,439
VI BRANT, INNOVATIVE AND DIVERSE STEM COMMUNITY.

102
00:06:12,439 --> 00:06:15,009
THAT'S WHAT THIS SUMMIT IS ALL ABOUT.

103
00:06:15,009 --> 00:06:18,280
HELPING US TO DO A BETTER JOB OF DIVERSIFYING STEM,

104
00:06:18,279 --> 00:06:22,448
NU RURING THE TALENT WE HAVE, AND INSPIRING A NEW

105
00:06:22,449 --> 00:06:23,449
GENERATION.

106
00:06:23,449 --> 00:06:26,819
I CANNOT TELL YOU HOW PLEASED I AM AT THE
TEAM WE HAVE

107
00:06:26,819 --> 00:06:28,749
GATHERED TO DO THIS.

108
00:06:28,749 --> 00:06:31,650
JOINING US OUR LEADERS FROM THE WHITE HOUSE, AND

109
00:06:31,649 --> 00:06:33,908
MEMBERS OF CONGRESS AND THEIR STAFFS.

110
00:06:33,908 --> 00:06:39,718
AS WELL AS TOP OFFICIALS FROM ACROSS GOVERNMENT, ACADEMIA, SCIENTIFIC CULTURAL INSTITUTIONS

111
AND INDUSTRY.

NOW, I WOULD LIKE TO SHARE WITH YOU AN IMPORTANT VIDEO

MESSAGE FROM SEVERAL MEMBERS OF CONGRESS DOES ON

PROMOTING STEM DIVERSITY AND INCLUSION AT ACADEMIC

INSTITUTIONS AND IN THE WORK PLACE.

AND HOW DOING SO CAN CONTRIBUTE TO THE STRENGTH AND

PRODUCT VIDEO OF THE AMERICAN WORKFORCE.

NO MISTAKE ABOUT IT, THOUGH, LEADERSHIP FROM THE VERY

TOP IS WHAT IS NEEDED TO REALIZE OUR OBJECTIVES AND

THIS WE HAVE TODAY.

THEREFORE, I WOULD LIKE TO THANK THESE MEMBERS, AS WELL

AS THE MANY OTHER MEMBERS OF CONGRESS, WHO HAVE
CONSISTENTLY SUPPORTED NASA'S STEM OUTREACH RECORDS.

AFTER YOU HEAR FROM THE MEMBERS, I INVITE YOU TO BE SURE TO STRETCH YOUR PERSPECTIVE IT'S AT THIS EVENT.

LEARNING COLLABORATE.

ENJOY THE REST OF THESE EXCITING TWO DAYS ON THIS VERY CRITICAL TOPIC.

>> AS A CONGRESSWOMAN – I'M CONGRESSMAN JOHNSON AND I LIKE TO WELCOME YOU TO THE FIRST NASA ASIAN STEM SUMMIT.

FOR MY ENTIRE CAREER I HAVE CHAMPION POLICIES THAT ENCOURAGE WOMEN AND MEN IRONY STUDENTS TO OBTAIN ADVANCED DEGREES IN STEM, AS A RANKING MEMBER ON THE
COMMITTEE OF SPACE AND TECHNOLOGY IN THE FIRST AFRICAN-AMERICAN AND THE FIRST WOMAN TO HOLD

This position, I am pushing for STEM education and broadening participation to be on the priority list of all of my colleagues.

I recall how a generation was inspired to pursue careers in math and science the buzz of the space race.

Students are still inspired by astronomy and space and that is why it is so important that NASA is working to pursue innovative ways to increase access to and interest in STEM fields and working with grantee institutions.

Their beneficiaries and other stakeholders to realize
THAT THE BENEFITS OF OUR SHARED INTERESTS IN STEM EXCELLENT, EQUAL OPPORTUNITY, DIVERSITY AND INCLUSION,

BECAUSE THIS IS NOT JUST AN ISSUE, IT'S AN ECONOMIC ISSUE, IT'S ABOUT THE COMPETITIVENESS OF OUR ENTIRE NATION.

STEM INITIATIVES LIKE THIS ARE CRUCIAL TO THE FUTURE OF INNOVATION IN THE UNITED STATES AND THE WORLD.

RESEARCH SHOWS THAT WOMEN AND UNDERREPRESENTED MINORITIES WHO, BY 2050 COMPRISE MORE THAN SIX PERCENT OF THE POPULATION, ARE DISPROPORTIONATELY LOST AT EVERY TRANSITION POINT IN THEIR STEM STUDIES.

AND AT RESEARCH CAREERS.

I STRONGLY FEEL THAT THE FUTURE SUCCESS OF OUR NATION
IS DEPENDENT UPON OUR ABILITY TO INNOVATE.

AND OUR ABILITY TO INNOVATE IS DIRECTLY TIED TO FEDERAL RESEARCH EFFORTS AND OUR SUCCESS IN STEM EDUCATION.

I THINK AND APPLAUD ALL OF YOU FOR BEING PART OF TODAY'S CONVERSATION AND TO ENCOURAGE YOU TO CONTINUE THESE CONVERSATIONS SO THAT WE CAN MAKE SURE THAT THE UNITED STATES REMAINS THE TECHNOLOGY LEADER OF THE WORLD AND THAT EVERY DEMOGRAPHIC GROUP IN OUR GREAT NATION HAS THE SAME OPPORTUNITY TO BE A PART OF THAT FUTURE.

>>> WELCOME TO WASHINGTON DC AND WELCOMED TO NASA'S MISSION STEM.
WE ARE GLAD YOU ARE HERE.

THIS IS AN IMPORTANT SUBJECT TO BE FOCUSED ON, THAT

QUESTION OF HOW TO REOPEN UP STEM FIELDS TO EVERYBODY?

NASA NEEDS OUR BEST AND BRIGHTEST AND IF WE ARE

EXCLUDING CERTAIN PEOPLE BECAUSE OF WHERE THEY'RE FROM

OR THEIR RACE OR THEIR SEX, WE ARE LOSING OUT ON

POTENTIAL PEOPLE WHO COULD BE A KEY PART OF ASIANS IN

THE FUTURE OR DISCOVERY IN THE FUTURE OR FINDING CURES

IN THE FUTURE.

SO WE HAVE TO CONTINUALLY ASK A QUESTION OF HOW DO WE

OPEN UP STEM FIELDS TO EVERYBODY, FINDING THOSE BEST

AND BRIGHTEST GEMS AND YOUNG PEOPLE WHO CAN RISE UP TO
BE A PART OF NASA INTO THE FUTURE?

I HAD THE PRIVILEGE JUST A FEW WEEKS AGO TO BE IN ST. LOUIS AT THE WORLD CHAMPIONSHIP OF THE FIRST COMPETITION IN ROBOTICS.

I HAD THE GREAT PRIVILEGE OF BEING LED AROUND BY A COUPLE OF YOUNG WOMEN WHO ARE PART OF TEAMS FOR MY DISTRICT READ ONE, ANNIE HUBBARD, WHO IS FROM OZWEGO;

ALLIE BALDWIN WHO IS FROM SAINT CHARLESTON.

THEY TOOK ME AROUND TO SHOW ME THEIR PROJECTS WITH ROBOTICS BUT I WAS ABLE TO HEAR FROM THEM THAT JUST A FEW YEARS AGO THEY HAD NO INTEREST IN ENGINEERING.

BUT BECAUSE THEY WERE INTRODUCED TO ENGINEERING IN STEM

FIELDS THROUGH ROBOTICS, NOW THEY'RE LOOKING TO STUDY.
THIS IN COLLEGE AND HOPEFULLY, HAVE A CAREER IN ENGINEERING OR AEROSPACE, AERONAUTICS, OTHER THINGS.

AND HE IS GOING TO BE GOING WITH A SCHOLARSHIP TO THE UNIVERSITY OF ALABAMA TO STUDY AERONAUTICAL ENGINEERING.

AND ALLEY IS LOOKING AT THE UNIVERSITY OF ENGINEER FOR ENGINEERING.

SO YOU SEE HOW CAPTURING, SPARKING THAT INTEREST AT AN EARLY AGE IS WHAT MAKES THE DIFFERENCE.

FOR THEM, IT WAS FRESHMAN, SOPHOMORE YEARS OF HIGH SCHOOL.

SOMETIMES IT'S EARLIER THAN THAT BUT WE HAVE TO MAKE
SURE WE DO NOT MISS ANYBODY.

WE NEED YOUR HELP.

WE NEED TO REACH OUT TO THESE YOUNG PEOPLE TO LET THEM KNOW THAT WE ARE DEPENDING ON THEM.

NASA IS DEPENDING ON THEM.

THANK YOU FOR THE INVITATION TO BE WITH YOU TODAY.

THIS IS SUCH AN IMPORTANT CONVERSATION AND I COMMEND YOU FOR WORKING TO MAKE SCIENCE TRULY INCLUSIVE.

BUT INCLUSIVE MEANS MORE THAN HAVING YOUR WOMEN AND MORE PEOPLE OF DIVERSITY WORKING IN SCIENCE.

IT ALSO MEANS HAVING AN ENVIRONMENT THAT IS HOSPITABLE.

FOR THOSE WHO ARE BEING INVITED TO JOIN IN THE CONVERSATION.
I HAVE BEEN FIGHTING SEXUAL ASSAULT IN THE MILITARY AND ON COLLEGE CAMPUSES FOR YEARS.

AND I HAVE SEEN THE SAME PATTERN OVER AND OVER AGAIN.

TYPICALLY, PREDATORS ARE IN ENVIRONMENTS WHERE THERE IS A CLOSED INSTITUTION, WHERE THERE IS A SEPARATE CODE OF CONDUCT, SO THEY HAVE LOTS OF POWER TO SWEEP CASES UNDER THE PROVERBIAL RUG.

OFTEN, IT IS SIX OR SEVEN TIMES BEFORE A PREDATOR IS ACTUALLY CAUGHT.

BECAUSE EVERYONE BELIEVES THE INCIDENT TO BE AN OUTLIER.

WELL, SURVIVORS, OFTEN GRADUATE STUDENTS AND POSTDOCS,
LOSING YEARS OF RESEARCH, THEIR FUNDING, THEIR
CONFIDENCE AND OFTEN THEY ABANDON THE FIELD

AND THOSE CAREERS.

TAKE THE ACTIONS OF PROFESSOR TIM SLATER WHO
ENGAGED IN

TRULY DISGUSTING HARASSMENT GRADUATE STUDENTS
HE WAS

ADVISING.

BY TELLING THEM THEY WOULD TEACH BETTER WITHOUT
UNDERWEAR.

AND REQUIRING THEM TO MEET HIM FOR OFFICE
HOURS AT A

STRIP CLUB.

THERE WERE NO CONSEQUENCES FOR HIS ACTIONS
ASIDE FROM

SENSITIVITY TRAINING.

AND THE REPORT OF HIS MALFEASANCE WAS SEALED.

HE NOW HOLDS AN ENDOWED CHARITY AT THE UNIVERSITY
OF

00:13:56,860 --> 00:14:01,079
WYOMING WHERE UNIVERSITY OF OFFICIALS WERE
UNAWARE OF

00:14:01,078 --> 00:14:04,078
THE GRAVITY OF HIS BEHAVIOR BEFORE HIRING
THEM.

00:14:04,078 --> 00:14:07,199
NOW HE SAYS HE IS NOW REFORMED.

00:14:07,200 --> 00:14:10,980
THE STUDENTS HE HARASSED LOST YEARS OF WORK
AND MANY OF

00:14:10,980 --> 00:14:13,269
THEM LEFT THE FIELD.

00:14:13,269 --> 00:14:17,240
THE JEFF MARCY AND JASON LEAD CASES WERE SIMILAR.

00:14:17,240 --> 00:14:20,879
FEDERAL FUNDING AGENCIES AND UNIVERSITIES
NEED TO STAND

00:14:20,879 --> 00:14:26,810
UP FOR SURVIVORS AND STOP FUNDING AND HIRING
HARASSEY.

00:14:26,809 --> 00:14:32,929
THAT'S WHY I'M WORKIN ON LEGISLATURES ACT.

00:14:32,929 --> 00:14:46,469
THIS WILL BILL WILL REQUIRE FACULTIES - SEXUAL
ASSAULT

00:14:46,470 --> 00:14:47,470
AND HARASSMENT.

00:14:47,470 --> 00:14:50,009
>> SUCCESSFUL - IT'S REALLY JUST ONE EXAMPLE
OF THE
ASTONISHING WINS THAT OUR SCIENTISTS AND ENGINEERS CAN ACHIEVE FROM EXPLORING OUR SOLAR SYSTEM TO EXPLORING OUR OWN PLANET. AND EVEN LAUNCHING HUMANS INTO THE UNFORGIVING ENVIRONMENT OF SPACE.

HOW ARE STEM PROFESSIONAL AND THE ONES – GET US THERE.

THEY ENABLE US TO MAKE THOSE GREAT LEAPS.

IN SCIENTIFIC INVASION IS THE PRODUCT NOT ONLY OF HARD WORK, BUT IT IS BRINGING TOGETHER ALL THE JEWS OF –

THAT'S WHY IT'S CRITICAL TO PUT STRUCTURES IN PLACE AT

INCREASING NUMBER OF UNDERREPRESENTED IN AND ORTIZ AND

WOMEN IN THE STEM FIELD.

NOW THE GOAL OF INCREASING DIVERSITY IN THE STEM FIELD
ISN'T JUST ONE OF ETHICS AND MORALITY. IT'S ALSO A RENTED AND PRACTICAL ROLE.

THERE IS NO ONE TYPE OF SCIENTIST ENGINEER OR MATHEMATICIAN AND BRINGING THOSE DIVERSE INTO OUR AGENCIES AND BUSINESSES STRENGTHENS THE WORK THAT THOSE ORGANIZATIONS ARE DOING.

SCIENCE AND TECHNOLOGY HAVE IMMENSE CAPABILITIES TO DO AMAZING THINGS AND WE MUST ENSURE THAT WE ARE USING ALL THE BRAINPOWER AND INGENUITY THAT IS AVAILABLE TO US.

INCREASING THE RIGHTS OF THE TRULY STEM WORKFORCE IN ARE SPIRIT OUR TEAMS WILL BENEFIT. WE'VE SEEN EFFORTS TO INCREASE DIVERSITY SINCE MY TIME
BACK IN THE 80S.

BUT TODAY, 84 PERCENT OF STEM RELATED JOBS IN THIS COUNTRY ARE FILLED BY WIDER ASIAN AMERICAN.

WE NEED TO BRING THE PERSPECTIVE, PROBLEM SOLVING SKILLS AND RESOURCEFULNESS OF MINORITIES AND WOMEN RIGHT TO THE TABLE SO WE CAN CONTINUE TO SOLVE THE PROBLEM THAT OF CAPTAIN AMERICA ON THE FOREFRONT OF SCIENTIFIC INNOVATION.

GOOD LUCK IN YOUR WORK.

THANK YOU, VERY MUCH HIGH EVERYONE.

I WISH I COULD BE THERE WITH YOU AT NASA'S FIRST MISSION STEM SUMMIT.

DIVERSITY IS ESSENTIAL TO THE FREE FLOW OF INFORMATION.
AND THE EXCHANGE OF GROUNDBREAKING IDEAS.

I APPLAUD THE MISSION STEM PROGRAM FOR WORKING TO

ENSURE DIVERSITY AND INCLUSION WITHIN NASA.

THE THEME OF THIS CONFERENCE, EATING THE NATIONS STEM

CHALLENGES, IS AN ISSUE THAT I AM WORKING TO TACKLE IN

THE SENATE.

HOW CAN WE GET MORE WOMEN AND MINORITIES INTERESTED IN

STEM FIELDS?

HOW DO WE ENCOURAGE YOUNG PEOPLE TO PURSUE TRAINING AND

CAREERS IN SCIENCE, TECHNOLOGY AND MATH FIELDS?

THese ARE QUESTIONS THAT AFFECT ALL OF US AS WE SHIFT

TO AN INNOVATION-BASED ECONOMY.
I AM CONFIDENT THAT YOU'LL WALK AWAY FROM THE SUMMIT OR

IN LIGHT WHenever AND HOPE YOU ENJOY THE NEXT TWO DAYS.

THANK YOU.

GOOD MORNING EVERYONE.

HELLO, HOW ARE YOU DOING?

WE ARE HERE TO RUN TWO DAYS OF THE MOST IMPORTANT CONVERSATION I CAN THINK OF.

IT'S CRITICALLY IMPORTANT.

DIVERSITY, INCLUSION AND EQUAL OPPORTUNITY IN THE STEM

FIELDS.

IN MANY WAYS, WE ARE GATHERED HERE TO TALK ABOUT HOW WE

GO FROM HERE TO HERE?

RIGHT NOW WE ARE ONLY PROGRESSING AT THIS RATE.

HOW DO WE GO FROM HERE TO HERE?
A MAJOR STEP CHANGE AND WHY HAS IT BEEN SO SLOW?

WE KNOW WITH THE NUMBER – THE NUMBERS ARE NOT WHAT WE WANT THEM TO BE.

WE ARE ALL WORKING ON THIS.

WE ARE COMMITTED.

THE STATISTICS AND WELCOMING REMARKS, BUT I WANT TO REMIND US THAT IN 2013, IN THE UNITED STATES WOMEN ACCOUNTED FOR 25 PERCENT OF EARNED DOCTORATE DEGREES IN ENGINEERING.

16 PERCENT OF THOSE WERE IN AEROSPACE ENGINEERING.

I'M IN AEROSPACE ENGINEER.

ISN'T THIS WHAT ALL ROCKET SCIENTIST LOOK LIKE?

SO WHY ARE OUR NUMBERS POOR?
AFRICAN-AMERICAN LESSON FIVE PERCENT AND HISPANICS ARE ALSO LESS THAN FIVE PERCENT.

HERE AT NASA, WE ARE 23 PERCENT ENGINEERING WOMEN AND 20 PERCENT WOMEN IN THE PHYSICAL SCIENCES.

THAT'S NOT GOOD ENOUGH.

CALL IT WHAT IT IS.

WE ARE LOOKING FOR PARITY.

HOW CAN WE REALLY MAKE THESE STEP CHANGES?

THE GOOD NEWS IS DOCTORAL ENGINEERING HAS DOUBLED IN THE US.

WE CAN SAY THAT THAT IS PROGRESS.

BUT FOR UNDERREPRESENTED POPULATIONS, EVEN EXPONENTIAL ONES, TO REACH PARITY, THE 30 PERCENT FOR UNDERREPRESENTED POPULATIONS, IT WILL TAKE
UNTIL 2130.

I WON'T BE ALIVE.

WE ARE GOING TO MARS.

SO I DID A SECOND FIT JUST TO SEE IF I COULD INCREASE MY DATA LITTLE BIT.

2150.

WE WILL BE ON MARS BEFORE WE REACH PARITY IF WE DO NOT DO SOMETHING AND THAT IS WHY WE ARE HERE TOGETHER.

WE'RE HERE TOGETHER BECAUSE THERE ARE GREAT PROMISING PRACTICES OUT THERE.

SOME FOLKS ARE DOING EXCEPTIONAL JOBS, BUT WE NEED TO SHARE THOSE.
WE NEED TO ALL BE IN THIS TOGETHER AND FRANKLY, WE JUST

NEED TO LOOK FOR THAT STEP CHANGE TO MAKE CHANGE AND

MAKE OUR GOALS TO SAY WE CAN DO THIS.

WE CAN DO THIS WITHIN THE DECADE, BUT WE ARE GOING TO

DO IT TOGETHER.

WHY IS IT SO CRITICAL TO NASA?

OUR DOORS ARE OPEN.

THIS IS THE PIPELINE.

THAT'S WHY I CARE SO DEEPLY ABOUT THAT.

OPENING OUR DOORS UP AND BRINGING EVERYONE IN.

WE ALSO KNOW IT GOES BEYOND THE NUMBERS.

IT'S THE UNCONSCIOUS BIAS.
IT HAS SERIOUS NEGATIVE IMPACTS ON WHO PURSUES DEGREES IN STEM.

WE SEE THAT IT'S A POSSIBILITY DEGREE IN STEM.

WE JUST HEARD AND WE KNOW ABOUT THE TROUBLING SEXUAL-HARASSMENT REPORTS.

I WANT TO BE VERY CLEAR.

SEXUAL-HARASSMENT IS A DENIAL OF EQUAL OPPORTUNITY IN

OUR WORKFORCES, IN OUR UNIVERSITIES.

FACULTY MEMBERS ENGAGING IN SEXUAL HARASSMENT, THEY ARE

DENYING EQUAL OPPORTUNITIES IN EDUCATION.

IT'S NOT JUST SEXUAL-HARASSMENT, THERE IS ALSO

HARASSMENT ON RACE, NATIONAL ORIGIN, DISABILITY, AND

OTHER CHARACTERISTICS THAT ARE PART BY OUR LAWS.
SO THAT IS WHY WE ARE HERE TO TALK ABOUT THIS, TO HAVE

CANDID, OPEN AND FRANK CONVERSATION.

WE ARE LOOKING FOR SOLUTIONS.

WE ARE LOOKING AT THE INNOVATIONS OUT THERE AND WHAT

ARE THE PROMISING PRACTICES THAT GO HAND-IN-HAND TO

REALLY ACHIEVE, TO FINALLY ACHIEVE WHERE WE SEE PARITY

IS, WHERE WE SEE ALL OF OURSELVES GOING READ I'VE

CHANGE THE CONVERSATION A LITTLE BIT AND I ACTUALLY

CALL IT STEM.

I THINK WE CAN HAVE AN IMPACT IN THE STEM FIELD, BUT WE

NEED TO BE MORE INCLUSIVE AND SO I ACTUALLY INCLUDE THE

ARTS BECAUSE EVERY GIRL AND BOY THAT I TALKED TO, I SAY

00:21:01,789 --> 00:21:05,049

00:21:05,049 --> 00:21:06,069

00:21:09,079 --> 00:21:11,299

00:21:11,299 --> 00:21:14,919

00:21:14,920 --> 00:21:18,519

00:21:18,519 --> 00:21:20,930

00:21:20,930 --> 00:21:22,430

00:21:22,430 --> 00:21:25,600

00:21:25,599 --> 00:21:28,149

00:21:28,150 --> 00:21:31,720

00:21:31,720 --> 00:21:32,779
YOU ARE THE VISIONARIES.

YOU ARE THE STORYTELLERS.

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I AM BRAD EMANUEL.

AND I WOULD LIKE TO WELCOME YOU TO THE VERY FIRST MISSIONSTEM SUMMIT 2016. WE ARE PLEASED TO HAVE SOMEBODY ASSOCIATES WITH US. BOTH HERE AND PERSON AS WELL AS VIRTUALLY.

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As our programming chores, we sought to heighten our efforts by providing a mechanism for touching all of our grantees. Thus the creation of the MissionSTEM website.

MissionSTEM is—under the nation's civil rights laws and to enhance their diversity and inclusion efforts.

Over the past four years, the MissionSTEM website has served as many things, among them, a catalyst for change, a vehicle for highlighting best practices, and a clearinghouse for information critical to equal opportunity and diversity efforts in STEM.

Today we bring you our grant recipients, together to
BRING – AND TO BEGIN AN INTERACTIVE DIALOGUE
WITH NASA

THAT WE BELIEVE IS THE NEXT LOGICAL STEP IN
OUR EFFORTS

TO CREATE DIVERSITY IN STEM AND TO PROVIDE
MORE

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WE WANT THIS TO BE A RICH AND THOUGHTFUL CONVERSATION
THAT CAN LEAD US TO REAL-WORLD PRACTICAL SOLUTIONS

TO
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IT IS OUR INTENTION TO OFFER VALUABLE INFORMATION ON
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THE NATIONAL SCIENCE FOUNDATION DATA TELLS US THAT WOMEN ACCOUNT FOR ONLY 19 PERCENT OF ALL ENGINEERING AND PHYSICS DEGREES. AFRICAN AMERICANS ACCOUNT FOR ONLY FOUR PERCENT OF ALL ENGINEERING AND 2.4 PERCENT OF PHYSICS DEGREES. THESE DISPARITIES ARE OF GREAT CONCERN.

AND WE, AS A NATION, CAN AND MUST DO BETTER. WE MUST NURTURE AND EMBRACE ALL OF THE TALENT THAT WE HAVE AVAILABLE TO US, BOTH TAPPED AND UNTAPPED.

AS A WORLD LEADER IN SCIENCE, AERONAUTICS, SPACE EXPLORATION AND TECH KNOWLEDGE HE, NASA CANNOT AFFORD TO DO ANYTHING LESS. THIS AWESOME AND UNPRECEDENTED NATURE OF THE
MISSIONS
WE UNDERTAKE DEMANDS TALENT FROM EVERY CORNER OF THE COUNTRY.

FROM EVERY WALK OF LIFE. TALENT THAT REFLECTS A VAST DIVERSITY OF DISCIPLINE AND THOUGHT.

WITHOUT THESE, WE CAN NEVER ACHIEVE THE KIND OF COMPLEX SOLUTIONS TO TECHNICAL PROBLEMS THAT WE NEED. TODAY, NASA IS ON A JOURNEY TO MARS THAT WILL PLACE HUMAN BEINGS ON ANOTHER BODY IN OUR SOLAR SYSTEM FOR ONLY THE SECOND TIME IN HISTORY.

AFTER MORE THAN 40 YEARS WITHOUT HUMAN SPACE LIFE.

WE ARE EXTENDING THE HUMAN PRESENCE TO THE FARthest REACHES OF OUR SOLAR SYSTEM WITH ROBOTIC ASIANS.
TO JUPITER, EUROPA AND PLUTO TO NAME A FEW.

RIGHT HERE AT HOME WE ARE INVOLVED IN A HOST OF EFFORTS TO BETTER LIFE ON EARTH FROM GATHERING DATA ABOUT CLIMATE CHANGE TO DEVELOPING SAFER AIR TRAVEL TO HELP FIGHTING FOREST FIRES. TO DO ALL THESE AMAZING THINGS, OUR NATION NEEDS A VIBRANT, INNOVATIVE AND DIVERSE STEM COMMUNITY. THAT'S WHAT THIS SUMMIT IS ALL ABOUT. HELPING US TO DO A BETTER JOB OF DIVERSIFYING STEM, NURTURING THE TALENT WE HAVE, AND INSPIRING A NEW GENERATION.

I CANNOT TELL YOU HOW PLEASED I AM AT THE TEAM WE HAVE JOINING US OUR LEADERS FROM THE WHITE HOUSE, AND
MEMBERS OF CONGRESS AND THEIR STAFFS.

AS WELL AS TOP OFFICIALS FROM ACROSS GOVERNMENT, ACADEMIA, SCIENTIFIC CULTURAL INSTITUTIONS AND INDUSTRY.

NOW, I WOULD LIKE TO SHARE WITH YOU AN IMPORTANT VIDEO

MESSAGE FROM SEVERAL MEMBERS OF CONGRESS DOES ON

PROMOTING STEM DIVERSITY AND INCLUSION AT ACADEMIC INSTITUTIONS AND IN THE WORK PLACE. AND HOW DOING SO CAN CONTRIBUTE TO THE STRENGTH

AND PRODUCT VIDEO OF THE AMERICAN WORKFORCE.

NO MISTAKE ABOUT IT, THOUGH, LEADERSHIP FROM THE VERY TOP IS WHAT IS NEEDED TO REALIZE OUR OBJECTIVES AND

THEREFORE, I WOULD LIKE TO THANK THESE MEMBERS, AS WELL AS THE MANY OTHER MEMBERS OF CONGRESS, WHO
HAVE CONSISTENTLY SUPPORTED NASA'S STEM OUTREACH RECORDS.
AFTER YOU HEAR FROM THE MEMBERS, I INVITE YOU TO BE SURE TO STRETCH YOUR PERSPECTIVE IT'S AT THIS EVENT.
LEARNING COLLABORATE.
ENJOY THE REST OF THESE EXCITING TWO DAYS ON THIS VERY CRITICAL TOPIC.
>> AS A CONGRESSWOMAN – I'M CONGRESSMAN JOHNSON AND I LIKE TO WELCOME YOU TO THE FIRST NASA ASIAN STEM SUMMIT.
FOR MY ENTIRE CAREER I HAVE CHAMPION POLICIES THAT ENCOURAGE WOMEN AND MEN IRONY STUDENTS TO OBTAIN ADVANCED DEGREES IN STEM, AS A RANKING MEMBER ON THE
COMMITTEE OF SPACE AND TECHNOLOGY IN THE FIRST AFRICAN-AMERICAN AND THE FIRST WOMAN TO HOLD THIS POSITION, I AM PUSHING FOR STEM EDUCATION AND BROADENING PARTICIPATION TO BE ON THE PRIORITY LIST OF ALL OF MY COLLEAGUES.

I RECALL HOW A GENERATION WAS INSPIRED TO PURSUE CAREERS IN MATH AND SCIENCE THE CUSS OF THE SPACE RACE. STUDENTS ARE STILL INSPIRED BY ASTRONOMY AND SPACE EXPLORATION. AND THAT IS WHY IT IS SO IMPORTANT THAT NASA IS WORKING TO PURSUE INNOVATIVE WAYS TO INCREASE ACCESS TO AND INTEREST IN STEM FIELDS AND WORKING WITH GRANTEE INSTITUTIONS. THEIR BENEFICIARIES AND OTHER STAKEHOLDERS TO REALIZE THAT THE BENEFITS OF OUR SHARED INTERESTS
IN STEM EXCELLENT, EQUAL OPPORTUNITY, DIVERSITY AND INCLUSION, BECAUSE THIS IS NOT JUST AN ISSUE, IT'S AN ECONOMIC ISSUE, IT'S ABOUT THE COMPETITIVENESS OF OUR ENTIRE NATION.

STEM INITIATIVES LIKE THIS ARE CRUCIAL TO THE FUTURE OF INNOVATION IN THE UNITED STATES AND THE WORLD. RESEARCH SHOWS THAT WOMEN AND UNDERREPRESENTED MINORITIES WHO, BY 2050 COMPRISE MORE THAN SIX PERCENT OF THE POPULATION, ARE DISPROPORTIONATELY LOST AT EVERY TRANSITION POINT IN THEIR STEM STUDIES. AND AT RESEARCH CAREERS.

I STRONGLY FEEL THAT THE FUTURE SUCCESS OF OUR NATION IS DEPENDENT UPON OUR ABILITY TO INNOVATE. AND OUR ABILITY TO INNOVATE IS DIRECTLY TIED
TO FEDERAL RESEARCH EFFORTS AND OUR SUCCESS IN STEM EDUCATION.

I THINK AND APPLAUD ALL OF YOU FOR BEING PART OF TODAY'S CONVERSATION AND TO ENCOURAGE YOU TO CONTINUE THESE CONVERSATIONS SO THAT WE CAN MAKE SURE THAT THE UNITED STATES REMAINS THE TECHNOLOGY LEADER OF THE WORLD AND THAT EVERY DEMOGRAPHIC GROUP IN OUR GREAT NATION HAS THE SAME OPPORTUNITY TO BE A PART OF THAT FUTURE.

>>> WELCOME TO WASHINGTON DC AND WELCOMED TO NASA'S MISSION STEM. WE ARE GLAD YOU ARE HERE.

THIS IS AN IMPORTANT SUBJECT TO BE FOCUSED ON, THAT QUESTION OF HOW TO REOPEN UP STEM FIELDS TO EVERYBODY?
NASA NEEDS OUR BEST AND BRIGHTEST AND IF WE ARE EXCLUDING CERTAIN PEOPLE BECAUSE OF WHERE THEY'RE FROM OR THEIR RACE OR THEIR SEX, WE ARE LOSING OUT ON POTENTIAL PEOPLE WHO COULD BE A KEY PART OF ASIANS IN THE FUTURE OR DISCOVERY IN THE FUTURE OR FINDING CURES IN THE FUTURE. SO WE HAVE TO CONTINUALLY ASK A QUESTION OF HOW DO WE OPEN UP STEM FIELDS TO EVERYBODY, FINDING THOSE BEST AND BRIGHTEST GEMS AND YOUNG PEOPLE WHO CAN RISE UP TO BE A PART OF NASA INTO THE FUTURE?

I HAD THE PRIVILEGE JUST A FEW WEEKS AGO TO BE IN ST.

LOUIS AT THE WORLD CHAMPIONSHIP OF THE FIRST COMPETITION IN ROBOTICS.
I had the great privilege of being led around by a couple of young women who are part of teams for my district read one, Annie Hubbard, who is from Oswego; Allie Baldwin who is from Saint Charleston. They took me around to show me their projects with robotics but I was able to hear from them that just a few years ago they had no interest in engineering. But because they were introduced to engineering in STEM fields through robotics, now they're looking to study this in college and hopefully, have a career in engineering or aerospace, aeronautics, other things. And he is going to be going with a scholarship to the
UNIVERSITY OF ALABAMA TO STUDY AERONAUTICAL ENGINEERING AND ALLEY IS LOOKING AT THE UNIVERSITY OF

SO YOU SEE HOW CAPTURING, SPARKING THAT INTEREST AT AN EARLY AGE IS WHAT MAKES THE DIFFERENCE. FOR THEM, IT WAS FRESHMAN, SOPHOMORE YEARS OF HIGH SCHOOL.

SOMETIMES IT'S EARLIER THAN THAT BUT WE HAVE TO MAKE SURE WE DO NOT MISS ANYBODY. WE NEED YOUR HELP.

WE NEED TO REACH OUT TO THESE YOUNG PEOPLE TO LET THEM KNOW THAT WE ARE DEPENDING ON THEM. NASA IS DEPENDING ON THEM.

>> THANK YOU FOR THE INVITATION TO BE WITH YOU TODAY.

THIS IS SUCH AN IMPORTANT CONVERSATION AND I COMMEND
YOU FOR WORKING TO MAKE SCIENCE TRULY INCLUSIVE. BUT INCLUSIVE MEANS MORE THAN HAVING YOUR
WOMEN AND MORE PEOPLE OF DIVERSITY WORKING IN SCIENCE.
IT ALSO MEANS HAVING AN ENVIRONMENT THAT IS HOSPITABLE
FOR THOSE WHO ARE BEING INVITED TO JOIN IN THE CONVERSATION.
I HAVE BEEN FIGHTING SEXUAL ASSAULT IN THE MILITARY AND ON COLLEGE CAMPUSES FOR YEARS.
AND I HAVE SEEN THE SAME PATTERN OVER AND OVER AGAIN.
TYPICALLY, PREDATORS ARE IN ENVIRONMENTS WHERE THERE IS A CLOSED INSTITUTION, WHERE THERE IS A SEPARATE CODE OF CONDUCT, SO THEY HAVE LOTS OF POWER TO SWEEP CASES UNDER THE PROVERBIAL RUG. OFTEN, IT IS SIX OR SEVEN TIMES BEFORE A PREDATOR
IS ACTUALLY CAUGHT.

00:24:48.319 --> 00:24:49.319
BECAUSE EVERYONE BELIEVES THE INCIDENT TO BE IN

00:24:49.319 --> 00:24:50.319
OUTLIER.
WELL, SURVIVORS, OFTEN GRADUATE STUDENTS AND

00:24:50.319 --> 00:24:51.319
POSTDOCS,
LOSING YEARS OF RESEARCH, THEIR FUNDING, THEIR

00:24:51.319 --> 00:24:52.319
CONFIDENCE AND OFTEN THEY ABANDON THE FIELD ALTOGETHER.

00:24:52.319 --> 00:24:53.319
AND THOSE CAREERS.
TAKE THE ACTIONS OF PROFESSOR TIM SLATER WHO

00:24:53.319 --> 00:24:54.319
ENGAGED IN
TRULY DISGUSTING HARASSMENT GRADUATE STUDENTS

00:24:54.319 --> 00:24:55.319
HE WAS
ADVISING.

00:24:55.319 --> 00:24:56.319
BY TELLING THEM THEY WOULD TEACH BETTER WITHOUT
UNDERWEAR.

00:24:56.319 --> 00:24:57.319
AND REQUIRING THEM TO MEET HIM FOR OFFICE
HOURS AT A

00:24:57.319 --> 00:24:58.319
STRIP CLUB.
THERE WERE NO CONSEQUENCES FOR HIS ACTIONS

00:24:58.319 --> 00:24:59.319
ASIDE FROM
SENSITIVITY TRAINING.
00:25:10,319 --> 00:25:11,319
ASTONISHING WINS THAT OUR SCIENTISTS AND ENGINEERS CAN

614
00:25:11,319 --> 00:25:12,319
ACHIEVE FROM EXPLORING OUR SOLAR SYSTEM TO
EXPLORING

615
00:25:12,319 --> 00:25:13,319
OUR OWN PLANET.
AND EVEN LAUNCHING HUMANS INTO THE UNFORGIVING

616
00:25:13,319 --> 00:25:14,319
ENVIRONMENT OF SPACE.
HOW ARE STEM PROFESSIONAL AND THE ONES – GET

617
00:25:14,319 --> 00:25:15,319
US THERE.
THEY ENABLE US TO MAKE THOSE GREAT LEAPS.

618
00:25:15,319 --> 00:25:16,319
IN SCIENTIFIC INVASION IS THE PRODUCT NOT
ONLY OF HARD

619
00:25:16,319 --> 00:25:17,319
WORK, BUT IT IS BRINGING TOGETHER ALL THE
JEWS OF –

620
00:25:17,319 --> 00:25:18,319
THAT’S WHY IT’S CRITICAL TO PUT STRUCTURES
IN PLACE AT

621
00:25:18,319 --> 00:25:19,319
INCREASING NUMBER OF UNDERREPRESENTED IN AND
ORTIZ AND

622
00:25:19,319 --> 00:25:20,319
WOMEN IN THE STEM FIELD.
NOW THE GOAL OF INCREASING DIVERSITY IN THE

623
00:25:20,319 --> 00:25:21,319
STEM FIELD
ISN’T JUST ONE OF ETHICS AND MORALITY.

624
00:25:21,319 --> 00:25:22,319
IT’S ALSO A RENTED AND PRACTICAL ROLE.
THERE IS NO ONE TYPE OF SCIENTIST ENGINEER

OR

MATHEMATICIAN AND BRINGING THOSE DIVERSE INTO

OUR

AGENCIES AND BUSINESSES STRENGTHENS THE WORK

THAT THOSE

ORGANIZATIONS ARE DOING.

SCIENCE AND TECHNOLOGY HAVE IMMENSE CAPABILITIES

TO DO

AMAZING THINGS AND WE MUST ENSURE THAT WE

ARE USING ALL

THE BRAINPOWER AND INGENUITY THAT IS AVAILABLE

TO US.

INCREASING THE RIGHTS OF THE TRULY STEM

WORKFORCE IN

F8 ARE SPIRIT OUR TEAMS WILL BENEFIT.

WE'VE SEEN EFFORTS TO INCREASE DIVERSITY SINCE

MY TIME

BACK IN THE 80S.

BUT TODAY, 84 PERCENT OF STEM RELATED JOBS

IN THIS

COUNTRY ARE FILLED BY WIDER ASIAN AMERICAN.
WE NEED TO BRING THE PERSPECTIVE, PROBLEM SOLVING SKILLS AND RESOURCEFULNESS OF MINORITIES AND WOMEN RIGHT TO THE TABLE SO WE CAN CONTINUE TO SOLVE THE
PROBLEM THAT OF CAPTAIN AMERICA ON THE FOREFRONT OF SCIENTIFIC INNOVATION. GOOD LUCK IN YOUR WORK.
THANK YOU, VERY MUCH HIGH EVERYONE. I WISH I COULD BE THERE WITH YOU AT NASA'S FIRST MISSION STEM SUMMIT.
DIVERSITY IS ESSENTIAL TO THE FREE FLOW OF INFORMATION AND THE EXCHANGE OF GROUNDBREAKING IDEAS. I APPLAUD THE MISSION STEM PROGRAM FOR WORKING TO ENSURE DIVERSITY AND INCLUSION WITHIN NASA.
THE THEME OF THIS CONFERENCE, EATING THE NATIONS STEM CHALLENGES, IS AN ISSUE THAT I AM WORKING
TO TACKLE IN

THE SENATE.

HOW CAN WE GET MORE WOMEN AND MINORITIES INTERESTED IN STEM FIELDS?

HOW DO WE ENCOURAGE YOUNG PEOPLE TO PURSUE TRAINING AND CAREERS IN SCIENCE, TECHNOLOGY AND MATH FIELDS?

THESE ARE QUESTIONS THAT AFFECT ALL OF US

AS WE SHIFT TO AN INNOVATION-BASED ECONOMY.

I AM CONFIDENT THAT YOU'LL WALK AWAY FROM THE SUMMIT OR IN LIGHT WHENEVER AND HOPE YOU ENJOY THE NEXT TWO DAYS.

THANK YOU. GOOD MORNING EVERYONE.

HELLO, HOW ARE YOU DOING? WE ARE HERE TO RUN TWO DAYS OF THE MOST IMPORTANT CONVERSATION I CAN THINK OF. IT'S CRITICALLY IMPORTANT.

DIVERSITY, INCLUSION AND EQUAL OPPORTUNITY IN THE STEM
FIELDS.
IN MANY WAYS, WE ARE GATHERED HERE TO TALK

ABOUT HOW WE
GO FROM HERE TO HERE?

RIGHT NOW WE ARE ONLY PROGRESSING AT THIS RATE.

HOW DO WE GO FROM HERE TO HERE?
A MAJOR STEP CHANGE AND WHY HAS IT BEEN SO

SLOW?
WE KNOW WITH THE NUMBER – THE NUMBERS ARE

NOT WHAT WE
WANT THEM TO BE.

WE ARE ALL WORKING ON THIS.
WE ARE COMMITTED.

THE STATISTICS AND WELCOMING REMARKS, BUT
I WANT TO

REMAIND US THAT IN 2013, IN THE UNITED STATES
WOMEN
ACCOUNTED FOR 25 PERCENT OF EARNED DOCTORATE
DEGREES IN

ENGINEERING.
16 PERCENT OF THOSE WERE IN AEROSPACE ENGINEERING.
I'M IN AEROSPACE ENGINEER.
ISN'T THIS WHAT ALL ROCKET SCIENTIST LOOK LIKE?
SO WHY ARE OUR NUMBERS POOR?

AFRICAN-AMERICAN LESSON FIVE PERCENT AND HISPANICS ARE
ALSO LESS THAN FIVE PERCENT.
HERE AT NASA, WE ARE 23 PERCENT ENGINEERING WOMEN AND 20 PERCENT WOMEN IN THE PHYSICAL SCIENCES.
THAT'S NOT GOOD ENOUGH. CALL IT WHAT IT IS.

WE ARE LOOKING FOR PARITY. HOW CAN WE REALLY MAKE THESE STEP CHANGES?

THE GOOD NEWS IS DOCTORAL ENGINEERING HAS DOUBLED IN THE US. WE CAN SAY THAT THAT IS PROGRESS.

BUT FOR UNDERREPRESENTED POPULATIONS, EVEN EXPONENTIAL ONES, TO REACH PARITY, THE 30 PERCENT FOR UNDERREPRESENTED POPULATIONS, IT WILL TAKE UNTIL 2130. I WON'T BE ALIVE.
WE ARE GOING TO MARS. BOOTS ON MARS AS YOU HEARD THE BEEN A STRAIGHTER

SO I DID A SECOND FIT JUST TO SEE IF I COULD INCREASE MY DATA LITTLE BIT. 2150.

WE WILL BE ON MARS BEFORE WE REACH PARITY IF WE DO NOT DO SOMETHING AND THAT IS WHY WE ARE HERE TOGETHER.

WE'RE HERE TOGETHER BECAUSE THERE ARE GREAT PROMISING PRACTICES OUT THERE. SOME FOLKS ARE DOING EXCEPTIONAL JOBS, BUT WE NEED TO SHARE THOSE.

WE NEED TO ALL BE IN THIS TOGETHER AND FRANKLY, WE JUST NEED TO LOOK FOR THAT STEP CHANGE TO MAKE CHANGE AND
MAKE OUR GOALS TO SAY WE CAN DO THIS. WE CAN DO THIS WITHIN THE DECADE, BUT WE ARE

00:26:31,319 --> 00:26:32,319
GOING TO DO IT TOGETHER.

00:26:32,319 --> 00:26:33,319
WHY IS IT SO CRITICAL TO NASA? OUR DOORS ARE OPEN.

00:26:33,319 --> 00:26:34,319
THIS IS THE PIPELINE. THAT'S WHY I CARE SO DEEPLY ABOUT THAT.

00:26:34,319 --> 00:26:35,319
CHANGING THAT. OPENING OUR DOORS UP AND BRINGING EVERYONE IN.

00:26:35,319 --> 00:26:36,319
WE ALSO KNOW IT GOES BEYOND THE NUMBERS.

00:26:36,319 --> 00:26:37,319
IT'S THE UNCONSCIOUS BIAS. IT HAS SERIOUS NEGATIVE IMPACTS ON WHO PURSUES DEGREES.

00:26:37,319 --> 00:26:38,319
WE SEE THAT IT'S A POSSIBILITY DEGREE IN STEM. WE JUST HEARD AND WE KNOW ABOUT THE TROUBLING SEXUAL-HARASSMENT REPORTS.

00:26:38,319 --> 00:26:39,319
I WANT TO BE VERY CLEAR.

00:26:39,319 --> 00:26:40,319
SEXUAL-HARASSMENT IS A DENIAL OF EQUAL OPPORTUNITY IN OUR WORKFORCES, IN OUR UNIVERSITIES.

00:26:40,319 --> 00:26:42,319
FACULTY MEMBERS ENGAGING IN SEXUAL HARASSMENT,
THEY ARE DENYING EQUAL OPPORTUNITIES IN EDUCATION.

IT'S NOT JUST SEXUAL-HARASSMENT, THERE IS ALSO

HARASSMENT ON RACE, NATIONAL ORIGIN, DISABILITY, AND

OTHER CHARACTERISTICS THAT ARE PART BY OUR LAWS.

SO THAT IS WHY WE ARE HERE TO TALK ABOUT THIS, TO HAVE

CANDID, OPEN AND FRANK CONVERSATION. WE ARE LOOKING FOR SOLUTIONS.

WE ARE LOOKING AT THE INNOVATIONS OUT THERE AND WHAT

ARE THE PROMISING PRACTICES THAT GO HAND-IN-HAND TO

REALLY ACHIEVE, TO FINALLY ACHIEVE WHERE WE SEE PARITY

IS, WHERE WE SEE ALL OF OURSELVES GOING READ I'VE

CHANGE THE CONVERSATION A LITTLE BIT AND I ACTUALLY
CALL IT STEM.
I THINK WE CAN HAVE AN IMPACT IN THE STEM FIELD, BUT WE NEED TO BE MORE INCLUSIVE AND SO I ACTUALLY INCLUDE THE ARTS BECAUSE EVERY GIRL AND BOY THAT I TALKED TO, I SAY YOU ARE THE VISIONARIES. YOU ARE THE STORYTELLERS. AND NOW I PUT A D ON THE END. THAT IS FOR DESIGN. WE HAVE A 3-D MAKER GENERATION OUT THERE AND IF THEY SEE THEMSELVES AS 3-D MAKERS, I SAY GUESS WHAT? YOU'RE GOING TO MAKE IT WITH US.

WE NEED YOU ALL. SO BEING INCLUSIVE.

I WANT TO FILTER EVERYONE IN. NO MORE FILTERING PEOPLE OUT. YOU DON'T HAVE TO BE THE BEST IN PHYSICS AND CALCULUS AND MATH TO JOIN THE STEM FIELD.
THAT MAKES IT SOMETHING THAT PEOPLE CANNOT

SEE THEMSELVES IN.

NO MORE FILTERING PEOPLE OUT LET'S FILTER EVERYONE IN

WITH INCLUSIVE CONVERSATION, BUT MORE IMPORTANTLY, INCLUSIVE ACTION.

MAKING SURE THAT EVERY GIRL AND BOY OUT THERE SO THEY CAN SEE THEMSELVES AND THEN I THINK HE WILL REALLY

ATTAIN THE RESULTS WE WANT TO HAVE IN THE STEM FIELD.

I THINK THAT IS HOW WE GET THERE FROM WHERE WE ARE AT.

SO I'M SPEAKING TO EVERYBODY IN THE AUDIENCE TODAY, THE

UNIVERSITY PRESIDENT, TOP ADMINISTRATORS, THE FACULTY

MEMBERS, OUR FEDERAL OFFICIALS AS WELL AS INDUSTRY

PROFESSIONALS THAT WE HAVE GATHERED TODAY FOR THE
PRESENCE AND HIGH-LEVEL ADMINISTRATORS EMPLOY YOU TO SHOW THE LEADERSHIP AND DEMONSTRATE THAT EQUALLY OPPORTUNITY IS FOR ALL OF US. IT WILL BE YOUR LEADERSHIP THAT REALLY IS AND ARE THE PROMISING PRACTICES THAT WE ALL NEED TO LEARN FROM TO REALLY CHANGE THE TIDE. FOR THE FACULTY IN PRINCIPLE INVESTIGATORS WHO ARE RECEIVING OUR GOVERNMENT AWARDS, YOU ARE THE ONES ON THE FRONT LINE. IT'S YOUR BEHAVIOR CREATING THE TEAM, THE INCLUSIVE TEAM, LEADING THOSE TEENS, NURTURING THEM THOSE OF THE NEXT GENERATIONS, THE FUTURE SCIENTISTS AND ENGINEERS, LEADERS IN THEIR OWN RIGHTS, BUT THEY NEED YOUR
MENTORING.

00:27:28,319 --> 00:27:29,319
YOU HAVE AN AWESOME RESPONSIBILITY BECAUSE YOU ARE AT

00:27:29,319 --> 00:27:30,319
THE FRONT LINE IN THE MENTORING AND RESPONSIBILITY YOU

00:27:30,319 --> 00:27:31,319
HAVE THAT WE PLACE ON YOU BUT THAT WE ENTRUSTED YOU AS

00:27:31,319 --> 00:27:32,319
WELL, THE FEDERAL OFFICIALS, TO ALL OF US TO MAKE

00:27:32,319 --> 00:27:33,319
SURE THAT THE GRANTING INSTITUTIONS ARE OPERATING WITHIN

00:27:33,319 --> 00:27:34,319
THE LAW BUT MORE IMPORTANTLY, THAT THEY ARE PROVIDING

00:27:34,319 --> 00:27:35,319
ALL THESE OPPORTUNITIES AND REALIZING THE STREAM THAT

00:27:35,319 --> 00:27:36,319
WE HAVE. AND WE ARE HERE IN THE GOVERNMENT AND SISTER

00:27:36,319 --> 00:27:37,319
AGENCIES TO PROVIDE WHAT ASSISTANCE YOU NEED.

00:27:37,319 --> 00:27:38,319
HOW CAN WE CONTINUE THE CONVERSATION? WE'RE IN THIS TOGETHER.

00:27:38,319 --> 00:27:39,319
WE WILL BE LOOKING AT COMPLIANCE, BUT WEARINESS ALTOGETHER AND KNOWING WHAT WORKS AND SHARING
THOSE STORIES IS WHAT WE'RE ALL ABOUT SO THAT WE CAN ALL BE BETTER.

FOR THE INDUSTRY PROFESSIONALS, WE ASK YOU TO CONTINUE TO PARTNER WITH THE GOVERNMENT IN ACADEMIA. WE ARE ALL DOING THIS BUT SOMETIMES OUR EFFORTS ARE INDIVIDUAL.

FROM THE THREE, FROM INDUSTRY ACADEMIA AND GOVERNMENT.

I THINK THE ONLY WAY TO GET THERE IS TO THINK OF NEW INNOVATIONS. HOW DO WE DO IT ALL TOGETHER?

SAME RESOURCES, BUT HOW CAN WE DO IT TOGETHER TO BRING UP OUT THE STEP CHANGE THAT WE WANT FOR EQUAL OPPORTUNITY, INCLUSION AND TO BRING ABOUT PARITY.

SO FOR ALL OF US, IN ONE WAY OR ANOTHER, TO
ME IT BOILS
DOWN TO EXCELLENCE.

WE ARE ONLY EXCELLENT THROUGH DIVERSITY. HAVE SOME PRETTY AWESOME BODACIOUS GOALS THAT

NASA. EXPLORING THE SOLAR SYSTEM.

WE NEED ALL OF YOUR EXCELLENCE. WE NEED ALL THE EXCELLENCE THAT IS COMING IN THE FUTURE GENERATIONS AND WE DO NOT HAVE THE LUXURY TO ELIMINATE EVEN ONE OF THE GREAT BRAINS, THE GREAT WINES, GREAT SUPERSTARS. PLEASE HELP US, WORK WITH US. ENSURE THAT EVERY GIRL AND BOY SEE THEMSELVES IN THE STEM FIELD, INCLUDING THEM IN WHATEVER THEY WANT TO BE. I CAN RELATE TO THAT. AN ARTIST, DESIGNER, JOURNALIST, STORYTELLER, AN ENGINEER OR A POET, I CAN SAY GUESS WHAT? GUESS WHAT.
[BLEEP] DOING?
GUESS WHAT ALL THIS GOOD WORK LEADS TO?

IT LEADS TO DREAMS AND EXPLORING TOMORROW'S AND BEYOND

AND THEN ALSO, MOST IMPORTANTLY, THINKING ABOUT OUR EARTH-RELATED ISSUES AND PROBLEMS. AND NOT IS WHY WE ARE HERE TO CELEBRATE WITH OUR SISTER AGENCIES HOW THE DISCUSSION WITH ALL OF YOU TO REALLY ACCOMPLISH, THIS TIME REALLY ACCOMPLISH, THIS STEP CHANGE THAT WE DESIRE.

THANK YOU SO MUCH FOR JOINING US. I HAVE THE GREAT PLEASURE TO DO AN INTRODUCTION NOW TO OUR KEYNOTE SPEAKER AND ALSO TO THINK AND ACKNOWLEDGE OUR PARTNERS AND DOCTOR FRANCE CORDOVA AND RACHEL GARTNER IS HERE FROM THE DEPARTMENT OF EDUCATION
WHO CARRIES THE RESPONSIBILITY FOR THE GOVERNMENT AGENCY WHEN IT COMES TO COMPLIANCE AND TITLE IX AND TITLE VI THAT WE WORK CLOSELY WITH OUR WHITE HOUSE OFFICE OF SCIENCE AND TECH KNOWLEDGE HE POLICY, WANT AWARD IS WITH US.

ALSO FROM OUR NATIONAL SCIENCE AND TECHNICAL COUNSEL,

ROOS IS HERE AND NOW I GET YOU INTRODUCED DOCTOR JO HANDELSMAN AS OUR KEYNOTE. CAN'T THINK OF ANYONE MORE QUALIFIED TO GIVE US REMARKS RIGHT NOW.

JOE IS THE ASSOCIATE DIRECTOR FOR SCIENCE AT THE WHITE HOUSE OFFICE OF SCIENCE AND ELEGY POLICY.

SHE WAS APPOINTED BY PRESIDENT OBAMA AND CONFIRMED BY
THE SENATE IN JUNE OF 2014.
I WATCHED HER CONFIRMATION TO THINK ABOUT

AND HOW MY OWN MIGHT GO FROM ACADEMIA AS WELL.

SO THANKS, FOR SHOWING ME THAT.
AND SHE HELPS ADVISE THE PRESIDENT ON IMPLICATIONS

OF SCIENCE FOR THE NATION AND HOW IT FORMS – IN

FORMS US POLICY AND HOW THE FEDERAL EFFORTS TO SUPPORT

ONLY SCIENTIFIC RESEARCH GOING OUT.

HOW ARE WE PROGRESSING?
HOW ARE WE DOING?

PRIOR TO JOINING OSC P DOCTOR JO HANDELSMAN WAS A

I THINK YOU KNOW HOW DISTINGUISH THAT ONEROUS.

SHE WAS ALSO THE PROFESSOR IN THE DEPARTMENT OF

MOLECULAR, CELLULAR AND – AT THE L UNIVERSITY.
SHE SERVED ON THE FACULTY AS THE LESSER OF
PLANT PATHOLOGY IN THE PROFESSOR AND CHAIR OF THE DEPARTMENT OF ACTIVITY ALLERGY.

SHE WAS ALSO PRESENT OF THE AMERICAN SOCIETY OF MICROBIOLOGY. SHE RECEIVED THE PRESIDENTIAL WORD FOR EXCELLENCE,

SCIENCE AND MENTORING IN 2011, AND SHE COCHAIR The WORKING GROUP THAT DEVELOPED THE 2012 REPORT, ENGAGED TO EXCEL. EACH CONTAIN THE RECOMMENDATIONS TO THE PRESIDENT OF HOW DO WE STRENGTHEN STEM EDUCATION TO MEET THE WORKFORCE NEEDS IN THE COMING DECADE? JUST ONE DECADE, HOW CAN WE DO THIS? DOCTOR HANDELSMAN COFOUNDED THE WISCONSIN PROGRAM FOR SCIENTIFIC TEACHING AS WELL AS THE L CENTER
SUMMER INSTITUTE ON UNDERGRADUATE EDUCATION.

THESE PROGRAMS HAVE LEARNED HER A VERY DISTINGUISHED NATIONAL AND INTERNATIONAL RECOGNITION AND

SHE'S DOWN THERE AT THE FRONT LINES FOR TEACHING VISIBLE

SOME PRACTICES AND NOW ALL THE WAY UP INTO ADVISING

US IN THE PRESIDENT AND WITH JOE'S LEADERSHIP I

THINK WE'LL

GET THIS DONE.
I'M LOOKING FORWARD TO HER KEYNOTE.

THANK YOU, J O. [APPLAUSE]

THANK YOU FOR ALL BEING HERE AND TO ALL OF THE GREAT

REPORTED STATEMENTS THAT WE HEARD FROM GENERAL BOLDEN

AND MANY MEMBERS OF CONGRESS.
I WAS REMINDED THIS MORNING OF NASA'S GREATNESS
IN PROBLEM-SOLVING ABILITY WHEN I GOT AN EMAIL

SAYING THAT MY SLIDES MIGHT NOT BE ABLE TO BE SHOWN AND

I THOUGHT WELL, WE'VE HEARD THIS PROBLEM BEFORE, RIGHT?

SMALL THINGS THAT CAN BLOCK EVENTS?
AND I MENTIONED IT TO MY HUSBAND.

I SAID AFTER ALL THAT WORK, MY SLIDES MIGHT NOT BE USED

AND HE SAID, WHAT?
AND HE STARTED DOING THIS IMITATION OF RUTH WILLIS IN ARMAGEDDON IF YOU'VE EVER SEEN THAT HE SAID

THIS IS THE GOVERNMENT.

THIS IS NASA.
THIS IS THE GROUP THAT SENT PEOPLE TO THE MOON!
IF THEY CAN'T DO IT, NOBODY CAN.

AND SO I WOULD LIKE TO JUST PUT THAT CHALLENGE TO NASA

IN TERMS OF DIVERSITY AS WELL.
I THINK THEY SOLVED MY SLIDE PROBLEM.

WE WILL FIND OUT AND I THINK NASA CAN ALSO SOLVE THE

INNOVATION PROBLEM OF GETTING MORE AND MORE DIVERSE PEOPLE INTO THE STEM FIELD, WITH THE ENERGY AND KNOWLEDGE AND EXPERTISE

HERE TODAY, THE MAKE ENORMOUS STRIDES IN THE NEXT TWO DAYS TO SOLVE THIS PROBLEM.

AND SO, IN THE SPIRIT OF BRUCE WILLIS, I WOULD LIKE US TO THINK AS PROBABLY AND AS BIG AND AS AGGRESSIVELY AND

CREATIVELY AS WE CAN ABOUT WHAT IT WILL TAKE TO BROADEN

SEE THEY SOLD IT.

[APPLAUSE] THIS IS NASA.

SO, I BRING YOU GREETINGS FROM THE WHITE HOUSE,

FROM THE PRESIDENT, WHY SHOULD MENTION I READ RECENTLY
THAT

HIS FAVORITE MOVIE OF 2015 WAS THE MARTIAN, WHICH I

THINK IS SICK AGAIN FOR TODAY'S DISCUSSION AND YOU WILL

SEE WHY AS I TALK.

I ALSO WOULD LIKE TO SHARE WITH YOU ONE OF OUR MOST

RECENT ADDITION TO THE STEM PORTFOLIO OF THE WHITE

HOUSE AND THAT IS THE STEM FOR ALL INITIATIVE. AND SO I WOULD LIKE TO START TALKING ABOUT

SOME OF THE GOALS OF STEM OR ALL, WHERE THIS INITIATIVE CAME FROM. SOME OF ITS ROOTS IN GOVERNMENT AND IN VARIOUS

REPORTS FROM ACADEMIA AS WELL AS GOVERNMENT AGENCIES

AND THEN TALKED ABOUT THE THREE ELEMENTS OF STEM FOR

ARE ACTIVE LEARNING, PROVIDING COURSE ACCESS
TO HIGH SCHOOL AND MIDDLE SCHOOL STUDENTS, AND THEN

THE ISSUES OF STEM FOR CLOSING.

SO THE PRINCIPLES OF MAKING CHANGE IN THIS WHITE HOUSE ARE THAT WE WORK FROM AN EVIDENCE-BASED STANDPOINT AND

THAT WE WORK COLLABORATIVE. AND SO THE PRESIDENTS STEM AND PROBABLY EDUCATION EFFORTS HAVE INVOLVED EVERY LEVEL OF EDUCATION, HAVE INVOLVED EVERY GROUP THAT CONTRIBUTES TO EDUCATION, FROM THE PRIVATE-SECTOR FOUNDATION, NGOS, TO THE GOVERNMENT AND UNIVERSITIES, AND IT HAS ALWAYS INVOLVED EVIDENCE-BASED PRACTICE.

IN LOOKING AT WHERE THE BEST EVIDENCE IS OF THE CHANGES THAT WE DESIRE TO MAKE. AND SO, ONE OF THE GROUPS THAT HAS BEEN A
GREAT CONTRIBUTOR HAS BEEN THE FC STEM AND CO-STEM COMMITTEES THAT ARE FORMED BY THE NATIONAL SCIENCE AND ELEGY COUNSEL WHICH IS RUN BY OSC P MY OFFICE AND IN THAT GROUP THERE HAVE BEEN GREAT DISCUSSIONS AND STRATEGIC PLANNING THAT HAS SUGGESTED THE WAY FORWARD FOR BROADENING PARTICIPATION AND INCREASING THE QUALITY OF STEM EDUCATION ACROSS ALL LEVELS OF EDUCATION IN THIS COUNTRY. AND SO, IF YOU LOOK AT THE STRATEGIC PLAN, FROM THE SC STEM GROUP THEIR FIVE-YEAR PLAN EMPHASIZED A FEW ELEMENTS THAT I THINK ARE CRITICAL. WE SHOULD FOLLOW THE EVIDENCE IN CONSISTENT WITH
President Obama's philosophy, we should look at what the experiments are, what this data and study show.

They will help us toward the best practices that will make change most effectively that we can.

Secondly, they focused on the importance of community colleges.

This is a group that is often left out of the conversation with higher education and yet, this is the group that trains more of our college students than any other group of institutions in the country. More than half of our students who are at the universities and the four-year universities.

- For your colleges and universities have a 10 did community.
SO THIS IS AN IMPORTANT ELEMENT OF ADDRESSING THE CHANGE THAT WE NEED TO MAKE IN STEM MORE BROADLY.

AND I URGE THE UNIVERSITIES THAT ARE REPRESENTED HERE TODAY TO CONSIDER THE COLLABORATIONS AND ALLIANCES THAT YOU CAN FORM WITH THE COMMUNITY COLLEGES WHO REACH INTO MANY OF THE COMMUNITIES THAT WE SO MUCH WANT TO DRAW UPON FOR OUR FUTURE STEM WORKFORCE. THEY ALSO, IN THE FC STEM FIVE-YEAR PLAN, EMPHASIZE RESEARCH EXPERIENCES AND THE IMPORTANCE OF GETTING AUTHENTIC EXPERIENCES TO OUR STEM STUDENTS EARLY ON IN THEIR CAREERS.

HAVING THEM UNDERSTAND WHAT A STEM EXPERIENCE MEANS,
WHAT A STEM CAREER MEANS, WHAT IT MEANS TO DO RESEARCH

923
00:33:26,569 --> 00:33:29,289
AND I INVESTIGATE NOT JUST MEMORIZE INFORMATION THAT

924
00:33:29,289 --> 00:33:34,990
SOMEONE ELSE HAD DISCOVERED.
AND FINALLY, THEY EMPHASIZE MATHEMATICS SUCCESS.

925
00:33:34,990 --> 00:33:37,950
THAT IS ABSOLUTELY CRITICAL IN THE FIELDS THAT

926
00:33:37,950 --> 00:33:44,019
CONTRIBUTE TO NASA.
AND WE NEED TO BE FOCUSING ON MATH, PARTICULARLY,

927
00:33:44,019 --> 00:33:45,019
JUST

928
00:33:45,019 --> 00:33:48,460
ABOUT OVER THE MINUTE TALK ABOUT TODAY WILL CONNECT

929
00:33:48,460 --> 00:33:53,220
WITH THE MATH CURRICULUM.
SO I HOPE YOU WILL THINK ABOUT AS WE GO THROUGH THE

930
00:33:53,220 --> 00:33:56,559
THOUGHTS THAT I LIKE TO SHARE WITH YOU TODAY.

931
00:33:56,559 --> 00:33:59,740
PRESIDENT OBAMA, FOLLOWING THE T CAST REPORT CALLED

932
00:33:59,740 --> 00:34:03,730
ENGAGE TO EXCEL THE DAVID MENTION, I PUT OUT THE GOAL

933
00:34:03,730 --> 00:34:08,510
OF TRAINING 100 - OR 1 MILLION MORE STEM COLLEGE
GRADUATES OVER THE NEXT – AT THAT POINT IT WAS OVER THE NEXT DECADE. IT IS NO LONGER A DECADE.

THAT WAS ACCOMPANIED BY HIS EARLIER COMMITMENT TO TRAIN 100,000 MORE OUTSTANDING STEM TEACHERS. MADE ENORMOUS ADVANCES IN BOTH OF THESE, PARTICULARLY IN THE TRAINING OF STEM TEACHERS. THE K-12 WORKFORCE, OF COURSE, NEEDS MORE TEACHERS TRAINED IN STEM FIELDS BECAUSE SO MANY OF THE EARLIER YEAR TEACHERS IN K-6 ACTUALLY HAVE AN ALLERGY TO STEM. A WANT TO AVOID STEM AT ALL COSTS AND THEY PASS ON THAT ALLERGY TO THEIR STUDENTS.

AND SO THAT IS AN IMPORTANT AUDIENCE THAT WE NEED TO REACH ARE THE K-12 TEACHERS. THE PRESIDENTS INITIATIVE OF 100,000 MORE
TRAINED STEM
TEACHERS IS ABOUT HALFWAY THROUGH.

946
00:35:02,039 --> 00:35:05,170
SINCE THE BEGINNING OF THAT INITIATIVE, WE
HAVE SEEN

947
00:35:05,170 --> 00:35:08,760
THE INTRODUCTION OF 50,000 MORE STEM TEACHERS
INTO THE

948
00:35:08,760 --> 00:35:12,430
WORKFORCE AND THERE SHOULD BE ANOTHER 50,000
IN

949
00:35:12,429 --> 00:35:16,500
TRAINING BY THE END OF THE ADMINISTRATION.
SO I THINK THAT IS ONE OF THE ADMINISTRATION'S

950
00:35:16,500 --> 00:35:19,858
MOST
SUCCESSFUL EFFORTS AND BE AN IMPORTANT ELEMENT

951
00:35:19,858 --> 00:35:23,869
IN
LEADING THE MILLION MORE STEM GRADUATES OF

952
00:35:23,869 --> 00:35:28,460
COLLEGE THAT
WE AIM FOR IN 2022.

953
00:35:28,460 --> 00:35:31,849
SO WHAT ELSE TO WE NEED TO DO TO ACHIEVE THAT
WORK

954
00:35:31,849 --> 00:35:35,509
FORCE?
AND SO, WE LOOKED AT THIS IN THE GROUP THAT

955
00:35:35,509 --> 00:35:39,769
WROTE THE
ENGAGE TO EXCEL REPORT AND WE FOUND THAT THERE

956
00:35:39,769 --> 00:35:42,800
WAS A
REAL CHALLENGE AND OPPORTUNITY, PARTICULARLY
IN COLLEGE.

I'M GOING TO FOCUS ON THIS TYPE OF EDUCATION BECAUSE OF

OUR AUDIENCE TODAY, AS WE'RE DEALING WITH UNIVERSITIES

AND COLLEGES. YOU ARE THE LEADERS THAT CAN MAKE THE DIFFERENCE

WE KNOW FROM THE EVIDENCE THAT 60 PERCENT

OR MORE OF STUDENTS WHO START COLLEGE INTERESTED IN STEM

AND UP GRADUATING IN A NON-STAMP FIELD.

THAT IS APPALLING. THAT SAYS THAT WE ARE OUTSTANDING AT DRIVING

STUDENTS AWAY FROM STEM FIELDS.

RATHER THAN FUNNELING THEM INTO THEM AS DAVID SAID.

WE HAVE THE OPPORTUNITY IN OUR INTRODUCTORY COURSES TO
EXCITE STUDENTS ABOUT – TO SHOW THEM THE THRILL OF THE STEM CAREER, THE CHALLENGES, THE EXCITEMENT OF SOLVING BIG PROBLEMS, SERVING SOCIETY, CHANGING THE WORLD AND YET, WHAT WE DO INSTEAD IS CONVINCE THEM THAT STEM IS NOT FOR THEM. WE NEED TO GET RID OF THAT WEED OUT UNTALENTED MANY OF OUR INTRODUCTORY COURSES HAVE AN INSTEAD, MAKE THEM MORE WELCOMING TWO MORE KINDS OF STUDENTS AND NOT TAKE PRIDE IN THE FACT THAT MANY OF OUR STUDENTS DO NOT DO WELL IN THOSE COURSES. WE SHOULD BE ASHAMED OF THAT. WE SHOULD BE WORKING TO ASSURE THAT EVERY STUDENT WHO WANTS TO BE A STEM MAJOR CAN SUCCEED IN STEM. SO, WHAT WE FOUND WAS THAT THE PROBLEM GOES
BEYOND JUST

00:37:05.199 --> 00:37:09.818
A GENERAL STATISTIC.
IT IS EVEN WORSE WHEN YOU LOOK AT STATISTIC

00:37:09.818 --> 00:37:14.518
GROUPS.
THIS IS FROM A REPORT THAT WAS PRODUCED BY

00:37:14.518 --> 00:37:20.329
THE NATIONAL
ACADEMY.

00:37:16.400 --> 00:37:25.460
IT SHOWED THAT RETENTION OF CERTAIN MINORITY
GROUPS IS

00:37:20.329 --> 00:37:30.389
SO MUCH WORSE, THAT IS LOW IS HALF OF THE
RATE OF

00:37:25.460 --> 00:37:30.389
RETENTION OCCURS IN SOME OF THE - THE MINORITY
GROUPS

00:37:30.389 --> 00:37:34.629
AS WITH WHITE MEN.
SO WITH WHITE MEN, YOU MAY HAVE - IN SOME

00:37:34.630 --> 00:37:42.519
STUDIES, A
FIVE YEAR DEGREE COMPLETION RATE IN STEM FIELDS

00:37:38.400 --> 00:37:42.519
OF
ABOUT 34 PERCENT AND IN SEVERAL MINORITY GROUPS,

00:37:42.519 --> 00:37:45.268
IT'S
AROUND 17 AND 18 PERCENT.

00:37:45.268 --> 00:37:46.500
THAT IS SIMPLY NOT ACCEPTABLE.

00:37:46.500 --> 00:37:46.500
IT IS NOT ACCEPTABLE THAT STUDENTS GENERALLY DO NOT GRADUATE WHEN THEY ARE INTERESTED IN STEM, BUT IT'S EVEN MORE APPALLING THAT WE HAVE AN FORM OF DISCRIMINATION GOING ON THAT DRIVES MINORITY STUDENTS OUT OF STEM FIELDS.

SO WHAT CAN WE DO? WHAT CAN WE DO TO CHANGE THAT?

IF WE WANT TO MEET THIS GOAL OF 1 MILLION MORE STEM WORKERS WITH COLLEGE DEGREES BY 2022, WE HAVE TO BE AGGRESSIVE ABOUT NOT ONLY RETAINING ALL STUDENTS IN STEM, BUT FOCUSING SPECIFICALLY ON MINORITY GROUPS AND WOMEN TO ENSURE THAT WE HAVE THE DIVERSITY IN THE WORKFORCE THAT WILL MAKE IT A TRULY POWERFUL WORK FORCE.
WE KNOW FROM EXTENSIVE RESEARCH THAT MORE
DIVERSE GROUPS ARE MORE CREATIVE AND COME UP WITH MORE SOLUTIONS AND MORE INTERESTING SOLUTIONS TO PROBLEMS AND THEY ALSO WILL BE ABLE TO DEFEND THEIR SOLUTIONS TO PROBLEMS BETTER.

ALL OF THOSE ARE IMPORTANT ELEMENTS FOR OUR STEM FIELD.

THE HALLMARK OF THE UNITED STATES IS OUR DIVERSITY AND TO USE IT AS OUR GREATEST STRENGTH AS IT IS AND NOT IGNORE IT AND SQUEEZE OUT SOME GROUPS FROM OUR STEM FIELD.

SO I WOULD LIKE TO TURN OUT TO THE THREE ELEMENTS OF STEM FOR ALL, WHICH I SEE IS ON HUNTING ALL
OF THE WORK
THAT THE PRESIDENT HAS DONE ON DIVERSITY AND
EDUCATION
AND IN STEM SPECIFICALLY FOR THE PREVIOUS
SEVEN YEARS.

THESE, I THINK, ARE ELEMENTS OF THE PLAN THAT
WILL AUGMENT OF EVERYTHING THAT WE'VE DONE IS A
GOVERNMENT.
WE WILL MAKE SURE THEY HAVE THE IMPACT THAT
THEMAY HAVE
WITHOUT CREATING BOTTLENECKS AT VARIOUS POINTS

IN EDUCATION SYSTEM.

I'D LIKE TO START WITH THE ACTIVE LEARNING
ASPECT.

MANY OF YOU MAY BE FAMILIAR WITH ACTIVE LEARNING,
WHICH

IS, BY THE WAY, NOT WHAT I'M DOING RIGHT NOW.
UNFORTUNATELY, MOST OF OUR STEM COURSES ARE
TAUGHT -

ESPECIALLY THE INTRODUCTORY ONES - IN A
VERY DIDACTIC

WAY WHERE WE LECTURE AT OUR STUDENTS.
WE TELL THEM WHAT WE WANT THEM TO KNOW RATHER
THAN
HAVING THEM TRULY ENGAGE WITH KNOWLEDGE.

THERE IS WORK GOING BACK MORE THAN 50 YEARS
SHOWING

THAT WHEN PEOPLE ENGAGE AT ANY LEVEL, ENGAGE
WITH

KNOWLEDGE, THEREFORE MORE LIKELY TO LEARNED
THAT IF

THIS IS A VERY SIMPLE EXAMPLE FROM SOME OF

THE EARLY
WORK THAT IF YOU ASK PEOPLE TO REMEMBER A

WORD, SAYING
FAST AND RAPID ARE RELATED WORDS, HAVE SIMILAR

THEY WILL BE MUCH LESS LIKELY TO REMEMBER

THE TWO WORDS
YOU SAID THAT IF YOU ASKED THEM TO SOLVE A

SIMPLE PROBLEM LIKE THIS BEING ABLE TO FILL
IN THE LETTERS OF THE WORD RAPID WHERE THEY HAVE TO THINK AND ENGAGE IN THE PROBLEM RATHER THAN SIMPLY MEMORIZE THE WORK THAT YOU GAVE THEM.

AND SO, USING THAT AS A PRINCIPAL, WE CAN EXPAND THAT AN EXTENDED TO ALL OF STEM EDUCATION AND IT IS NOT A PRESCRIPTIVE APPROACH. IT’S A PRINCIPLE OF GETTING STUDENT INVOLVED AND ENGAGED IN IN THEIR STEM EDUCATION.

THE BEAUTY OF ACTIVE LEARNING IS THAT THERE ARE MANY DIFFERENT WAYS OF CONDUCT IT IN ANY SIZE CLASS IN ANY MATCH. AND SO IT CAN BE ANYTHING FROM CASE STUDIES TO SIMPLY ASKING STUDENTS TO WRITE A QUESTION ON A NOTE.
CARD AS
THEY ARE LEAVING CLASS OR DOING QUIZZES BEFORE

1049
00:41:15,079 --> 00:41:18,739
CLASS.
THERE IS A BEAUTIFUL STUDY FROM STANFORD SHOWING

1050
00:41:18,739 --> 00:41:21,858
THAT
WHEN STUDENTS ENGAGE BEFORE A LECTURE, THEY

1051
00:41:21,858 --> 00:41:24,608
ARE FAR
MORE LIKELY TO LEARN OF THE LECTURE THAN IF

1052
00:41:24,608 --> 00:41:26,719
THEM ENGAGE
AFTER THE LECTURE.

1053
00:41:26,719 --> 00:41:30,598
SO AN IMPORTANT ELEMENT MIGHT BE TO DEVELOP
QUIZZES OR

1054
00:41:30,599 --> 00:41:34,750
ACTIVE PROBLEM-SOLVING BEFORE STUDENTS ENTER
THEIR

1055
00:41:34,750 --> 00:41:37,259
LECTURES.
SO IT DOESN'T MEAN THROWING OUT EVERYTHING

1056
00:41:37,259 --> 00:41:41,190
WE'VE DONE
FOR THE LAST 30 YEARS OF OUR CAREERS.

1057
00:41:41,190 --> 00:41:44,519
A LOT OF PEOPLE ARE INTIMIDATED BY THAT.

1058
00:41:44,518 --> 00:41:46,819
THEY SAY UP IN TEACHING MY PHYSICS COURSE
THE SAME WAY

1059
00:41:46,820 --> 00:41:50,530
FOR DECADES.
I DON'T REALLY WANT OVER HOLLY COMPLETELY.
IT DOES NOT REQUIRE THAT.
IT REQUIRES INTERJECTING STRATEGIC USE OF
ACTIVE LEARNING, ANYTHING THAT WILL ENGAGE STUDENTS

IN THE PROCESS OF THINKING, PROBLEM-SOLVING AND HELPING

OTHERS LEARN AS WELL.

AND SO, ENGAGEMENT IS A VERY IMPORTANT ELEMENT OF THAT

AND IT DOES NOT HAVE TO HAPPEN IN THE CLASSROOM,
ALTHOUGH IT CERTAINLY CAN, EVEN IN MASSIVE

LECTURES OF 1000 PEOPLE.

IF THERE IS NO PROBLEM INVOLVING STUDENTS DURING THE

BUT IT CAN HAPPEN OUTSIDE AS WELL, WHICH IS

STUDENTS TEACHING STUDENTS IS ONE OF THE VERY
BEST WAYS
WE KNOW IT HAS BEEN SHOWN FOR YEARS TO HAPPEN IN OR

1072
00:42:32,130 --> 00:42:35,550
MISLEAD POSITIVE AFFECT ON LEARNING, BUT ON MUCH MORE

1073
00:42:35,550 --> 00:42:39,250
THAN LEARNING. WHAT WE HAVE FOUND HER RESEARCH IS THAT NOT

1074
00:42:39,250 --> 00:42:43,380
ONLY IS LEARNING INCREASED BY ACTIVE LEARNING APHIDS,

1075
00:42:43,380 --> 00:42:46,740
BUT IT ALSO INCREASES RETENTION OF STEM MAJORS.

1076
00:42:46,739 --> 00:42:49,278
STUDENTS THAT HAVE BEEN ACTIVELY GAUGED ARE MORE LIKELY

1077
00:42:49,278 --> 00:42:52,318
TO BE RETAINED IN THE STEM MAJORS, BUT THEY ARE MORE

1078
00:42:52,318 --> 00:42:54,789
LIKELY TO BE RETAINED IN COLLEGE GENERALLY WHICH I

1079
00:42:54,789 --> 00:42:57,940
THINK IS AN INTERESTING STATEMENT ABOUT WHAT WE HAVE

1080
00:42:57,940 --> 00:43:00,670
BEEN DOING IN TERMS OF A COMFORT, THE EXCITEMENT,

1081
00:43:00,670 --> 00:43:04,930
GAUGE MEANT IN THE SUCCESS OF OUR STUDENTS GENERALLY

1082
00:43:04,929 --> 00:43:08,250
WITH THE PASSIVE FORMS OF TEACHING THAT WE HAVE USED.
THE REDUCTION IN VERY POOR GRADES IS QUITE STRIKING IN

MOST OF THE STUDIES OF ACTIVE LEARNING.
STUDENTS ARE MORE LIKELY TO DEVELOP NOT ONLY

THE
MEMORIZATION OF KNOWLEDGE SKILLS, BUT THE

HIGHER ORDER
THINKING SKILLS OF EVALUATION, SYNTHESIS,

AND
UNDERSTANDING OF DATA AND INFORMATION.

AND ONE OF THE THINGS I THINK IS SO IMPORTANT
AND

ACTIVE LEARNING AND PARTICULARLY IN THE RESEARCH

ENGAGEMENT THAT I TALKED ABOUT EARLIER THAT
FC STEM IS

RECOMMENDED IS THAT STUDENTS DEVELOP AN IDENTITY
A

SCIENTIST.
AND THAT IS CRITICAL FOR THEM TO FEEL PART

OF THE
SCIENTIFIC COMMUNITY AND PARTICULARLY, FOR
STUDENTS LIKE WOMEN AND MINORITIES WHO HAVE NOT NECESSARILY SEEN ROLE MODELS IN THEIR PAST THAT LOOK LIKE THEM.

AND THEY CAN'T QUITE IMAGINE THEMSELVES PART OF THAT SCIENTIFIC COMMUNITY BECAUSE THEY DO NOT LOOK LIKE THE SCIENTIST THAT THEY HAVE SEEN. IT'S CRITICAL THAT THEY, EARLY ON IN THEIR SCHOOLING, DEVELOP AN UNDERSTANDING OF WHAT IT FEELS LIKE TO BE A SCIENTIST TO BE PART OF THE GROUP OF SCIENTISTS. THAT'S WHAT ME MEAN BY THE IDENTITY OF SCIENTISTS.

ONE OF THE EXCITING RINGS THAT WE'RE LOOKING FORWARD TO COMING UP THIS FALL IS ACTIVE LEARNING DATE THAT WAS ANNOUNCED BY THE NATIONAL SCIENCE FOUNDATION AT SCIENCE FAIR LAST APRIL. THIS IS A BACK TO SCHOOL AFTER THAT WE'LL
ENGAGE INSTRUCTORS AT ALL LEVELS FROM K-12 THROUGH GRADUATE SCHOOL.

AND WE HOPE THAT IT WILL BE FOLLOWED. IT WILL BE OCCURRING EARLY AND SET TEMPER

AND THEN WE ARE HOPING THAT IT WILL BE FOLLOWED BY ENGAGEMENT BY COLLEGES AND UNIVERSITIES ACROSS THE COUNTRY

AND COMMITTING TO INVOLVING THEIR FACULTY AND THEIR STUDENTS AND ACTIVE LEARNING IN STEM CLASSES.

WE DO NOT EXPECT A RADICAL CHANGE AT THE BEGINNING, BUT

WE FEEL THAT IF MANY, MANY INSTITUTIONS ENGAGE, EVEN A

SMALL AMOUNT AND ACTIVE LEARNING, MANY OF OUR INSTRUCTORS WOULD OVERCOME THE INITIAL BARRIERS TO
USING ACTIVE LEARNING.
IT'S NEW AND DIFFERENT.

IT'S SCARY.
THEY DON'T FEEL EXPERT AT IT.

BUT IF WE GET MANY PEOPLE TO TRY IT, PERHAPS THEY WILL

FIND THE EXCITEMENT OF ENGAGING THEIR STUDENTS, SEE THE

VALUABLE FOR THEIR STUDENTS AND THEMSELVES IN USING AN

ACTIVE APPROACH IN THE CLASSROOM AND WILL BEGIN TO SEE

CHANGE.
THE NEXT AREA OF STEM FOR ALL IS OF COURSE

ACCESS.
AND I WOULD LIKE TO JUST MENTION IT BRIEFLY.

IT'S FOCUSING ON K-12 BECAUSE THAT'S WHERE ACCESS TENDS

TO BE MORE DISCRIMINATORY THAN AT OTHER LEVELS.
SO I WILL NOT SPEND A LOT OF TIME ON IT SINCE

THIS IS REALLY FOCUSED MORE ON THE UNIVERSITY AND

COLLEGE
LEVEL.

1129
00:45:58,858 --> 00:46:02,730
SO THERE ARE SEVERAL APPROACHES THAT WE'VE
SUGGESTED TO

1130
00:46:02,730 --> 00:46:06,858
INCREASE COURSE ACCESS AND SEVERAL OF THESE
ARE UNDER

1131
00:46:06,858 --> 00:46:11,259
WAY.
THE CHALLENGES THAT THE REPRESENTATION OF

1132
00:46:11,259 --> 00:46:14,420
OUR AP
COURSES, THE ADVANCED COURSES, AS WELL AS

1133
00:46:14,420 --> 00:46:19,869
COMPUTER
SCIENCE AT ALL LEVELS IS DIFFERENTIAL ACCORDING

1134
00:46:19,869 --> 00:46:23,960
TO
SCHOOL DISTRICT AND ACCORDING TO STATE AND

1135
00:46:23,960 --> 00:46:26,030
ACCORDING TO
PART OF THE COUNTRY.

1136
00:46:26,030 --> 00:46:28,400
SO THERE ARE, FOR EXAMPLE, MANY SOUTHERN STATES
AND

1137
00:46:28,400 --> 00:46:32,769
WESTERN STATES THAT HAVE VERY LOW RATES OF
AP COURSE

1138
00:46:32,769 --> 00:46:36,639
COMPLETION AND THOSE RATES ARE EVEN LOWER,
MUCH LOWER,

1139
00:46:36,639 --> 00:46:43,889
AMONG WOMEN AND NUMBERS OF NORDIC GROUPS.
AND SO, WE NEED TO BE OFFERING THE AP CURRICULUM
OR BROADLY, MORE EVENLY, ACROSS THE UNITED STATES AND MAKE SURE THAT ALL STUDENTS IN HIGH SCHOOLS WHO ARE INTERESTED IN ADVANCED COURSES CAN TAKE THEM.

THERE IS A STRONG ASSOCIATION BETWEEN ADVANCED COURSES ACCESS AND RETENTION IN COLLEGE AND SUCCESS IN COLLEGE CURRICULUM GENERALLY, NOT JUST IN STEM, BUT MORE BROADLY. AND SO WE ARE DEPRIVING STUDENTS OF AN EXPERIENCE THAT WILL DO HATE MUCH OF THEIR SUCCESS LATER ON, NOT JUST A HIGH SCHOOL EXPERIENCE, BY DENYING THEM ACCESS.

ONE OF THE EFFORTS OF THE INITIATIVE IS TO FOCUS ON...
COMPUTER SCIENCE.
YOU MAY HAVE HEARD COMPUTER SCIENCE FOR ALL

1152
00:47:33,309 --> 00:47:37,710
ANOTHER
WHITE HOUSE INITIATIVE THAT GENERATED $4 BILLION

1153
00:47:37,710 --> 00:47:41,539
OF
SUPPORT FROM PRIVATE INDUSTRY TO HELP STUDENTS

1154
00:47:41,539 --> 00:47:42,539
ACQUIRE

1155
00:47:42,539 --> 00:47:44,659
THE SKILLS IN COMPUTER SCIENCE THAT ARE NEEDED
FOR

1156
00:47:44,659 --> 00:47:49,670
TODAY'S AND TOMORROW'S WORKFORCE.
THAT HAS BEEN AN INCREDIBLE SUCCESS ACROSS

1157
00:47:49,670 --> 00:48:00,929
PRIVATE
INDUSTRY COMMITTED TO HELPING STUDENTS AND

1158
00:48:00,929 --> 00:48:02,629
SCHOOLS HAVE
ACCESS TO THE RIGHT EQUIPMENT, THE RIGHT EXPERTISE

1159
00:48:02,629 --> 00:48:06,150
AND
THE EXPERIENCES THAT WILL TRULY EQUIP THEM

1160
00:48:06,150 --> 00:48:08,629
FOR THE
FUTURE.

1161
00:48:08,629 --> 00:48:10,150
WE'RE TRYING ALSO TO ACHIEVE FEDERAL FUNDING
FOR THAT

1162
00:48:10,150 --> 00:48:14,289
AND WE ARE HOPING THAT THE COLLABORATIVE PRIVATE
PARTNER WILL REALLY CHANGE THE FACE OF COMPUTER
SCIENCE AND K-12 TEACHING BECAUSE AS WE ALL KNOW,

THE ABILITY TO CODING USE COMPUTERS THE ABILITY TO PROGRAM

ARE TO BE SKILLS THAT ARE NEEDED NOT ONLY IN STEM

FIELDS, BUT ACROSS ALL OF OUR WORKFORCE ON THIS ISSUE

AND THAT IS SOMETHING THAT DAVID MENTIONED

IMPLICIT BIAS OR THE ASSUMPTIONS MADE ABOUT PEOPLE

CUSS OF STEREOTYPES THAT WE ARE FAMILIAR WITH.

IT IS ONE OF THE - IT REPRESENTS ONE OF THE MOST

INSIDIOUS FORMS OF DISCRIMINATION ACROSS ALL OF OUR

SECTORS AND PARTICULARLY AFFECTS MINORITIES AND WOMEN

SO I WOULD LIKE TO TALK ABOUT A FEW KINDS
OF EVIDENCE
THAT BIAS IS GREATLY AFFECTING OUR STEM WORK

1175
00:49:08,460 --> 00:49:11,599
FORCE.
I'D LIKE TO START WITH SOME EMPLOYMENT DATA,

1176
00:49:11,599 --> 00:49:15,588
WHICH IS
NOT PROOF OF ANYTHING, BUT IS AN OBSERVATION.

1177
00:49:15,588 --> 00:49:19,078
AND THEN SOME MORE EXPLANATORY OR MECHANISTIC
STUDIES

1178
00:49:19,079 --> 00:49:23,048
WHICH ARE RANDOM CONTROLLED STUDIES THAT SHOW
THE

1179
00:49:23,048 --> 00:49:28,199
EVIDENCE OF BIAS AND THEN LOOK AT THE EFFECTS
OF

1180
00:49:28,199 --> 00:49:33,798
CHANGING BIAS THROUGH PRACTICAL INTERVENTION
IN

1181
00:49:33,798 --> 00:49:40,009
INSTITUTIONS, BUT ALSO IN THE MASS MEDIA.
IF WE LOOK AT SOME OF THE EMPLOYMENT DATA

1182
00:49:40,009 --> 00:49:44,539
IN THE US,
THESE ARE DATA FROM THE NATIONAL SCIENCE FOUNDATION,

1183
00:49:44,539 --> 00:49:47,819
WE
SEE THAT THE SALARIES OF MEN AND WOMEN WHO

1184
00:49:47,818 --> 00:49:51,820
HAVE NATURAL
OTHERS TO GREECE INSTEAD ARE QUITE DIFFERENT.

1185
00:49:51,820 --> 00:49:54,900
AND SO IF YOU LOOK ACROSS THE ENTIRE WORKFORCE,
THIS IS
ALL AGES, WE SEE THAT THE AVERAGE RAIL SALARY IN STEM -

THE MAIL SALARIES 80,000 IN THE AVERAGE FEMALE SOCIETY

IS 65,000.

WHEN WE FIRST LOOKED AT THE DATA WE WONDERED IF PERHAPS

THERE'S BEEN MORE MEN IN STEM FOR LONGER AND SO THEY

HAVE THE MORE SENIOR JOBS. BUT VERY WISELY, THE NATIONAL SCIENCE FOUNDATION

LOOKED AT THAT QUESTION! LOOKING AT PEOPLE IN THE

WORKFORCE WHO WERE 29 IN YOUNGER WHEN YOU CAN IMAGINE

THEY WERE TRAINED IN YEARS WHEN THERE WAS MUCH MORE.

T IN THE STEM MAJORS AND YOU SEE THAT PERCENTAGEWISE, THE DIFFERENCE IS EVEN GREATER.

53 VERSUS 40,000.

SO THIS IS A PERSISTENT DIFFERENT IN PAY.
WE DO NOT KNOW WHY THIS IS.
WE CANNOT SAY THAT IT IS DISCRIMINATION, BUT

IT
CERTAINLY IS SUSPICIOUS THAT PEOPLE WITH THE

SAME
DEGREE, ON AVERAGE, MAKE SUCH DIFFERENT SALARIES.

SO WE BEGAN TO LOOK AT THIS AND OTHER - THROUGH
OTHER DATA.
AND IF YOU LOOK AT SOME OF THE CONTROLLED

EXPERIMENTS, YOU FIND THAT THERE IS TREMENDOUS BIAS AND

IT IS NOT A SURPRISE THAT SALARIES WOULD DIFFER GREATLY

IN STEM FIELDS BETWEEN MEN AND WOMEN.

SO, ONE OF THE CLASSIC EXPERIMENTS WAS TO HAVE

REVIEWERS RATE THE VERBAL SKILLS OF A PERSON - THIS IS

NOT NECESSARILY IN STEM - BASED ON READING A SHORT

PARAGRAPH THAT THAT PERSON SUPPOSEDLY WROTE.
AND IF THE REVIEWER WAS TOLD THAT THE WRITER
WAS AN AFRICAN-AMERICAN, THEY RATED THE SKILLS OF

THE PERSON LOWER.

THE SAME PARAGRAPH JUST TOLD IN AN AFRICAN-AMERICAN
WROTE THE PARAGRAPH WILL TRY THAT RATING DOWN.

INTERESTINGLY, IF THERE TOLD AMY AND WROTE
IT THEY WILL

ALSO REDUCE THEIR RATING WITH A RATING WILL
BE REDUCED

BECAUSE THERE SEEMS TO BE A STEREOTYPE THAT
IN THE CASE

OF RACE, THAT WHITES RICE BETTER THAN AFRICAN-AMERICANS
AND THAT WOMEN WRITE BETTER THAN MEN.

THAT IS A CASE WHERE WE HAVE A LITTLE BIT
OF REVERSAL

IT CAN WORK BOTH WAYS PASTE ON WHATEVER THE

AND, COURSE, THE STEREOTYPES ARE NOT NECESSARILY
CORRECT, BUT EVEN IF THEY WERE, AND THIS IS A CRITICAL

POINT THAT GETS LOST IN THE CONVERSATION. EVEN IF, IN GENERAL, THE STEREOTYPES WERE

CORRECT, THEY DO NOT APPLY TO ANY INDIVIDUAL NECESSARILY.

ANOTHER EXPERIMENT THAT I PARTICULARLY LIKE IS ONE WHERE THEY ASK PEOPLE TO ESTIMATE THE HEIGHTS OF MEN AND WOMEN.

PEOPLE CONSISTENTLY OVERESTIMATED THE HEIGHTS OF THE MEN AND UNDERESTIMATED THE HEIGHTS OF THE WOMEN.

THAT IS AN EXAMPLE WHERE THERE IS A STEREOTYPE THAT IS TRUE. THAT IS A STEREOTYPE THAT MEN ARE ON AVERAGE TALLER THAN WOMEN, BUT THE STEREOTYPE WRITES US TO THE WRONG ANSWER THAT’S ONE OF THE REASONS STEREOTYPES
ARE DESTRUCTIVE.

WHETHER TRUE OR NOT ON AN AVERAGE OF POPULATION LEVEL,

IT DOES NOT MATTER WHEN YOU ARE DEALING WITH THE

INDIVIDUAL. YOU WILL GET TO THE WRONG ANSWER IF YOU ENABLE

THOSE STEREOTYPES TO ENTER INTO A DECISION-MAKING

PROCESS. AND SO, THINK THAT'S AN IMPORTANT POINT BECAUSE

IT TAKES THE CONVERSATION AWAY FROM WHAT HAPPENS

ON AN AVERAGE FOCUSES ON THE EVALUATIONS THAT WE

MAKE EVERY DAY ABOUT INDIVIDUALS, MEN, WOMEN, AFRICAN-AMERICANS,

NATIVE AMERICANS, HISPANICS, DISABLED PEOPLE, ANYBODY

COMING INTO OUR STEM FIELDS. WE EVALUATED THEM BASED ON THEIR OWN MERITS
AND THEIR OWN TALENTS?

OR ARE WE EVALUATING THEM BASED ON THE STEREOTYPES THAT MAY OR MAY NOT APPLY TO THE?

ANOTHER TYPE OF STUDY THAT IS REALLY QUITE POWERFUL IS A LONG HISTORY – AND THERE ARE ABOUT 40 OR 50 YEARS OF THE STUDIES – WHERE RANDOMIZED CONTROLLED EXPERIMENTS ARE SET UP WHERE IDENTICAL APPLICATIONS ARE GIVING TO EVALUATORS.

THE EVALUATORS HARASSED WHETHER THEY WOULD HIRE THE PERSON OR NOT. A DIFFERENT NAME IS RANDOMLY PLACED ON THE APPLICATIONS IN THE EVALUATORS TO SEE ONE APPLICATION WITH EITHER THE MAN OR THE WOMAN'S NAME AND THIS HAS BEEN DONE WITH
RACE AS WELL.

IN THE EXPERIMENT COMES OUT THE SAME EVERY TIME.

THIS IS ESPECIALLY EVIDENT IN THE STEM FEEL 'S OR IN

FIELDS WHERE WOMEN ARE LESS WELL REPRESENTED TO DOOR

MINORITIES ARE IN MORE NUMBERS THAN MEN. PEOPLE ARE MORE LIKELY TO HIRE A PERSON IF

THE APPLICATION HAS A MAN'S NAME ON IT IN A FIELD

THAT IS DOMINATED BY MEN.

IN OVER 40 YEARS WE HAVE NOT SEEN A CHANGE IN THIS.

AND THAT IS AN INTERESTING PHENOMENON BECAUSE WE ALL

KNOW THAT EXPLICIT BIAS AND PREJUDICE AND DISCRIMINATION HAS BEEN DIMINISHED OVER THE

LAST 40 YEARS.

BUT WHAT THIS SAYS IS THAT THE BIASES THAT WE DON'T
THINK ABOUT, THE ONES THAT ARE COMING FROM THE

UNCONSCIOUS THAT ARE EMBEDDED THROUGH CULTURAL EXPOSURE

FOR PROBABLY CENTURIES, ARE THE ONES THAT ARE NOT CHANGING.

THOSE ARE THE ONES WE NEED TO FOCUS ON IN STEM NOW.

WE KNOW WHAT'S ILLEGAL AND ALTHOUGH, AS DAVID SAID, WE NEED TO WORK HARDER TO ENFORCE OUR LAWS FOR EQUAL OPPORTUNITY, BUT THE IMPLICIT BIASES ARE NOT AS OBVIOUSLY ILLEGAL, ALTHOUGH THERE IS SOME EVIDENCE FROM THE LAW THAT THEY CAN BE USED IN COURT AS

BUT WHETHER LEGAL OR NOT, THEY ARE WRONG AND THEY LEAD
US TO THE WRONG ANSWERS AND WE NEED THOSE OUT.

00:55:49,639 --> 00:55:55,259
I TALKED ABOUT THIS A LONG TIME WHEN I WAS A PROFESSOR

AND I KEPT HEARING THE SAME ANSWER OR REACTION FROM MANY PEOPLE. AND WISE THAT WE DO NOT KNOW THAT THIS EXTENDS TO STEM.

00:55:55,259 --> 00:55:59,170
00:56:03,639 --> 00:56:07,858
WE KNOW IT IS TRUE AND LOTS OF OTHER FIELDS

00:56:03,639 --> 00:56:07,858
00:56:07,858 --> 00:56:13,380
DOMINATED BY MEN OR MAJORITY PEOPLE, BUT WE DO NOT KNOW

00:56:13,380 --> 00:56:16,318
SCIENTISTS CAN'T OVERCOME THOSE BIASES BECAUSE THEY ARE TRAINED TO BE OBJECTIVE.

00:56:16,318 --> 00:56:21,420
AND ALTHOUGH THAT DOES NOT MAKE SENSE BECAUSE WE ARE TALKING ABOUT IMPLICIT AND UNCONSCIOUS FUNCTIONS.

00:56:21,420 --> 00:56:24,200
WE ARE NOT TALKING ABOUT THE COGNITIVE FUNCTIONS OF THE

00:56:24,199 --> 00:56:28,618

00:56:28,619 --> 00:56:34,019
AS A PROFESSOR, I GOT REALLY DISPARAGING OF
OVER CONVINCING COLLEAGUES THAT THIS WAS REALLY APPLYING TO THEM.

AND SO, I RESEARCH GROUP IN MY TEACHING SIDE OF MY PROGRAM DECIDED TO DO THE EXPERIMENTS. AND SO, WE TOOK 127 IDEOLOGISTS, CHEMISTS AND PHYSICISTS AT UNIVERSITIES ACROSS THE COUNTRY.

THESE WERE TOP UNIVERSITIES, PUBLIC, PRIVATE, ALL AREAS.

WE SENT EACH OF THOSE FACULTY MEMBERS A DESCRIPTION OF A STUDENT, JUST ONE DESCRIPTION.

WE RANDOMLY ASSIGNED THE NAME EITHER JENNIFER OR JOHN TO THE DESCRIPTION. AND WE ASKED THEM ABOUT THE COMPETENCE OF THE STUDENT, WHETHER THEY WOULD HIRE THE STUDENT AS A LAB.
MANAGER, WITH THEY WOULD PROVIDE THE STUDENT MENTORING

AND WHAT SALARY THEY WOULD PROVIDE THE STUDENT.

AND THE RESULTS WERE QUITE STRIKING. SO IN HIRING JOHN WAS MUCH MORE LIKELY TO BE HIGHER THAN JENNIFER.

THIS IS ON A LIKELIHOOD – LIKE SCALE UP TO FIVE POINTS.

AND THE RESULT WAS HIGHLY SIGNIFICANT AND IT WAS SPREAD THROUGHOUT THE POPULATION. ONE OF THE THINGS THAT WAS STRIKING WAS THAT AFTER WE COLLECTED ONLY 26 RESPONSES, THE RESULTS WERE STATISTICALLY SIGNIFICANT SUGGESTING THIS WAS A WIDESPREAD BIAS, NOT JUST A FEW OUTLIERS CHANGING THE MEAN.

AND THEN WE ASKED WHETHER JOHN OR JENNIFER WOULD RECEIVE MENTORING AND THIS WAS ONE THAT I
LIVE IT SURPRISED ME THE MOST AND THEY SAID THAT THEY WERE LESS LIKELY TO MENTOR JENNIFER AND JOHN.

AND THIS WAS DESPITE THE FACT THAT ON AVERAGE, THEY LIKED JENNIFER MORE THAN JOHN. THEIR REACTION WAS MORE POSITIVE WHEN THE STUDENT WAS FEMALE, BUT THEY WERE STILL LESS LIKELY TO MENTOR HER. IT WAS NOT DRIVEN BY LIKE.

AND THE SALARY THEY WOULD OFFER EACH OF THE STUDENT WAS QUITE DIFFERENT. ABOUT 15 PERCENT DIFFERENT, A DIFFERENCE IN SALARY. JENNIFER, COURSE, RECEIVING THE LOWER SALARY.

IF YOU CALCULATE THE CUMULATIVE EARNINGS OVER A LIFETIME OF THIS DIFFERENCE IN STARTING SALARY, YOU GET
UP INTO THE HIGH HUNDREDS OF THOUSANDS OR MILLIONS OF

DOLLARS OF DIFFERENT OF LIFETIME EARNINGS. SO THIS IS A PRETTY SIGNIFICANT DIFFERENCE

INTERESTINGLY, THE GENDER OF THE FACULTY DID NOT MATTER. AND THIS IS CONSISTENT WITH ALL THE STUDIES PREVIOUSLY ON HIRING AND EVALUATION OF ANY WOMEN'S HEIGHTS AND MANY WOMEN WRITING ABILITY.

IT DOES NOT MATTER WHETHER YOU ARE FROM ONE GROUP OR THE OTHER, THIS EXTENDS AS WELL TO RAISE. THE PREJUDICES AND THE IMPLICIT I - BIAS YOU SeEM TO BE THE SAME WHEN THEY COME FROM THE UNCONSCIOUS MIND.

JENNIFER AND JOHN WERE EVALUATED ACCORDING TO THEIR
GENDER AND NOT THEIR QUALITIES AND JOHN WINS

1335
00:59:38.650 --> 00:59:43.070
OUT ON
JUST ABOUT EVERY FRONT EXCEPT LIKABILITY.

1336
00:59:43.070 --> 00:59:50.338
SO THIS IS AMONG FACULTY.
THIS IS AMONG FACULTY IN THE SCIENCES, IN

1337
00:59:50.338 --> 00:59:53.028
BIOLOGY,
CHEMISTRY AND PHYSICS DEPARTMENTS.

1338
00:59:53.028 --> 00:59:58.829
IT DOESN'T CHANGE WITH THE RANK OF THE FACULTY.
SO THAT SUGGESTS THAT PEOPLE ARE NOT JUST

1339
00:59:58.829 --> 01:00:01.259
CHANGING
BECAUSE THE NUMBERS ARE CHANGING.

1340
01:00:01.259 --> 01:00:09.478
IT ALSO DOESN'T CHANGE WITH THE FIELD.
BIOLOGY HAS BEEN GRADUATING 50 PERCENT WOMEN

1341
01:00:09.478 --> 01:00:13.219
UNDERGRADUATES FOR DECADES AND YET, BIOLOGISTS
WERE NO

1342
01:00:13.219 --> 01:00:18.169
MORE LIKELY TO HIRE JENNIFER THEN THE PHYSICISTS OR

1343
01:00:18.170 --> 01:00:19.358
CHEMISTS.

1344
01:00:19.358 --> 01:00:23.469
SO THAT SAYS THAT THESE BIASES ARE VERY WELL
INGRAINED.

1345
01:00:23.469 --> 01:00:27.498
THEY ARE NOT INFLUENCED WHAT WE SEE AROUND
US ON A

1346
DAILY BASIS IN OUR ADULT LIVES AS PROFESSIONALS.
AND THEY ARE NOT LIKELY TO CHANGE UNLESS WE DO SOMETHING TO INTERVENE.

SO, THE QUESTION IS WHAT DO WE DO ABOUT THESE BIASES?

THESE ARE NOT THE ONLY BIASES THAT WE HAVE TO WORRY ABOUT.
THE BIASES COME UP IN THE AREAS OTHER THAN HIRING.
A COUPLE OF STUDIES THAT HAVE COME OUT IN THE LAST COUPLE OF YEARS I FIND PARTICULARLY FASCINATING.
THE FIRST ONE WAS BY CATHERINE MILLMAN'S GROUP AT THE UNIVERSITY OF PENNSYLVANIA WITH A LOOK AT FACULTY'S RESPONSE TO EMAILS WITH THE ONLY DIFFERENCE ON THE EMAIL BEING THE NAME.
THEY USED CLASSIC ASIAN NAMES, CLASSICALLY AFRICAN-AMERICAN, HISPANIC OR AVERAGE WHITE.
AND WITH APPROACHES TO 6500 FACULTY ACROSS THE COUNTRY,

THEY ASKED SIMPLE QUESTIONS LIKE – ONE QUESTION: WOULD YOU MEET WITH ME TO DISCUSS A RESEARCH PROJECT? AND OVERALL, SHOULD SAY WE SHOULD ALL BE EMBARRASSED THAT THE OVERALL RATE OF RESPONSE WAS PRETTY LOW TO ALL STUDENTS. BUT IT WAS MUCH LOWER WITH MINORITIES AND WOMEN. SO THIS IS ASKING FOR 10 MINUTES OF A FACULTY MEMBER’S TIME AND THE RESPONSE RATE, NOT EVEN ASKING TO GET A POSITIVE RESPONSE, JUST GETTING A RESPONSE AT ALL, WAS AFFECTED BY THE STUDENT’S GENDER AND THEIR RACE OR ETHNIC CITY.

ANOTHER STUDY LOOKED AT THE BIOMEDICAL FACULTY AND THEY
LOOK AT THE COMPOSITION OF LABS THAT WERE RUN BY THESE

ELITE FACULTY. THESE ARE WINNERS UP NOBEL PRIZE, MY INVESTIGATORS

AND MEMBERS OF NATIONAL ACADEMY OF SCIENCES AND

A FEW OTHER MAJOR HONORS.

AND AMONG THIS GROUP, THEY FOUND THAT THE FREQUENT

CIVIL WOMEN GRADUATE STUDENTS IN THOSE LABS OR WOMEN

LAB MEMBERS WAS A LOWERS AMONG THE MEN. AND SO THIS WAS SICK IF IT CAN BECAUSE THE

WOMEN ELITE LABS OR THE ELITE LABS RUN BY WOMEN HAD 50-50

WOMEN. BUT THE ELITE LABS RUN BY MEN HAD A LOWER FREQUENCY OF
WOMEN.
THIS MATTERS BECAUSE THEY ALSO FOUND THAT

THE MAJORITY
OF OUR ASSISTANT PROFESSORS COME FROM ABOUT

FIVE
PERCENT OF OUR LABS.

BY MY CALCULATION LOOK LIKE OR THAT 50 PERCENT
OF OUR

ASSISTANT PROFESSORS ARE HIRED OUT OF ABOUT
FIVE

PERCENT OF THE LABS IN THIS COUNTRY.
AND, OF COURSE, THOSE TEND TO BE THE ELITE

THAT SAYS TO BECOME AN ASSISTANT PROFESSOR

IN THIS
COUNTRY, YOU HAVE TO GO TO THIS SET OF OF

BEING VERY
LIKELY IN AN ELITE LAB THAT AUTOMATICALLY,

ON AVERAGE,
HAS FEWER WOMEN THAN OTHER LABS.

SO THAT SAYS THAT WE HAVE A REAL PROBLEM WITH
THE

BOTTLENECK THAT WE CREATE OF GRADUATE TRAINING
IN OUR
ELITE LABS THAT ARE TRAINING MOST OF OUR FACULTY FOR THE NEXT GENERATION. AND WE NEED TO LOOK AT THAT VERY CAREFULLY.

I THINK THE STATISTICS IN THE RESEARCH THAT I DESCRIBED ARE PARTICULARLY FRIGHTENING BECAUSE OF THE NUMBER OF INTERACTIONS ARE FACULTY HAVE WITH OUR STUDENTS. JUST TO NAME A FEW THAT MAKE OUR FACULTY DATE KEEPERS OF STEM EDUCATION AND STEM CAREERS.

OBVIOUSLY, THEY OFFER ADVISING. MOST OF THE ADVISORS IN OUR UNIVERSITIES ARE FACULTY. THEY ALSO PROVIDE INFORMAL ACCESS TO OPPORTUNITY.

IF THEY'RE GOING TO RECOMMEND A STUDENT TO ANOTHER LAB,

WILL THEY RECOMMEND A MALE OR FEMALE OR AN AFRICAN-AMERICAN OR A WHITE STUDENT WITH THE SAME FREQUENCY IF THE STUDENTS HAVE THE SAME CONFIDENCE?
I think they on the research, we can assume no.

I think that is a pretty, on average, reliable assumption.

Students also rely on faculty or any experts in their field or anybody in a more advanced stage in the field for advice, but also for an evaluation of the students.

That is how they get their gauge of how good they are in a field.

And if students are never told what they are good at or what they are not good at or where they need to improve, is difficult for them to figure that out on their own.

And the evidence is that male students are being told...
ON A MORE REGULAR BASIS OR POSITIVE THINGS

ABOUT THEIR OWN ABILITIES.

THAT’S REINFORCING THEIR ABILITY TO THEN PURSUE THOSE CAREER PATHS.

THE OTHER THING THAT OUR FACULTY PROVIDES IS A VISION OF THE FUTURE.

NOT ONLY ARE THEY A ROLE MODEL THAT A STUDENT HAD IMAGINE FOLLOWING THE FOOTSTEPS OF, BUT THEY ALSO SUGGEST CAREER DIRECTIONS.

ARE THEY SUGGESTING THE MOST AMBITIOUS CAREERS FOR OUR MINORITIES IN OUR WOMEN?

I THINK ON AVERAGE WE COULD GUESS PROBABLY NOT.

THEY ARE PROBABLY OFFERING SUGGESTIONS OF PROFESSIONAL PADS THAT ARE JUST A LITTLE BIT LOWER, LESS AMBITIOUS.
TO WOMEN AND MINORITY THEN TO WHITE MEN OF THE SAME

THE LAST KIND OF BIAS THAT I WANT TO MENTION ARE THE BARRIERS THAT OCCUR THE COUSIN OF OLD BIASES

HAPPEN PROBABLY MANY DECADES AGO OR EVEN CENTURIES

THAT CREATE STRUCTURAL BARRIERS TO SUCCESS

IN OUR UNIVERSITY SYSTEM.

AND THOSE INCLUDE OFTEN GENDER BIAS BECAUSE, OF COURSE,

OUR UNIVERSITIES WERE STARTED BY – FOR THE MOST PART –

WHITE MEN.

THE SYSTEM WAS BUILT WITH A CERTAIN LACK OF

ATTENTION TO THINGS LIKE WORKLIFE BALANCE OR CHILDCARE

OR SOME OF THE – THE ENTIRE LIFECYCLE THAT WOMEN HAVE
THAT MAN
DON'T SHARE OR GO THROUGH A VERY DIFFERENT
LIFE CYCLE.

AND SO, WE NEED TO BE THINKING VERY CAREFULLY
ABOUT HOW

WE STRUCTURE OUR INSTITUTIONS, OUR TENURE
GAME.

HOW WE OFFER CHILDCARE, WHERE WE OFFER CHILDCARE.
THE TENURE CLOCK EXTENSION AND WHAT KIND OF
STIGMA
THERE IS.

MANY UNIVERSITIES HAVE THESE BUT THE FACULTY
WON'T USE

THEM BECAUSE THERE'S A STICK ASSOCIATED WITH
THEM.

SO HOW DO WE TREAT PEOPLE WHO WANT TO ENGAGE
IN A
FAMILY LIFE OR SOME LIFE OUTSIDE OF WORK,
ELDER CARE

FOR EXAMPLE, AS WELL AS A SCIENTIFIC CAREER?
AND THEN FINALLY, WHAT ARE THE IMAGES THAT
WE POST
AROUND THE INSTITUTIONS OF LEARNING.
I urge you to go back to the institutions and look at the faces that you see a former department chairs or luminaries in the field and notice how many women and minorities are lacking from those images. And that leads me to my last two points which are on the mitigation of bias and what we can do.

So briefly, we are in progress right now that we are working on a report from OS CP in the office of personnel management on a report on mitigating implicit bias in STEM fields. That report has been prepared by about 20 of our agencies that are engaged in STEM funding and we hope
TO HAVE THAT OUT IN THE NEXT MONTH OR TWO
AND

HOPEFULLY, THAT WILL GIVE GUIDANCE, NOT ONLY
TO OUR

FEDERAL AGENCIES, BUT ALSO TO OUR UNIVERSITIES
AND

INDUSTRY ABOUT HOW TO REDUCE THE IMPACTS OF
VIRUS IN

OUR WORKFORCE TO INCREASE THE EQUITY IN OUR
WORKFORCE.

THE SECOND AREA THAT OS CP IS WORKING ON IS
ON THE PASS

MEDIA AND HOW WE CAN USE THE MASS MEDIA TO
CHANGE

ATTITUDES ABOUT STEM BEFORE THEY ARE SOLIDIFIED
AND

BEFORE STUDENTS REACH THE COLLEGE LEVEL WHERE
IT IS

HARD TO REVERSE SOME OF THE ATTITUDES.
AND SO, WE HAVE BEEN WORKING WITH WRITERS
AND PRODUCERS AND EXECUTIVES IN THE FILM INDUSTRY AND TV

TO TALK
ABOUT WHAT KINDS OF DEPICTION THEY COULD BE
OFFERING THE PUBLIC ABOUT SCIENCE AND SCIENTISTS.

AND I THINK IF YOU LOOK ACROSS JUST A RANDOM COLLECTION OF IMAGES OF WHAT SCIENTISTS LOOK LIKE. IF YOU GOOGLE STEM IN THE MEDIA, YOU WILL FIND PEOPLE BLOWING THINGS UP.

BUT ALSO NOTICE THAT YOU FIND MOSTLY WHITE PEOPLE AND MOSTLY MEN. AND IF YOU ASK A FOURTH GRADER TO DRY A SCIENTIST,

THEY WILL DRAW A WHITE AND WITH A BEARD AND A BALD HEAD AND GLASSES, USUALLY WEARING A LAB COAT AND SOMETIME HOLDING A TEST TO WHICH IS EXACTLY THE SAME IMAGE WHEN THEY DREW WHEN MARGARET MEAD DID THAT EXPERIMENT FOR THE FIRST TIME IN 1953 ASKING CHILDREN TO DRY
BUT IF YOU GET STUDENTS ENGAGED IN DOING SCIENCE,

WHO WILL THEY DRAW A SCIENTIST?

SO WE HAVE AN EASY FIX THEY'RE IN THAT GOES

BACK TO THE EDUCATIONAL SYSTEM, BUT WE ALSO HAVE THE TOOLS

OF THE MASS MEDIA TO CHANGE SOME OF THOSE IMAGES.

ONE OF THE CRIMES OF THE MASS MEDIA HAS BEEN THE

OMISSION OF SOME OF THE GREAT WOMEN AND MINORITIES FROM

AND WHEN YOU ASK PEOPLE ABOUT WHY THERE ARE

NOT OR IMMINENT MINORITIES IN THE MASS MEDIA THEY'LL

OFTEN SAY THAT THERE HAVEN'T BEEN THAT MANY GREAT STORIES.

AND I THINK WE'RE STARTING TO SEE THAT CHANGE.

AND ONE FIGURE THAT I WOULD LIKE TO MENTION

PARTICULARLY BECAUSE WE ARE HERE AT NASA SHE
IMPORTANT TO NASA'S SUCCESSES CATHERINE JOHNSON. SHE WAS A GREAT FEMALE BLACK MATHEMATICIAN IN THE 50S AND 60S.

LAST YEAR PRESIDENT OBAMA AWARDED HER THE MEDAL OF FREEDOM. THIS MONTH SHE CELEBRATES HER 98TH BIRTHDAY.

AND IS IN EXCELLENT HEALTH AND HAS A SHARP MIND TO THIS DAY.

CATHERINE IS KNOWN FOR THE GREAT WORK THAT SHE DID THAT LAUNCHED SOME OF THE EARLY SPACE MISSIONS.

AND IT SAID THAT JOHN GLENN WOULD GO INTO SPACE UNTIL

CATHERINE, AS HE CALLED HER, HAD CHECKED THE MATH. I THINK THAT HOW THE STORY THAT MOST OF US DID IN HERE.

I GREW UP WITH ALL OF THE IMAGES AND THE POST
AIR AND THE GREATNESS OF NASA AND THE GREAT

AND I NEVER ONCE HEARD A WOMAN UNTIL I HEARD

JAMISON AND SALLY RIDE MANY YEARS LATER AS AN ADULT. SO I THINK WE NEED TO BE THINKING CAREFULLY

AND THAT MESSAGE HAS BEEN HEARD BY HOLLYWOOD AND THERE

IS A FILM IN PRODUCTION. ONE OF MY STAFF WENT DOWN TO ATLANTA TO THE

PLACE THEY ARE FILMING. I THINK THEY ARE JUST ABOUT DONE NOW. THEY HAVE THE VERY FAMOUS ACTRESS PLAYING

CATHERINE JOHNSON IN A FILM CALLED FIGURES.

WE ARE LOOKING FORWARD TO SEEING THAT REPRESENTATION OF SOME GREAT WOMEN AND PARTICULARLY, BLACK WOMEN
CONTRIBUTING TO THE EARLY DAYS OF NASA’S STEM

01:12:11,600 --> 01:12:15,500
WE’VE BEEN WORKING WITH THE ENTERTAINMENT

01:12:15,500 --> 01:12:18,329
I SHOULD SAY WE ARE NOT RESPONSIBLE FOR THAT

01:12:18,329 --> 01:12:20,010
I, JOHNSON DEPICTION.

01:12:20,010 --> 01:12:25,150
THEY CAME UP WITH THAT ON THEIR OWN.

01:12:25,149 --> 01:12:32,750
BUT WE’RE HOPING TO HAVE A LITTLE BIT OF INFLUENCE

01:12:32,750 --> 01:12:36,500
ON SOME OF THE OTHERS BECAUSE HOLLYWOOD IS SO

01:12:28,920 --> 01:12:32,750
POWERFUL IN

01:12:32,750 --> 01:12:36,500
THE IMAGES THAT WE ALL SEE AND THE IMAGES

01:12:36,500 --> 01:12:40,539
THAT LIVE

01:12:40,539 --> 01:12:43,779
WITH US OF WHO CAN DO CERTAIN JOBS, WHO CAN

01:12:43,779 --> 01:12:47,909
BE THE

01:12:47,909 --> 01:12:52,809
HEROES OF THE SPACE PROGRAM OF THE LABORATORIES,

AND WE HAVE BEGUN TO SEE SOME VERY EXCITING

RESULTS
FROM THOSE CONVERSATIONS. IT TURNS OUT THAT HOLLYWOOD IS VERY INTERESTED IN THIS. THEY JUST NEVER HEARD ABOUT IT.

SO THE CONVERSATION HAS BEEN AN EASY ONE TO HAVE.

THEY ARE INTERESTED IN NEW STORYLINES. THEY ARE INTERESTED IN THE EXCITEMENT OF STEM.

THEY FEEL THAT THEY JUST DON'T KNOW ENOUGH AND THAT WE CAN HELP THEM TO THE RESOURCES TO LEARN ABOUT THE GREAT FIGURES IN STEM OR HELP THEM EVEN DEVELOP FICTIONAL FIGURES IN STEM.

WE'VE ALSO BEGUN TALKING TO THE ADVERTISING COMMUNITY AND WE HAVE HAD AN AMAZING SUCCESS.

THERE'S A TYPO. IT SHOULD BE A'S THE.

THE ALLIANCE FOR FAMILY AND ENTERTAINMENT IS A VERY
POWERFUL GROUP THAT'S PART OF THE NATIONAL ADVERTISERS

THE NATIONAL ADVERTISERS REPRESENT 85 PERCENT

OF THE ADVERTISING ON TELEVISION.

THEY HAVE MADE A PLEDGE TO CHANGE THE DEPICTION OF

WOMEN AND REDUCE THE RECTIFICATION AND EMIGRATION OF

WOMEN IN ALL OF THEIR AD.

THEY HAVE MADE THAT PLEDGE ACROSS THE AD INDUSTRY,

BUT MORE THAN THAT, THEY HAVE MADE THAT PLEDGE TO PRESSURE THE CONTENT, THE PROGRAMMING, TO CHANGE \- TO

PRESENT WOMEN IN A MORE POSITIVE LIGHT.

PART OF THAT THEY HAVE AGREED WILL BE TO PRESENT WOMEN IN STEM AND MORE DIVERSE FIGURES IN STEM GENERALLY.

AND WE THINK THIS IS A TREMENDOUS RESPONSE THAT THEY HAVE HAD.
WE'VE ARTIE BEGUN TO SEE A LITTLE BIT OF THE EFFECT.

THERE WAS A MEETING RECENTLY IN WHICH THEY ACTUALLY RAISED THIS ISSUE WITH SOME OF THEIR PROGRAMMERS FROM SOME OF THE MAJOR NETWORKS. THEY HEARD A STORY LINE THAT HAD A SOMEWHAT SEXIST QUALITY ABOUT THE STEM ASPECT, THEY RAISED IT AND WE HOPE THAT THAT NETWORK WILL GO BACK AND CHANGE THEIR STORYLINE.

SO WE THINK THIS IS GOING TO BE A VERY POWERFUL MOVE.

THE CONVERSATIONS ARE IMPORTANT AND I BRING THIS UP JUST BECAUSE I THINK EVERY ONE OF US CAN HAVE AN IMPACT ON THE COMMUNITY OF CREATORS. AS DAVID SAID, BRING THOSE CREATORS INTO THE
STEM COMMUNITY, AND INFLUENCE THEM IN COLLEGE SO

Perhaps when they go out and they began to

write about the world around them, they will think of

women and

minorities and STEM as one of their images. One that happened very recently that we were

very excited about was that the – we had had

our office had had a conversation with the producers

of like fish, which is a very popular TV show, about a black

family. And we don't know if there is a connection

between our conversation, but here he soon after, the

oldest girl in the family and high school referred to

herself as a chemistry nerd and started carrying her SAT
STUDY BOOK AROUND WITH HER IN THE SHOW.

IT WAS ONE OF THOSE LITTLE, SUBTLE CHANGES THAT HERE IS

THIS VERY EXCITING AND INTERESTING BEAUTIFUL GIRL WHO

ASKED JUST LIKE A TEENAGER. SHE'S TEXTING ALL THE TIME AND SHE HAD IDENTIFIED

AS A CHEMISTRY NERD.

IN REAL LIFE, THE ACTRESS IS A SUPERB PETITION. SHE TOLD ME RECENTLY THAT SHE WAS – THIS

PAST YEAR DATING CALCULUS, BUT SHE DECIDED TO BREAK

UP WITH HIM BECAUSE SHE WAS GOING TO MOVE ON TO STATISTICS.

[LAUGHTER] SO YOU CAN IMAGINE HOW DELIGHTED SHE WAS

WHEN HER SCRIPT STARTED REFLECTING WHO SHE WAS IN REAL

LIFE AS A REAL HIGH SCHOOL STUDENT. THE INDUSTRY IS ALSO SUPPORTING THE DEVELOPMENT
OF A DASHBOARD OR A SET OF METRICS TO EVALUATE COMMERCIALS AS WELL AS THE CONTENT OF SHOWS FOR THEIR DEPICTION OF WOMEN AND WOMEN IN STEM WILL BE PART OF THAT AND DIVERSITY OF WOMEN WILL BE PART OF THAT DASHBOARD.

SO WE'RE VERY EXCITED. THEY'RE GOING TO START PUBLISHING THE RESULTS OF THEIR EVALUATION OF THEIR METRICS ABOUT ALL OF THE NETWORKS, ABOUT SHOWS, AND ABOUT ADS ON A WEEKLY BASIS. SO THAT THE CREATORS CAN TRACK THEIR IMPROVEMENT ABOUT DEPICTING PEOPLE IN A MORE EQUITABLE WAY AND A MORE EXCITING WAY IN TERMS OF STEM IN THE MEDIA. AND SO, WE KNOW THAT THIS WILL WORK BECAUSE WE HAVE SEEN THE MEDIA HAVE AN EFFECT ON MANY THINGS IN AMERICA.
AND OTHER COUNTRIES.

01:17:17,029 --> 01:17:20,829
THERE ARE NUMEROUS EXAMPLES AND STUDIES THAT SHOW THAT

01:17:20,829 --> 01:17:24,019
THE CHANGING OF SOMETHING IN NETWORK TELEVISION HAS

01:17:24,020 --> 01:17:28,270
CHANGED BEHAVIOR IN THE PUBLIC.
MY FAVORITE EXAMPLE IS THE INTRODUCTION OF

01:17:28,270 --> 01:17:32,130
THE CONCEPT OF THE DESIGNATED DRIVER, WHICH WAS UNKNOWN

01:17:32,130 --> 01:17:36,190
AND A PROFESSOR AT HARVARD CAME BACK FROM A VISIT

01:17:36,190 --> 01:17:39,059
TO THE MEDICAL COMMUNITY IN SCANDINAVIA AND HAD LEARNED

01:17:39,060 --> 01:17:40,810
ABOUT THE DESIGNATED DRIVER CONCEPT.

01:17:40,810 --> 01:17:48,640
HE SAID WE COULD BE SAVING LIVES. SO WE WENT TO HOLLYWOOD AND HE GOT THEM TO

01:17:48,640 --> 01:17:51,510
INTEGRATE THE CONCEPT OF THE DESIGNATED DRIVER INTO

01:17:51,510 --> 01:17:53,219
PRIME TIME TELEVISION.

01:17:53,219 -- 01:17:59,760
- DESIGNATED DRIVER - IT WENT TO 95 PERCENT RECOGNITION.
THREE YEARS.
SO THAT IS THE KIND OF POWER THAT WE CAN SEE

THE MEDIA
HAVE AND THE INFLUENCE THAT THEY CAN HAVE

SO THE PRESIDENTS IMAGE – AND I THINK THE
GOVERNMENTS

IMAGE – GENERALLY, IS OF A WORK FORCE THAT
IS

DEMOGRAPHICALLY DIVERSE, THAT INCLUDES PEOPLE
WHO ARE

INTERESTED IN WHATEVER FIELD THEY WANT TO
BE AND NOT

BASED ON THEIR GENDER OR THEIR RACIAL OR ETHNIC
ORIGINS.

AND THAT STEM IN PARTICULAR ATTRACTS PEOPLE
TASTE ON

THEIR SKILLS AND TALENTS AND INTERESTS AND
NOT BASED ON

WHO DID STEM IN PREVIOUS GENERATIONS AND WHAT
THE
IMAGES OF STEM WORKERS ARE.
AND SO, WE HOPE THAT THE ENTIRE COUNTRY WILL

BE
POPULATED BY A COMMUNITY THAT IS MORE INTERESTED

IN
STEM GENERALLY, TASTE ON SOME OF THE CHANGES

THAT WE
ARE MAKING AN K-12 AND IN COLLEGE, BUT ALSO,

IN CHANGES
WE'RE BEGINNING TO SEE THE MEDIA.

BUT IN PARTICULAR, THAT WE SEE MUCH MORE DIVERSE

AND
THEREFORE MORE ROBUST WORK FORCE WORKING ON
STEM AND

THE COMING DECADES.
WE DON'T HAVE TO WAIT FOR THE PREDICTIONS

THAT DAVID
MADE OF 2130 2C PARITY IN OUR WORKFORCE.

SO THANK YOU FOR ALL THE WORK THAT YOU DO
ON ALL OF

THIS AND I URGE YOU TO GO BACK AND DO EVEN
MORE TO

DIVERSIFY YOUR STEM WORKFORCE.
THANK YOU VERY MUCH.
THANK YOU SO MUCH, J O.

THOSE ARE THE FACTS AND GREAT INSPIRATION FOR ALL OF US.

WE ARE WORKING ON IT HARD.

GREAT SOLUTIONS THERE AND SO TO CONTINUE THE CONVERSATION IT'S MY GREAT HONOR TO INTRODUCE YOU TO TINA CHEN – TINA TCHEN – ASSISTANT TO THE PRESIDENT AND SERVES THE FIRST LADY.

SHE'S THE PASTOR ACTOR OF THE WHITE HOUSE OFFICE OF PUBLIC ENGAGEMENT. TINA WAS PREVIOUSLY A PARTNER IN CORPORATE LITIGATION AND IN THAT REALM, SHE REPRESENTED PUBLIC AGENCIES IN THE STATE AND FEDERAL CLASS-ACTION INCLUDING ILLINOIS DEPARTMENT OF CHILDREN AND FAMILY SERVICES,
THE ILLINOIS DEPARTMENT OF PUBLIC AID, AND THE CHICAGO HOUSING AUTHORITY.

HUGE AUDACIOUS TASKS IN THEIR OWN RIGHT. I'M SO GLAD TO HAVE HER IN WASHINGTON AND REALLY IT'S OUR PLEASURE TO INVITE HER AND WELCOME HER TO NATIONAL HEADQUARTERS WHICH IS A RECIPIENT OF MANY AWARDS INCLUDING LEADERSHIP AWARDS FROM THE WOMEN'S BAR ASSOCIATION OF ILLINOIS, MEN OF ACHIEVEMENT AWARD, FROM THE INTAKE INFORMATION LEAK AND SHE WAS A CHICAGO LAWYER, PERSON OF THE YEAR. SO THE PERSON OF THE YEAR IS TO ASCEND US A MESSAGE TO THE WHITE HOUSE AND WELCOME YOU ALL, TINA TCHEN, THANK YOU FOR BEING WITH US.
[APPLAUSE]

01:21:09.738 --> 01:21:13.179
>> THANK YOU DEPUTY ADMINISTRATOR NEWMAN AND GOOD

MORNING.
I AM DELIGHTED TO BE HERE AT NASA HEADQUARTERS.

01:21:17.029 --> 01:21:19.909
I HAVE TO PARTICULARLY THINK ADMINISTRATOR CHARLIE BOLDEN WHO HAS BEEN A GREAT PERSONAL FRIEND AND GREAT

01:21:19.909 --> 01:21:22.769
LEADER ON SCIENCE FOR NASA, BUT ESPECIALLY ON THESE

ISSUES OF DIVERSITY AND INCLUSION THAT YOU'RE TALKING

AND ALSO, YOUR ASSOCIATED ADMINISTRATOR BRENDA

01:21:28.640 --> 01:21:32.829
ABOUT TODAY.
AND ALSO, YOUR ASSOCIATED ADMINISTRATOR BRENDA

01:21:32.829 --> 01:21:35.769
AND WELL PUT THIS TOGETHER.

01:21:35.770 --> 01:21:39.810
AND I ALSO WANT TO GIVE A PARTICULAR ACKNOWLEDGMENT TO

01:21:39.810 --> 01:21:43.030
OUR MEMBERS OF THE WHITE HOUSE COUNCIL ON WOMEN AND

01:21:43.029 --> 01:21:52.079
AS DAVID TENSION, NASA HAS BEEN AN UZI ENTHUSIASTIC
PARTICIPANT.
CLARISSA CARNELL AND LISA GUERRA ARE NASA'S REPRESENTATIVES.
YOU HAVE DONE AMAZING WORK ON THIS PARTICULAR ISSUE, ON THE INCLUSION OF WOMEN AND EXPANDING SINCE THE FIRST TERM AND THROUGHOUT.

RECENTLY, WE HAD OUR UNITED STATE OF WOMEN'S SUMMIT IN JUNE WITH 5000 WOMEN FROM ACROSS THE COUNTRY AND AROUND THE WORLD, ON ALL OF THE ISSUES CONCERNING WOMEN AND GIRLS. IN PARTICULAR WE TALKED ABOUT EDUCATION AND STEM AND THE NEXT DAY WE ENCOURAGED AGENCIES TO DO EVENTS THE DAY AFTER.

AND YOU HERE AT NASA DID ENGAGING WOMEN AND GIRLS IN
STEM THROUGH DATA SCIENCE.
YOU HAD 200 FOLKS HERE THE DAY AFTER THE UNITED

1678
01:22:34,270 --> 01:22:35,270
STATE
OF WOMEN.

1679
01:22:35,270 --> 01:22:37,620
THAT’S IN ADDITION TO THE MENTORING PROGRAM
THAT YOU

1680
01:22:37,619 --> 01:22:44,199
HAVE DONE FOR NASA GIRLS.
AND YOUR NASA SCIENCE FOR GIRLS PROGRAM.

1681
THAT YOU DO WITH LIBRARIES AND FAMILIES.
SO I WANT TO – IT’S A GREAT OCCASION FOR

1682
ME TO THANK
YOU FOR THE LEADERSHIP AND THE WORK THAT NASA

1683
HAS SHOWN
THROUGHOUT.

1684
01:22:53,460 --> 01:22:56,189
I BRING YOU GREETINGS FROM THE PRESIDENT AND
FIRST

1685
01:22:56,189 --> 01:22:59,179
LADY.
THEY ARE ON A WELL-DESERVED VACATION SO THAT

1686
01:22:59,180 --> 01:23:02,350
IS WHY
THEY COULD NOT BE HERE WITH YOU TODAY.

1687
01:23:02,350 --> 01:23:05,710
BUT THE PRESIDENT AND I AND THE FIRST LADY
IN THAT

1688
01:23:05,710 --> 01:23:09,829
CATEGORY THAT JO HAD UP THERE IF THE PEOPLE
THAT AREN’T
IN STEM AND WE MIGHT NOT EVEN UNDERSTAND SCIENCE, BUT

WE THINK IT’S REALLY COOL. SO WE REALLY – THE PRESIDENT’S FAVORITE

EVENT OF THE YEAR EVERY YEAR IS THE WHITE HOUSE SCIENCE FAIR WHICH IS SOMETHING HE INAUGURATED IN THIS ADMINISTRATION.

WE HOPE IT WILL CONTINUE, BUT IT IS HIS FAVORITE EVENT

OF THE YEAR AND HIS FAVORITE PLACE TO ENGAGE WITH YOUNG WOMEN AND GIRLS AND THE DIVERSE YOUNG PEOPLE ARE THERE.

I FAVORITE SHOT FROM OUR TIME AT THE WHITE HOUSE IS

FROM LAST YEAR’S WHITE HOUSE SCIENCE FAIR WHERE A GROUP OF BROWNIES, GIRL SCOUTS, YOU KNOW THAT’S THE YOUNGEST

OF GIRL SCOUTS, THE LITTLE GIRLS IN THEIR SUPERGIRL CAPES
AND THEIR PRINCESS TRS, WHICH THEY PUT ON THE PRESIDENT

AND HE IS BENDING DOWN AND ENGAGING WITH THEM WITH THEIR SCIENCE PROJECT.

AND THAT IS CHANGING THE FACE OF WHAT IT MEANS TO BE A SCIENTIST AND BE INTERESTED IN STEM EVEN AT THE YOUNGEST YEARS WHICH J O TALKED ABOUT.

BEFORE HER TIME AT THE WHITE HOUSE AND HAS USED THE PLATFORM OF THE WHITE HOUSE TO EDUCATE SO MANY OF US ON WHAT SHE HAS. SHE'S GOT THE DATA AND THE EVIDENCE TO BACK UP THE NEED THAT WE HAVE IN THE WAYS IN WHICH WE CAN CHANGE IT AND THE BEST PRACTICES.

SO IT WAS A TREAT TO LISTEN TO HER AND A TREAT FOR YOU

TO SEE HER THIS MORNING.
THIS HAS BEEN A HUGE INVESTMENT, NOT JUST

IN THOSE KIND
OF FEEL-GOOD MOMENTS LIKE THE WHITE HOUSE

BUT THE PRESIDENT HAS BEEN KEY ABOUT MAKING

HARD CORE
INVESTMENTS TO LIKE $1 BILLION IN PRIVATE

INVESTMENTS,
3 BILLION DOLLARS IN OUR BUDGET, HE'S ESTABLISHED

US
DSR UNITED STATES DIGITAL SERVICES GROUP FOR

THE FIRST
TIME EVER TO BRING REALLY STATE-OF-THE-ART

TECHNOLOGY,
COMPUTER SCIENTISTS INTO THE FEDERAL GOVERNMENT.

HE ESTABLISHED THE OFFICE OF THE CHIEF TECHNOLOGY
OFFICER AND HE HAS REALLY TRIED TO PROMOTE

IN EVERY
CORNER AND TURNED THE NEED FOR INCREASING

HE KNOWS AND TALKS ABOUT HOW WE NEED 1 MILLION

MORE
STEM JOBS BY 2020 AND WE NEED TO MAKE SURE THAT THOSE INCLUDE DIVERSE WOMEN, MINORITIES. YOU KNOW, YOU HERE AT NASA, NOT ONLY FOR WHAT YOU HAVE DONE FOR WOMEN AND GIRLS THAT I CITED, BUT WITH YOUR ONE AND A HALF DOLLAR GRANTS FOR STEM RESEARCH, YOU ARE IN A PARTICIPANT IN THIS AND I AM SO PROUD THAT WHAT THROUGH THIS CONFERENCE TODAY, AND THROUGH ALL THE WORK I KNOW YOU DO THROUGHOUT AS YOU MAY GRANT DECISIONS, AS YOU MAKE YOUR OWN SCIENTIFIC AND RESEARCH DECISIONS, YOUR BEEN OUTSPOKEN ABOUT INCLUSION AND DIVERSITY NEEDS THAT WE HAVE. LET'S FACE IT. NASA IS LIKE REALLY COOL. WHEN YOU ALL DO THINGS, PEOPLE PAY ATTENTION, KIDS PAY
ATTENTION.

01:26:08,800 --> 01:26:12,090
BECAUSE YOU ARE THE COOL GUYS IN THE FEDERAL GOVERNMENT.

01:26:12,090 --> 01:26:15,940
I CONFESS THAT WHEN DOCTOR HOLDEN SENDS THE PHOTOS I

01:26:15,939 --> 01:26:21,789
SENT THEM AROUND HE CAME WITH ME BECAUSE HE WANTED TO

01:26:21,789 --> 01:26:24,369
BE HERE AT NASA HEADQUARTERS BECAUSE HE LOVES THE

01:26:24,369 --> 01:26:27,409
PHOTOS THAT WE SEND OUT WHEN DOCTOR HOLDEN

01:26:27,409 --> 01:26:38,039
– BECAUSE YOU GUYS SHOW WHAT COOL CAN BE. AND I AM JUST SO GRATEFUL FOR THIS OPPORTUNITY

01:26:38,039 --> 01:26:41,899
THIS MORNING TO THANK YOU FOR THE CONTINUED SUSTAINED

01:26:41,899 --> 01:26:45,960
LEADERSHIP THAT YOU ALL PROVIDE TO SPUR YOU WANT TO DO

01:26:45,960 --> 01:26:48,289
MORE INTO CONTINUE TO LEAD THE REST OF US IN THE

01:26:48,289 --> 01:26:51,880
FEDERAL GOVERNMENT ON HOW TO DO BETTER AT THIS AND TO

01:26:51,880 --> 01:26:57,640
BE THAT BEACON FOR YOUNG WOMEN AND GIRLS AND YOUNG BOYS
AND MEN THROUGHOUT OUR COUNTRY TO REALLY BE INSPIRED,

TO REACH THE HEIGHTS THAT YOU ALL ARE ABLE TO REACH

EVERY DAY AND TO REALLY PROPEL THIS COUNTRY FORWARD

BECAUSE YOU ARE THE KEY, NOT JUST TO THE FUTURE FOR

THESE YOUNG PEOPLE, BUT TO THE FUTURE OF OUR COUNTRY.

SO THANK YOU VERY MUCH. [APPLAUSE].

>> THANK YOU. LET'S GIVE OUR DISTINGUISHED GUESTS ANOTHER ROUND OF APPLAUSE.

WE'VE HAD A WEALTH OF INFORMATION THIS MORNING AND WE HOPE THAT THOSE WHO ARE VIEWING WE HAVE A LARGE NUMBER OF FOLKS VIEWING THE STEM CONFERENCE
THIS MORNING AND WE HOPE THAT YOU ARE ENJOYING

1758
01:27:45,670 --> 01:27:46,670
THE SUMMIT AS
WELL.