INSIDE THIS REPORT

Governor Inslee meets with young student presenters from schools across the state at a STEM Alliance meeting focused on Early Learning — Feb. 13, 2020.

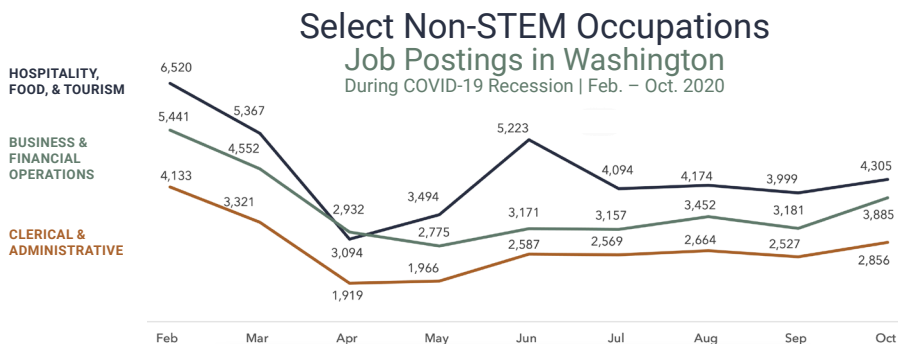**IMAGE COURTESY OF THE WASHINGTON STATE OFFICE OF THE GOVERNOR**
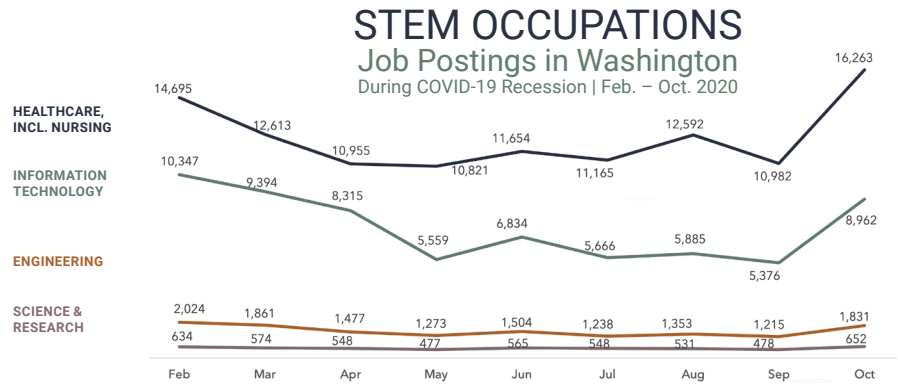
STEM

2021 STEM EDUCATION REPORT CARD

Washington State
STEM Education Innovation Alliance

Washington State
STEM Education Innovation Alliance

WASHINGTON STUDENT ACHIEVEMENT COUNCIL
EDUCATION · OPPORTUNITY · RESULTS

Advancing STEM Education for a Sustained and Equitable Recovery from the COVID-19 Recession

With Washington's economy straining under the weight of a global pandemic, 2020 was a difficult year. The state faced a deep recession as a result of the COVID-19 outbreak, with wide-ranging business closures, layoffs, job losses, and record unemployment claims. Yet Washington is in a better position for a recovery than many other states, because our innovation-driven economy and large number of STEM-based employers make us more resilient. STEM jobs tend to hold up relatively well during economic downturns. For example, during the Great Recession of 2008−2010, total U.S. employment declined by 5.5%. By comparison, employment in U.S. technology services and the software industry declined by 1.7%.[1] Overall, STEM workers experienced a lower rate of job loss and benefited from an earlier recovery than other employment sectors.[2]

Washington job postings data in 2020 reflect a similar trend during the COVID-19 recession. The decline in STEM job openings in the early months of the pandemic was shallower than for many other occupational fields and beginning in September and October they were on a clear upswing.

STEM OCCUPATIONS
Job Postings in Washington
During COVID-19 Recession | Feb. − Oct. 2020

HEALTHCARE, INCL. NURSING: 14,695 — 12,613 — 10,955 — 10,821 — 11,654 — 11,165 — 12,592 — 10,982 — 16,263

INFORMATION TECHNOLOGY: 10,347 — 9,394 — 8,315 — 5,559 — 6,834 — 5,666 — 5,885 — 5,376 — 8,962

ENGINEERING: 2,024 — 1,861 — 1,477 — 1,273 — 1,504 — 1,238 — 1,353 — 1,215 — 1,831

SCIENCE & RESEARCH: 634 — 574 — 548 — 477 — 565 — 548 — 531 — 478 — 652

Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct

Select Non-STEM Occupations
Job Postings in Washington
During COVID-19 Recession | Feb. − Oct. 2020

HOSPITALITY, FOOD, & TOURISM: 6,520 — 5,367 — 2,932 — 3,494 — 5,223 — 4,094 — 4,174 — 3,999 — 4,305

BUSINESS & FINANCIAL OPERATIONS: 5,441 — 4,552 — 2,775 — 3,171 — 3,157 — 3,452 — 3,181 — 3,885

CLERICAL & ADMINISTRATIVE: 4,133 — 3,321 — 3,094 — 1,919 — 1,966 — 2,587 — 2,569 — 2,664 — 2,527 — 2,856

Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct

As the state emerges from the recession in the coming months or years, Washington's STEM-based employment sector will be one of the keys to a robust economic recovery.

Before the impact of the pandemic, Washington was ranked as one of the top states in the country for business,[3] employment in high-tech industries,[4] technology and science workforce intensity,[5] and projected STEM job growth.[6] Progress in aligning the state's education system with STEM employer demand is essential to continuing the economic recovery and expanding worker opportunities for high-paying jobs in the long term.
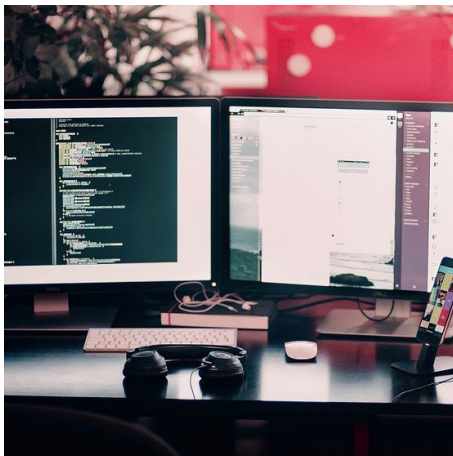
STEM occupations are on the rise! Despite a decline in job postings early in the pandemic, the number of newly available positions in healthcare, information technology, engineering, and science and research has grown steadily during the past few months.

Washington's STEM Challenge

A strong education continuum in all phases, from preschool through college, is critical to students' academic progress and long-term career success
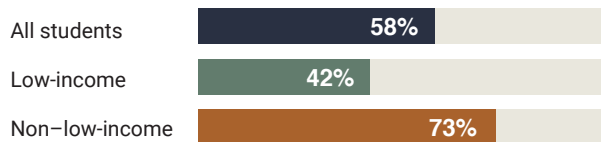
Smarter Balanced Assessment (SBA) Results

Students whose families are low-income are less likely to meet standard on the SBA. The decline in the percentage of these students meeting standard as they progress through successive grades is a point of concern. The 2019 results indicate these students may benefit from expanded support services. Data was not collected in 2020 due to the COVID-19 pandemic.
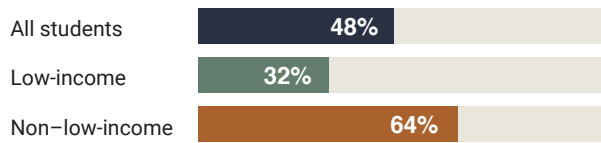
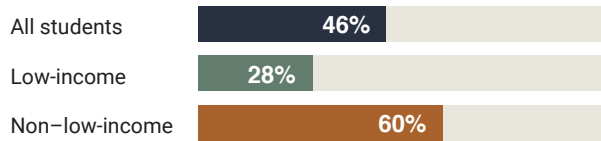### Math Scores, 2019[8]
Percent meeting math standard

3RD GRADE

All students	58%
Low-income	42%
Non−low-income	73%

5TH GRADE

All students	48%
Low-income	32%
Non−low-income	64%

8TH GRADE

All students	46%
Low-income	28%
Non−low-income	60%

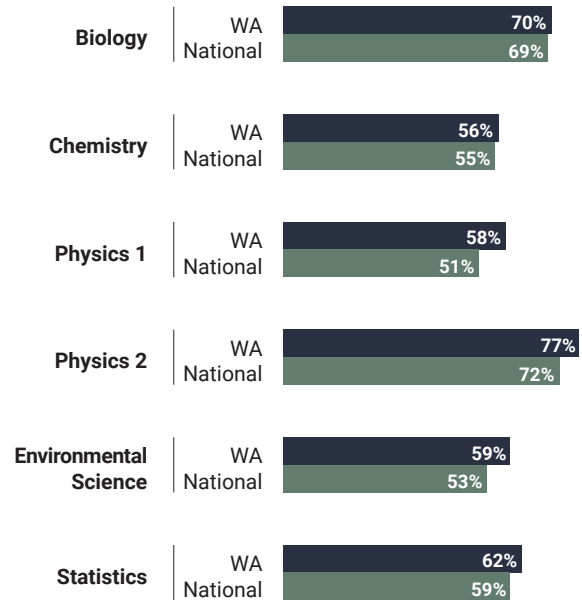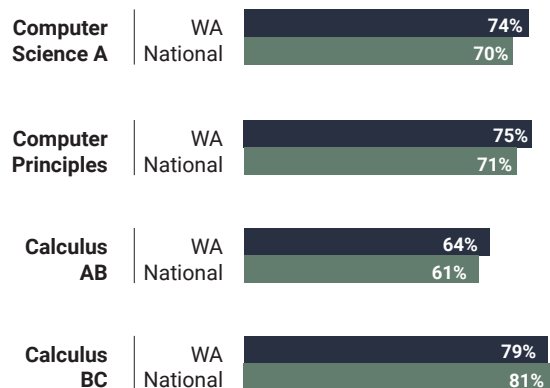## 2020 AP Exam Pass Rates

Washington students consistently outperformed national averages across nine STEM courses.[9] Research shows that students who score a 3 or higher on AP exams typically experience greater academic success in college and are more likely to earn a degree on time than non-AP students.[10]

Course		WA	National
Computer Science A		74%	70%
Computer Principles		75%	71%
Calculus AB		64%	61%
Calculus BC		79%	81%

Course		WA	National
Biology		70%	69%
Chemistry		56%	55%
Physics 1		58%	51%
Physics 2		77%	72%
Environmental Science		59%	53%
Statistics		62%	59%

Some AP courses have seen decreased enrollment and exam participation during this school year, while other courses have remained level or increased.

For example, the number of students taking AP exams in Washington has increased in the following areas over the past five years:

	2015	2020
Computer Science A	1770	2442
Calculus BC	1996	2479
Biology	4093	4221

Meanwhile, the number of students taking AP exams has declined in the following subjects:

	2015	2020
Calculus AB	6741	5910
Physics 1	3180	3064
Chemistry	3052	2918
Statistics	3644	3441

Expanded efforts are needed to encourage more students to enroll in AP, Running Start, College in the High School, and other advanced or accelerated coursework to help prepare them for success in postsecondary education.

Underrepresented Populations Face Continued Challenges in STEM

The Gender Gap

Although girls and boys begin school with comparable math and cognitive skills, STEM achievement among female students tends to recede as they move through their education. New innovative strategies may be needed to close this STEM gender gap.

Pre-K

Among pre-K students, female students tend to do as well as male students in math, with about **68.4%** demonstrating "kindergarten readiness" in the 2019–20 WaKIDS assessment, compared to **68.1%** of boys.[11]

Secondary

As they advance in their education, female students tend to be underrepresented in some STEM subjects. In 2020, female students accounted for only **37%** of students completing AP Physics exams and less than **30%** of students completing AP Computer Science A exams.[12]

Physics

Computer Science A

Post-secondary

Male students also complete STEM degrees in greater numbers than female students. In 2020, only **35%** of students completing associate degrees or bachelor's degrees in STEM subjects and only **22%** completing degrees in computer science were female.[13]

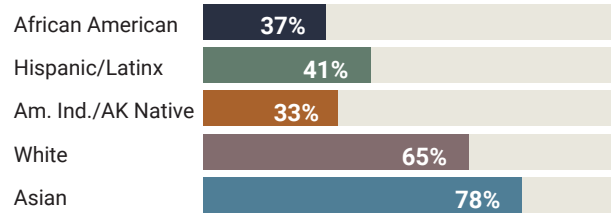**All STEM Subjects**

Computer Science
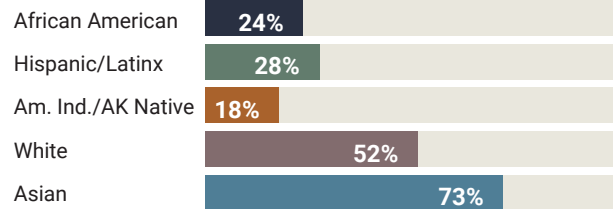
Racial and Ethnic Achievement Gaps

Students from underrepresented and underserved minority families are challenged at all stages along the STEM pathway. The percentage of students meeting standard on SBA assessments[14] reveals a need for more support services in early grades. Similarly, AP exam pass rates[15] reflect the difficult journey many students face in preparing for college-level studies.
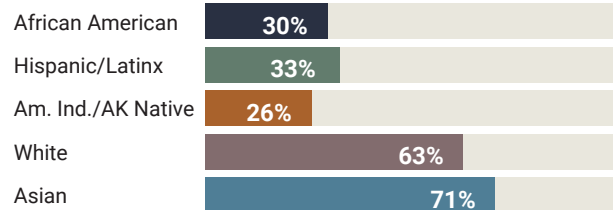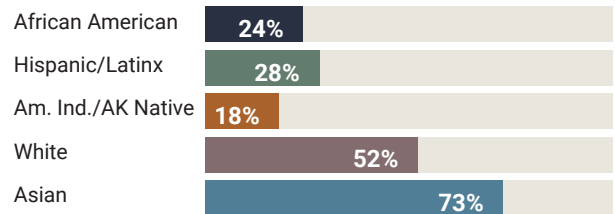
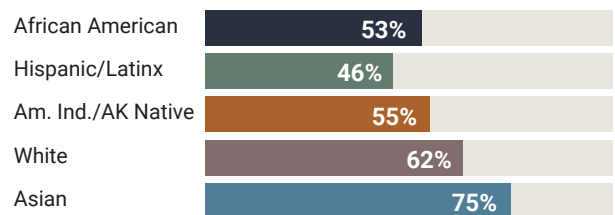### 3RD-GRADE MATH — *Percent meeting standard (2019)*

African American	37%
Hispanic/Latinx	41%
Am. Ind./AK Native	33%
White	65%
Asian	78%

5TH-GRADE MATH

African American	24%
Hispanic/Latinx	28%
Am. Ind./AK Native	18%
White	52%
Asian	73%

5TH-GRADE SCIENCE

African American	30%
Hispanic/Latinx	33%
Am. Ind./AK Native	26%
White	63%
Asian	71%

8TH-GRADE SCIENCE

African American	24%
Hispanic/Latinx	28%
Am. Ind./AK Native	18%
White	52%
Asian	73%

AP CALCULUS AB — *Percent passing (2020)[16]**

African American	53%
Hispanic/Latinx	46%
Am. Ind./AK Native	55%
White	62%
Asian	75%

AP COMPUTER SCIENCE

African American	46%
Hispanic/Latinx	58%
Am. Ind./AK Native	63%
White	71%
Asian	80%
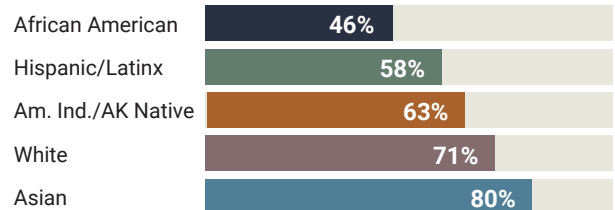
*Several factors may affect the percent of students passing AP exams. Unlike state assessments like the SBA, AP is optional and selective, and testing costs pose an additional challenge for many low-income families.

STEM Industry Demand Continues to Rise

Degree completions across STEM fields experience steady five-year increase but fail to match rising workforce demand

STEM Degree Production

STEM degree and long-term certificate completions have steadily increased from 2014 to 2019.[17] Degree completion has nearly doubled at the baccalaureate level, but limited enrollment capacity, particularly in computer science, remains a barrier to advancement.

Mid-level

Degree and certificate completions in STEM fields grew by more than **15%** between 2014 and 2019, with expanding Career and Technical Education (CTE) programs playing an important role. Nearly 7,700 students completed a mid-level degree or certificate in 2019.

2014 STEM COMPLETIONS
Each cap represents 1,000 students

2019 STEM COMPLETIONS
Each cap represents 1,000 students

Baccalaureate level

Completions in Computer and Information Sciences grew by **70%**, in Engineering by **9%**, in Health by **16%**, and in all other STEM fields by **6%**. About 12,700 students completed a baccalaureate degree in 2019.

2014 STEM COMPLETIONS
Each cap represents 1,000 students

2019 STEM COMPLETIONS
Each cap represents 1,000 students

Graduate level

Completions in Computer and Information Sciences grew by **70%**, in Engineering by **9%**, in Health by **16%**, and in all other STEM fields by **6%**. Approximately 3,500 students completed a graduate-level degree or certificate in 2019.

2014 STEM COMPLETIONS
Each cap represents 1,000 students
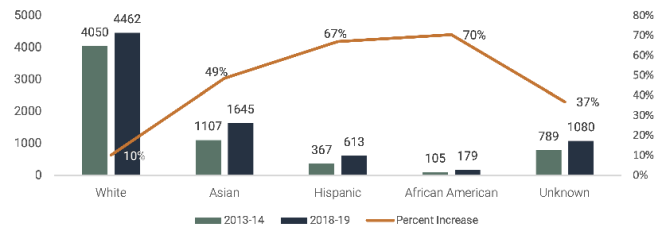
2019 STEM COMPLETIONS
Each cap represents 1,000 students

Although the overall STEM completion numbers show a steady increase, disparities are seen across key racial and ethnic groups. Despite positive growth over the last five years, STEM completions among African American and Hispanic/Latinx students remain low.

STEM Degree Completions
Washington Public 4-Year Institutions | 2014–2019

	White	Asian	Hispanic	African American	Unknown
2013-14	4050	1107	367	105	789
2018-19	4462	1645	613	179	1080
Percent Increase	10%	49%	67%	70%	37%

Workforce Demand

Even with these increases, rapidly growing workforce demand is outpacing STEM degree production. Over the course of the next ten years, jobs in the following four fields are projected to offer more than 63,000 openings to STEM graduates.[18]

Computer occupations

Computer occupations are projected to grow by **21%**, equivalent to 18,000 annual openings.

Healthcare support occupations

Healthcare support occupations are projected to grow by **26%**, with 27,000 annual openings available.

Healthcare practitioners and technical occupations

Healthcare practitioners and technical occupations are projected to grow by **26%**. There are 14,000 annual openings in this area.

Life, physical, and social science occupations

Life, physical and social science occupations are projected to grow by **21%**, with 4,600 annual openings.

Healthcare occupations are set to represent nearly **50%** of the fastest-growing industries between 2019 and 2029. The Bureau of Labor Statistics also projects strong growth and demand in IT and software development.[19]

2020: The Year in Review

Highlighting key approaches to sustaining, improving, and expanding STEM education

EARLY LEARNING

During a meeting held Feb. 14, 2020 the STEM Alliance focused attention on the critical role that early childhood education has for students' future success in school and ultimately in later careers. Among the many outstanding student presentations highlighted was the Yellow Giraffes Robotic Team from Highlands Elementary in Renton, WA. Image used with permission, courtesy of Julia Fishler.

The Importance of Early Childhood Education

Kindergarten readiness: Early math skills and long-term outcomes

A large body of evidence shows a connection between early learning and kindergarten readiness in preparing students to hit the school grounds running. Students who enter elementary school with early math skills are more likely to have success in school, even after controlling for other factors such as family characteristics, early IQ scores, and reading achievement.[20] In fact, strong early math skills may be the strongest predictor of later success in both reading and math.

Conversely, children who enter kindergarten with weak math skills are more likely to remain behind their peers in later grades. Children who are the least prepared in math when they enter kindergarten tend to be from minority and low-income families.

Exposing children from these groups to math concepts before they enter school can improve their long-term outcomes for academic success. The Washington Kindergarten Inventory of Developing Skills (WaKIDS) provides progress data early in the school year to show where Washington's kindergartners are in their development. The data can be used to inform critical education policy and investment decisions at the state, district, and classroom level.

Kindergarten readiness is improving, but more effort is needed to continue advancement in this critical area.

- About **68%** of incoming kindergarteners assessed by WaKIDS demonstrated kindergarten readiness in math, a 4% improvement over the previous year.

- About **52%** of students were kindergarten-ready in all six domains, up from 45.7% the year before.

THE EARLY CHILDHOOD EDUCATION AND ASSISTANCE PROGRAM (ECEAP) is a pre-kindergarten program that provides comprehensive education, health and family support services to the most vulnerable of Washington's young children. Children who participate in ECEAP are more likely than others from low-income families to be kindergarten ready, and the benefits of ECEAP extend well beyond kindergarten. When compared to similar non-participants, children who participate in ECEAP outperform their peers even five or six years after their last participation in ECEAP with:

- A **23%** higher passing rate on the state fifth-grade reading test.

- A **16%** higher passing rate on the state fifth-grade math test.[21]
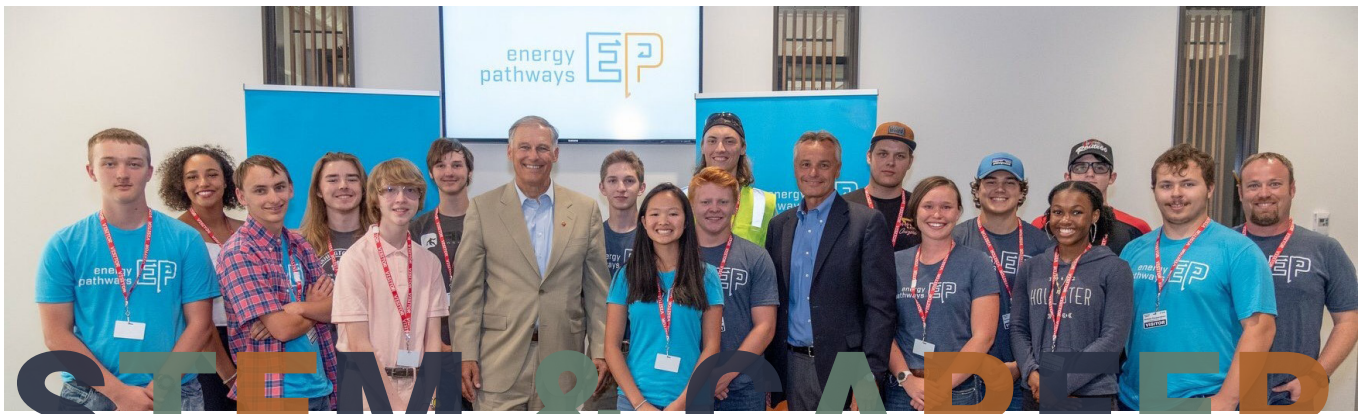
STEM & CAREER CONNECTED LEARNING

Governor Inslee with students enrolled in the Avista Energy Paths program as part of the Career Connect Washington initiative in the Spokane Valley region. Image courtesy of Spokane Valley CTE – Central Valley, East Valley, Freeman and West Valley School Districts.

Career Connect Washington (CCW), a key partner of the STEM Alliance, is a coalition of industry, labor, education, and community leaders in Washington state dedicated to creating integrated work-based and academic programs for young people to explore, learn, get paid, and earn college-level credit.

A growing percentage of jobs, particularly those that pay a living wage, require training or education beyond high school. This is particularly true for STEM occupations. However, too many young people are leaving high school or postsecondary programs without opportunities to gain hands-on experience actual jobs, explore career pathways, and build the skills they need to pursue their career goals.

CCW worked on several initiatives in 2020 that will help students and young adults adjust to the changing work landscape and contribute to state strategies for a successful economic recovery from the COVID-19 recession.

Career connected learning directory

CCW is developing a web-based directory of career connected learning programs for students, school staff, and employers. Directory users will be able to explore opportunities across three broad categories:

- **CAREER EXPLORE PROGRAMS**, which are integrated into the K–12 school experience and give students a chance to learn about various occupations and careers and interact with professionals in those fields through job fairs, work site tours, career presentations, job shadowing, and more.

- **CAREER PREP PROGRAMS**, which give students hands-on experience in professional settings to help them make decisions about the next steps in their education and training. These include internships, pre-apprenticeships, and other forms of instructional work-site learning.

- **CAREER LAUNCH PROGRAMS**, which provide paid, intensive work experience aligned with substantial classroom learning, offering opportunities for students to receive credentials and become competitive job candidates. They include registered apprenticeships as well as programs in the K–12, community and technical college, and 4-year university systems.

CCW aids in COVID recovery

COVID-19 has significantly impacted young people's education and employment. CCW is working to dramatically expand the number of pathways and programs and to increase student supports to enable those furthest from opportunity to participate, including bringing career connected learning to students' homes via CareerConnect@Home[22] and the State of Innovation Challenge.

State of Innovation Challenge: Empowering Youth Voice, Supporting Teachers, Engaging Industry in the Virtual Classroom

In 2020, the STEM Alliance partnered with Career Connect Washington, the Office of the Superintendent for Public Instruction, the Washington Student Achievement Council and the Employment Security Department as well as youth-serving organizations like 4-H Washington to create the State of Innovation Challenge, a virtual, career connected problem-solving challenge for young people in middle school and high school, as well as those studying through alternative learning experiences, Open Doors programs, WIOA programs, or community-based youth development programs.

The Challenge was part of the STEM Alliance's effort to respond to the unprecedented events of 2020 and 2021. Over the past year, the COVID-19 pandemic has reshaped the way Washingtonians studied and worked, underscoring the long-standing inequities in our education system and state economy. Solving new problems from the pandemic joined ongoing efforts to fight climate change and address systemic racism on the agenda of state leaders.

The STEM Alliance and its partners saw an opportunity through the State of Innovation Challenge to empower youth voices in solving these problems, while also supporting teachers and youth program leaders in adapting to virtual learning and creating new ways for Washington industries to engage in the virtual classroom.

The Challenge builds on and expands Career Connect Washington's successful spring 2020 CareerConnect@ Home initiative, which responded to the sudden pandemic-related cancellation of many career exploration opportunities by offering daily livestreams with Washington employers throughout May and June. The State of Innovation invites young people to solve one of three cases questions currently facing the state, and to share their ideas with state leadership. The case questions are:

- **THE FOOD CHAIN:** How can we ensure that every Washingtonian has access to healthy, affordable, and environmentally sustainable food during the pandemic?

- **RESPONDING TO COVID-19:** How can we support the mental health of Washingtonians while practicing social distancing-- especially teens and elders?; How can people have accurate, actionable, accessible information about COVID-19, while still respecting individual privacy?

- **OUR COMMUNITIES AFTER COVID-19:** How can we help Washington build back from the pandemic in a healthier, more resilient, and more sustainable way?

Each case includes an introductory video (produced and edited by teen apprentices at the Northwest Film Forum's Reel Grrls Pro project), and an instruction guide for adult facilitators (teachers, club leaders, or youth program leaders) with specific problem solving prompts students can tackle, and curated background research. Adult facilitators can also get one on one support to help them implement the challenge with young people.

The Challenge is scalable based on student interest, classroom or program needs, and instructor capacity. Young people can choose to submit a "Nano," "Micro," or "Macro" solution with Nano projects taking as little as an hour of instructional time and Macro projects stretching over several months. Solutions are evaluated based on their ability to incorporate themes like creativity, equity, and accessibility and will be available to legislators and state leaders.

As students work on their Challenge projects, they have an opportunity to join twice weekly live webinars with Washington industry leaders, where they can explore careers and hear directly how industry is responding to the challenges of 2020.

State of Innovation Challenge Case video narrator Rey Rosario invites students and educators to think through how they can help solve challenges confronting Washington state.

For example, they can learn how the Spokesman-Review reporters ensure accurate information about the pandemic reaches readers, how the Department of Natural Resources is dealing with the impacts of climate change, or how Microsoft's Minecraft division uses video games to help young people learn about history and create more equitable futures.

The most innovative student solutions will receive special recognition at the end of Challenge event in March. Adult facilitators can also be recognized for innovative lesson and activity plans share with peers statewide through the Challenge's "Lesson Bank."

In addition to working with OSPI and Career Connect Washington to bring the Challenge directly to schools, the project has built community partnerships with organizations seeking enriching, career connected content for youth in the pandemic. The Challenge is partnered with student clubs including 4-H Washington, Junior Achievement, Washington DECA, Washington Technology Student Association. It is also connected

with Open Doors programs like TC Futures and South Seattle's CareerLink, Goodwill Longview, and youth serving programs through Big Brothers Big Sisters, the Boys and Girls Club, JUMA, Seattle Goodwill, and United Way of King County.

The State of Innovation Challenge is rooted in the idea that Washington has always been a state of dreamers, doers, and innovators. It seeks to empower the next generation of problem solvers to meet the problems of today, all while exploring careers and postsecondary pathways for the future.

Climate Science Learning

The ClimeTime project provides science teacher training programs that link Next Generation Science Standards (NGSS) with climate science to support teachers' efforts to help youth understand the impact of climate change and promote a thriving and sustainable environment. In addition to teacher professional development opportunities, grantees are funded to develop instructional materials, design related assessment tasks and evaluation strategies, and facilitate student events. ClimeTime is facilitated by the Office of the Superintendent of Public Instruction (OSPI) in collaboration with the UW Institute for Science + Math Education.

In 2019–20, participants were in broad agreement that their experience in the program expanded and deepened teachers' understanding of topics related to research-based instructional practices and provided them with the necessary skills and knowledge to try different approaches and bring a renewed relevance to their classes. In its second year of operation, ClimeTime served:

- More than **200** school districts
- **6,858** teachers
- **1,752** schools
- **244,894** students

WASHINGTON GREEN SCHOOLS WORKSHOP

The image to the left shows educators participating in a two-day workshop led by Washington Green Schools, in partnership with ESD 105, at the Wild Horse Wind and Solar Facility outside Ellensburg, Yakima-area teachers deepened their knowledge of the renewable energy industry, engaged in lessons centered on energy resources and their connections to climate change, and explored ways to help students understand and use different kinds of scientific data.

FORESTRY WORKSHOP

Third- through fifth-grade educators attended a workshop led by the Pacific Education Institute to use locally relevant information about forests, climate change and climate science resources to drive instruction and engage students in their environment.

The image to the right shows participants on a field trip to Port Blakely's school tour site in Olympia, where they learned about sustainable forestry, how Port Blakely is adapting planting practices to a changing climate, and about carbon storage in wood products.

REMOTE LEARNING & STUDENT SUPPORTS

Left, a student listens to his instructor on a monitor in the lab. Right, a physics student adjusts voltage to accelerate electrons in a Frank-Hertz tube. Images courtesy of University of Washington Bothell.

The Two-Year Sector

Washington's community and technical colleges

Resources for building effective remote learning environments are critical to meeting the COVID-19 Pandemic challenge.

STEM COMMUNITIES OF PRACTICE (CoPs)

The CoPs were established during the COVID-19 crisis across the state's 34 community and technical colleges. They are faculty-driven, technology-mediated learning collectives designed to support educators in creating effective remote learning environments for students during the COVID-19 crisis, with a focus on equitable opportunities for underrepresented populations.

Each CoP is composed of full-time and adjunct faculty across the major STEM disciplines and meets regularly to explore challenges and share successes on a range of topics, including equitable assessment practices, developing quality online labs, and successfully engaging students.

FINANCIAL ASSISTANCE

The State Board for Community and Technical Colleges developed innovative ways to support students with financial assistance to help students pursue their educational goals.

- Basic Education for Adults: Many colleges waived fees altogether for students who are unable to pay.

- Work Study: Colleges can continue to pay work study students even if the students can't perform their usual work due to COVID-19 disruptions. Both the U.S. Department of Education and the Washington Student Achievement Council are allowing colleges to convert work-study awards to need-based financial aid.

MESA COMMUNITY COLLEGE PROGRAM

Twelve community and technical colleges in Washington are now participating in MESA (Mathematics Engineering Science Achievement), providing academic preparation for community college students who are interested in transferring to four-year institutions to attain baccalaureate degrees in STEM fields.

The program serves students who are traditionally underrepresented in STEM fields, including African Americans, Native Americans, Hispanic/Latinx, Pacific Islanders and women. Most of these students are from low-income households and many are the first in their families to attend college. This program is an extension of MESA's primary program focusing on K-12 students.

The Four-Year Sector

Washington's public colleges and universities

The 2020 pandemic posed challenges to equitable access to broadband connectivity and technology for students. In response, Washington's public four-year college and universities employed a range of approaches and resources to assist students in the transition to remote learning. They included:

FINANCIAL AND TECHNOLOGICAL AID

- Utilizing professional judgment in financial aid decisions to increase the amount of aid to students to reduce financial barriers to access broadband services.

- Purchasing and lending laptops to students.

- Establishing mobile hot spots via public venues (e.g. libraries, etc.), parking lots and university centers.

- Boosting signal strength where possible through a range of access points.

STUDENT AND FACULTY SUPPORT SERVICES

- Bolstering student and faculty support services to assist with the transition to remote learning including advising and technology assistance.

- Sharing broadband resources with students and families including, but not limited to, Federal Communication Commission guidance and broadband services and carriers.

- Surveying students to develop proactive responses to emerging issues and challenges.

COLLABORATION AND PARTNERSHIP

- Supporting and reaching out to state agencies and partners (e.g., K–12 education, libraries, etc.) to provide leadership and assistance through our research and public service missions across the state.

- Participation in the Washington Internet Access Crisis Team to participate in updates, coordination and prioritization of next steps for addressing digital inclusion gaps.

Students conducting an experiment in a physics lab that requires in-person instruction. Image courtesy of UW Bothell.

FOUR-YEAR INSTITUTIONS CENTER PANDEMIC RESPONSE ON STUDENTS
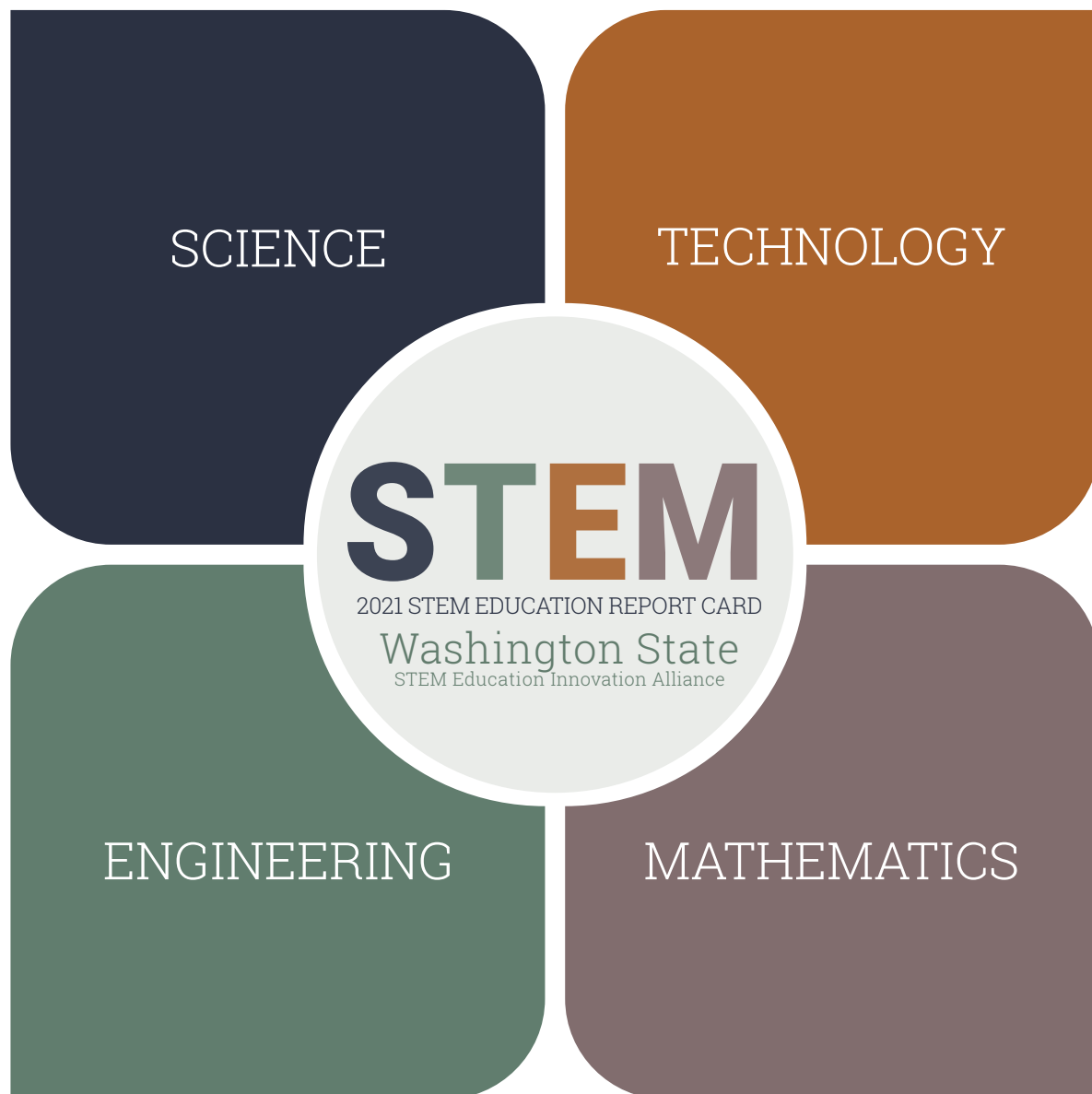
To meet the unprecedented challenge of the pandemic and ensuing recession, Washington's public baccalaureate institutions are striving to:

- Provide student-centered and equitable academic and vital support services, which include advising, counseling, mentoring, tutoring, career services and financial aid in a remote learning environment. While gains have been made with underrepresented students, opportunity gaps remain, requiring continued outreach and support for students on their pathway to a degree.

- Ensure students have access to the technology and resources they need to meet their basic needs and be successful in their educational goals.

- Encourage investment in public baccalaureate base funding to support expanded enrollment slots in specific STEM and high-demand programs.

Concluding Remarks

The recession brought on by the COVID-19 pandemic in 2020 has presented new challenges for Washington. But the data show that STEM jobs experienced a shallower decline in the initial stages of the recession and are experiencing signs of an earlier recovery compared with many other occupational fields. This reflects the prominent role of STEM in Washington's innovative tech-driven economy. Aligning the state's STEM education system with workforce demand will be a key component of a robust economic recovery. This will require significant efforts to address equity issues, to make sure that groups that have been historically underrepresented in STEM are given the resources they need to succeed. From highly-effective programs that provide supports for students' crucial steps in early learning, such as the Early Childhood Education and Assistance Program (ECEAP), to career connected learning programs and other programs that help guide students through the varied crossroads encountered on the way to postsecondary education, progress is being made. Ensuring that these programs receive the funding they need to be effective is essential to future progress.

SCIENCE

TECHNOLOGY

STEM

2021 STEM EDUCATION REPORT CARD

Washington State

STEM Education Innovation Alliance

ENGINEERING

MATHEMATICS

The STEM Alliance's Impact

Since its inception in 2013, the STEM Education Innovation Alliance has advised the Governor and Legislature on strategies to expand opportunities and improve STEM education in Washington. In collaboration with its partners, the STEM Alliance's advocacy has helped secure key legislation and funding to drive STEM advancement statewide.

STEM Alliance: A History of Successful Advocacy for STEM Education in Washington

✓ Increased enrollment slots in computer science and engineering at UW, WSU, and WWU.

✓ Expansion of the Washington MESA program.

✓ Expansion of Apprenti, an innovative program that is developing apprenticeship programs in STEM and other nontraditional trades.

✓ Increased resident undergraduate enrollment at the University of Washington for STEM majors. Computer science and education grants for early learning and K–12 curriculum development, teacher training, technology, and digital access for historically underserved groups.

✓ Increased funding for the Washington State Opportunity Scholarship. Extension of the scholarship to include students pursuing sub-baccalaureate professional and technical degree and certificate programs offered at our state's 34 community and technical colleges.

✓ Support for K–12 science teacher training in Next Generation Science Standards.

✓ The Workforce Education Investment Act (E2SHB 2158) established the Washington College Grant, which replaced the State Need Grant, guaranteed funding for all eligible students, extended financial aid to middle class families, and expanded applicability to include apprenticeships and select certificate programs.

✓ Extended state funding to support the Governor's Career Connect Washington initiative, designed to expand work-based learning, career exploration, career preparation, and career launch opportunities for Washington students.

✓ Increased funding to expand the Guided Pathways model of advising, course sequencing, and student support to improve retention and completion rates for students in the Community and Technical College system.

Advocating for Future-Ready STEM Education

Students conducting experiments in Biological Sciences at Clark College, Vancouver, WA
IMAGE COURTESY OF CLARK COLLEGE

Computer Science and Software Engineering students at University of Washington Bothell
IMAGE COURTESY OF UW BOTHELL

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STEM Education Innovation Alliance

The STEM Education Innovation Alliance, legislatively created in 2013, brings together leaders from a broad range of business, labor, education, government, and nonprofit organizations, with the role of advising Washington's governor and legislature on policy and strategic planning in support of STEM education initiatives.

Mission

The STEM Education Innovation Alliance is committed to promoting innovative policies that will enhance STEM education and career pathways, advance economic development, meet our state's urgent workforce demands, incentivize regional public and private partnerships, and provide opportunities for more Washingtonians to compete for jobs in this vital high-wage sector.

Goals

✓ Inspire youth through career-connected and real-world STEM learning opportunities.

✓ Provide every K–12 student access to computer science education.

✓ Prepare Washington's future workforce by increasing attainment of technical credentials and two- and four-year degrees and contributing to Washington's 70% postsecondary education attainment goal.

✓ Improve equity by implementing interventions to close educational opportunity gaps from cradle to career, providing excellent preparation and support for STEM teachers and improving workforce diversity.

✓ Raise public awareness of and support for STEM.

STEM Alliance Membership

2019 Washington State Teacher of the Year
Robert Hand

Amazon
Lindsay Hopkins

Association of Washington School Principals
Scott Friedman

Ballmer Group
Andi Smith

Bill & Melinda Gates Foundation
Lindsay Hunsicker

Career Connect Washington
Maud Daudon

Citizen Members
Marcie Maxwell

Code.org
Hadi Partovi

College Success Foundation
James Dorsey

Community Colleges of Spokane
Christine Johnson

Council of Presidents
Paul Francis

Eastern Washington University Student Member
Francisco Ramirez

FIRST (For Inspiration and Recognition of Science and Technology) Washington
Erica Beckstrom

Greater Spokane Inc.
Alisha Benson

Independent Colleges of Washington
Terri Standish-Kuon

Mentors in Tech
Kevin Wang

Microsoft Philanthropies
Jane Broom Davidson

Microsoft Philanthropies Technology Education and Literacy in Schools Program
Patrick O'Steen

North Central Educational Service District
Sue Kane

Office of Superintendent of Public Instruction
Chris Reykdal

Pacific Education Institute
Kathryn Kurtz

Pacific Northwest National Laboratory
Evangelina Galvan Shreeve

Starbucks Corporation
Evan Smith

State Board for Community and Technical Colleges
Jan Yoshiwara

STEMCore Consultants
Deidre Holmberg

The Museum of Flight
Dana Riley Black

University of Washington Computer Science & Engineering
Ed Lazowska

Wagstaff, Inc.
Kevin Person

Washington Mathematics Engineering and Science Achievement
Gregory King

Washington State Board of Education
Jeff Estes and Randy Spaulding

Washington State Department of Children, Youth and Families
Ross Hunter

Washington State Department of Commerce
Lisa Brown

Washington State Department of Labor & Industries
Joel Sacks

Washington State Employment Security Department
Suzi LeVine

Washington State Labor Council
Larry Brown

Washington State Office of the Governor
John Aultman

Washington State Opportunity Scholarship
Kimber Connors

Washington STEM
Angela Jones

Washington Student Achievement Council
Mike Meotti

Washington Workforce Training and Education Coordinating Board
Eleni Papadakis

Wenatchee Valley College
Karina Vega-Villa