

NORTH DAKOTA SEES JUMPS IN AP[®] TEST PARTICIPATION, SCORES

National Math + Science Initiative Partnership Trainings Help Teachers, Students Meet Ambitious STEM Goals



Photo Credit: North Dakota Department of Public Instruction

In 2013-2014, 40% of graduating seniors attending North Dakota University System institutions required remedial coursework in math, English or both subjects. The state ranked 51st in the nation for the number of Advanced Placement[®] courses taken per 1,000 high school juniors and seniors, and 49th for the percentage of students (5.5%) who received a score of 3 or higher on an AP[®] exam during high school — a score that typically qualifies students to receive college course credit.

State Superintendent Kirsten Baesler set ambitious STEM goals for North Dakota students when she introduced a program called “Leveraging the Senior Year” in 2015. The program had two aims: to reduce the number of students requiring math and English college remediation and to ensure that high school seniors had more challenging coursework available to them.

The state also sought to increase the number of students from Indigenous education and Indigenous tribes taking part in AP courses and exams. At the same time, North Dakota's new governor strongly believed in preparing students to be leaders in technology, engineering, cybersecurity, and oil development, making North Dakota the first state in the nation to develop computer science and cybersecurity standards for grades K-12.

To support Leveraging the Senior Year, in 2015 the North Dakota State Legislature initially earmarked \$1,252,627 to make AP courses accessible to North Dakota students, including paying for one AP exam for each student and up to four exams in science, mathematics, English and computer science for students eligible for free or reduced meals.

North Dakota also received a sizeable private donation from XTO, a subsidiary of ExxonMobil, to expand AP course opportunities further. The North Dakota Department of Public Instruction (NDDPI) leveraged XTO funding to engage with the National Math and Science Initiative to provide professional development programs that would prepare educators to teach AP classes in the areas of science, mathematics, English and computer science.

“NMSI was a logical fit to help teachers reinforce and develop concrete mathematical skills they could teach in a relevant way to students,” said Ann Ellefson, director of the Office of Support at the North Dakota Department of Public Instruction.

“We needed to scale content-level professional development appropriately, so partnerships like NMSI are instrumental to our success,” she said.

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FORGING A PARTNERSHIP WITH NMSI

Soon after legislation passed, NDDPI partnered with NMSI to offer math and English teacher workshops. It also recruited high schools to join NMSI's College Readiness Program, a program focused on expanding AP teachers' skills and increasing STEM access and achievement across schools.

NDDPI expanded NMSI training to include elementary and middle school teachers who needed to prepare students for the rigor they would face in future AP courses. The district implemented NMSI's Laying the Foundation program, helping teachers develop advanced levels of thinking and learning for their students in grades 3-12.

Since 2016, North Dakota teachers from 29 schools have participated in 26 NMSI training events. As part of the school program, high school students could review lessons with an AP teacher from outside their school or district on Saturdays, which helped them reinforce their skills and learn content from a different perspective.

"I think [Saturday sessions] had a strong connection to the program's success. It provided a through-

line for the course, the educator and the student," Ellefson said. "I also think the structure of providing the study session in another voice was helpful for students. It's a form of educator mentoring and coaching, where a teacher can see the lesson delivered from someone else's point of view."

In 2018-2019, with funding from the United States Department of Education, North Dakota piloted a "blended" CRP program, which gave students from rural schools an opportunity to participate in online AP courses if they could not enroll in a specific AP course or had no AP courses available at their schools. Teachers from participating rural schools could also take part in NMSI training and have access to NMSI's classroom-ready resources.

"North Dakota's partnership with NMSI was instrumental in providing additional learning opportunities for the students in our schools and districts," Ellefson said. "NMSI offered high-quality instructional support to local teachers and coaches, furthering our capacity to make this initiative successful."



Photo Credit: North Dakota Department of Public Instruction

STATE INVESTMENTS YIELD MEANINGFUL OUTCOMES

North Dakota's investments in NMSI programming yielded significant increases in student exam participation (especially students from low-income student backgrounds), student test scores and the number of students who took STEM-related AP exams.

1

According to 2021-2022 data, **22.5% of North Dakota graduates took the AP exam**, up from 12.4% in 2011. The increase in the number of exam takers over the past 10 years climbed 9.8 percentage points, giving North Dakota **the 7th highest growth rate in the nation**, according to the NDDPI.

2

Overall **student participation in AP exams soared** from 2,428 students in the 2015-2016 school year to 4,690 students in the 2022-2023 school year, an increase of more than 47%. Of those tests taken in 2022-2023, the state paid for 3,230 exams.

3

More economically disadvantaged students reported taking an AP exam since the bill passed. In 2015-2016, 83 economically disadvantaged students participated, compared to 187 in 2022-2023.

4

Not only has student exam participation in STEM-related AP exams increased, but **student test scores have increased**, too. In 2015-2016, 1,051 students scored a 3 or above on their AP exam, and in 2022-2023, 2,808 students achieved a 3 or higher.

5

According to the 2021-2022 Cohort Report, since 2016, **the percentage of North Dakota students scoring a 3 or better increased 4.3 percentage points** (3rd in the nation), whereas the national average increase was .67 percentage points.

In the future, NDDPI hopes to continue to work with NMSI to bring CRP to the western part of the state, as North Dakota continues to support underwriting AP exams and training. Teachers who've participated in NMSI programming attest to the positive outcomes a rich AP experience offers its high school students.

"Students experience a rigorous course but also learn lifelong skills in time management and organization," said Tracy Friesen, assistant principal at St. Mary's Central High School in Bismarck. "The students that choose these courses are well-prepared not only for the AP exam but for post-secondary experience."

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