

Bonny Eagle School District: Mathematics through Career and Technical Education

Many schools and districts in Maine have students enrolled in career and technical education (CTE) programs, and it is important to consider what pathways through mathematics education are available to those students. Bonny Eagle High School provides one example of how a district has approached mathematics options for students taking CTE courses. Their approach has emphasized laying the groundwork to be able to award math credits for completed CTE courses. Their work has helped create a more inclusive and flexible education system that caters to the diverse needs of students, preparing them effectively for their future endeavors in both college and careers.

About Bonny Eagle High School

[Bonny Eagle High School](#) is part of [Maine School Administrative district 06 \(MSAD06\)](#)

Bonny Eagle High School has over 1000 grades 9-12 students and approximately 88 teachers. A little more than 10% of students from Bonny Eagle participate in Career and Technical Education (CTE) programs each year, including at Westbrook Regional Vocational Center and Portland Arts and Technology High School. Bonny Eagle High School uses standards-based grading, and in 2023, Bonny Eagle's 4- and 5/6-year graduation rates were 83.7 and 84%.

A Focus on Students Needs

Bonny Eagle leaders saw the importance of addressing how students could meet academic requirements without creating barriers to CTE participation. Some students were having difficulty meeting graduation requirements in English or mathematics while also being able to benefit from participation in CTE programs. These needs arose when students struggled in and sometimes failed required math classes or just did not have time in their schedules to complete the required courses along with their CTE requirements (especially with travel to their CTE programs eating into the school day). By doing the work to integrate math credits into CTE courses, Bonny Eagle is providing a pathway for these students to fulfill their math requirements using a more applied, hands-on approach that aligns with their career interests.

“We were having kids dropping out who should have gone to CTE ... who were struggling to get over the finish line but who had plans to be a plumber ... removing barriers so those kids could access the CTE program was really where our drive was.”

Alignment of CTE Courses with Math Standards

Integrating credits from CTE programs across different schools is a complex process, with each school determining its own credit requirements, leading to diverse standards and expectations. Bonny Eagle High School has prioritized identifying and strengthening alignment of CTE program courses with

“It is the difference between having math being taught as part of the CTE program and kids just doing math in CTE classes.”

mathematics standards to be able to offer required math credits to students through their CTE programs. Students at first needed to compile portfolios for a CTE course to demonstrate their mathematics learning and justify that they had met the requisite standards to be able to receive mathematics credit. By developing a programmatic foundation that ensures that the standards are being met in particular CTE courses and programs, Bonny Eagle now is able to offer CTE mathematics credits based on program completion rather than portfolios. After completion of a two-year CTE program, students can receive a defined number of mathematics and

English credits for that program. For example—the electrical programs involve more mathematics and so may be eligible for more CTE math credits. Strategies that led to this alignment have included:

DRAFT Profile for Maine Math Pathways Toolkit

(See the Maine Math Pathways Toolkit For Additional Examples from Maine Districts – [Section 5 link](#))

- **Cross-District Planning.** Bonny Eagle leaders have participated in planning work in collaboration with representatives from other districts participating in the same CTE programs. This planning has focused on blueprints for offering academic credits to participating student, while recognizing that different districts have different requirements for their academic credits and requirements so each district would determine which credits are awarded to students participating in different programs.
- **Supporting CTE-Mathematics Instructors.** For multiple years, Bonny Eagle High School allocated resources to support dedicated instructors onsite at the CTE programs. They supported a half-time English instructor and a half-time math instructor. Initially, these instructors were to work directly with students on creating portfolios and ensuring they were meeting standards. But once on site, they began serving as coaches and/or co-teachers with the CTE teachers, partnering to identify modifications to lesson plans and curriculum to ensure specific standards were met. Many CTE teachers were very receptive and eager to partner in this way.
- **Identifying Curriculum Alignment to offer CTE Math Credits.** Through the work of those CTE-Mathematics instructors, Bonny Eagle was able to ensure that the CTE curriculum for particular programs is aligned with state and national academic standards. They create detailed crosswalks that map CTE competencies to academic standards and document which CTE programs will be eligible for mathematics credits based on the skills and knowledge gained in those programs.

Communication about CTE Options for Mathematics

Bonny Eagle High School ensures that students and families are aware of the CTE program and related math offerings available to help students succeed in high school and reach their career goals. CTE advisement includes personalized learning plans that align CTE coursework with each student's academic and career goals, ensuring they meet graduation requirements. Advisors help students understand how their CTE coursework fulfills academic standards and assists them in planning their educational pathways. For example, advisors help students understand what math credit graduation requirements they can fulfill through their CTE program, but also what mathematics they need for their career or educational goals, which may mean that they should take additional math classes at Bonny Eagle High School and not only rely on the CTE math credits. Communication with mathematics teachers has been important as well, to ensure the mathematics teachers are aware of what mathematics students are learning through their CTE programs—and that the credit they will receive on their transcript is for CTE/general math not a specific credit such as Algebra II. It has also been important to be clear that offering students math credits through their participation in CTE courses is not about replacing mathematics teachers or classes at the high school or removing any math teacher positions.

Conclusion and Vision for the Future

Bonny Eagle High School's commitment to identifying the alignment of CTE programs and mathematics standards has laid the groundwork needed to be able to support the mathematics learning of students enrolled in CTE programs in ways that facilitate students' future success rather than setting up barriers. The school remains dedicated to refining its educational pathways to better serve its diverse student body. Leaders remain committed to advancing educational excellence and equity for all students, with a goal of creating a more inclusive and flexible education system that accommodates the diverse needs of students, preparing them effectively for college, careers, and the workforce. While they do not currently have funding to continue sending onsite mathematics instructors to the CTE programs, their work over the past several years to establish alignment gives them confidence to continue offering students CTE math credits. They value the work of onsite academic content area instructors/coaches and hope that there will be future opportunities or cross-district funding sources to continue this strategy.