

BACKGROUND INFORMATION

Career and technical education (CTE) plays a vital role in the K-12 instructional programming. The district provides these courses to students in high interest areas and have standards and benchmarks that assist students in their growth and development as adolescents. This supports them in their college and career readiness - preparing them to be productive, well-adjusted members of society.

In the 2022-2023 school year at the end of quarter two, 84% of all students had taken at least one CTE course at Buffalo High School. Furthermore, 60% of ninth grade students had taken at least one course, 84% of tenth grade students, 93.8% of eleventh grade students and 98% of twelfth grade students had taken one course of CTE during their tenure at BHS. This data shows that students are taking CTE courses at a high level.

The BHM district employs thirteen full time CTE staff. Although the role of each is slightly different based on content area, each of these educators works to meet the needs of all students in their classrooms. In these elective courses, students have access to course content that furthers their understanding and engagement in school.

Buffalo Community Middle School (BCMS) offers the following courses:

- FCS (Family & Consumer Science): FACS 7, Foods 101, Textile Discovery
- Technology Education: STEAM Technology 6, Technology Education 8, Transportation Technology, Woods

With the shift to the trimester schedule at Buffalo High School, Career & Technical Education courses are allotted among 13.5 elective course credits. At the high school level, Courses that are offered are:

Agriculture: Intro to Agriculture, Veterinary Science, Animal Science, Intro to Ag Business, Unified Agriculture, Companion Animal Science, CIS Landscaping / Landscaping, Horse Science & Management, Agriculture Construction, CIS Animal Science, Natural Resource

Business: Accounting, Personal Finance, CIS College Academic Prep, College & Career Exploration, CIS College & Career Prep, Intro to Business, Marketing, Sports & Entertainment Marketing, CIS Business, CIS Entrepreneurship, Law & Order, Digital & Graphic Design, Computer Applications

FCS (Family & Consumer Science): Human Development: Prenatal through Toddler, Child Development: Preschool through Adolescence, Adulting 101, Fundamentals of Food Preparation, Culinary Foods, Baking & Pastry, Textile Design

Technology Education: Wood Technology, CIS Woods II, CIS Woods III, Technology Exploration, Electricity & Electronics, Intro to Digital Photography/Video, CIS Competitive Engineering, Intro to CAD, Architectural Drawing , CIS 3D Mechanical Drawing, Intro to Welding, Sheet Metal Fabrication, Energy Power & Transportation , Automotive Engineering & Design, CIS Auto Maintenance, Robotics , Robotics II, Robotics III

STANDARDS AND REQUIREMENTS

Because Career & Technical Education courses are electives, each discipline utilizes standards and frameworks to coincide with their work. Listed below are the frameworks and standards that correspond to each course.

From the MDE Website:

The Business, Marketing, and Information Technology Frameworks provide teachers in these career fields with high quality, rigorous indicators and benchmarks to identify what students should know and be able to do after completing a program of study in any of the included pathways. Development of local courses and programs should be informed by a combination of these academic and employability elements, and expectations of business and industry stakeholders addressing current and future workforce needs.

Minnesota Family & Consumer Science Education Frameworks

Currently, in Minnesota schools, Family and Consumer Sciences education and Service Occupations programs do not have MN Legislature mandated "FCS Standards"; however, FCS classrooms are meeting the needs of today's students with curriculum that is engaged with STEM/STEAM Standards; 21st Century Skills; FCCLA Connections; FCS National Standards, Career and Technical Education Standards; and Industry. In an effort to reflect this complex programming, the Minnesota Department of Education provided a grant to facilitate the

development of the new “Minnesota FACS Frameworks”. Frameworks is the term used to show the suggested structure of what FACS curriculum should be in Minnesota.

Standards for Technological Literacy

STL identifies *content* necessary for K-12 students, including knowledge, abilities, and the capacity to apply both to the real world. The standards in *STL* were built around a cognitive base as well as a doing / activity base. They include assessment checkpoints at specific grade levels. *STL* articulates what needs to be taught in K-12 laboratory classrooms to enable all students to develop technological literacy. The goal is to meet all of the standards through the benchmarks, which are included in *STL*. Standards are written statements about what is valued that can be used for making a judgment of quality.

Within the new trimester schedule at BHS, beginning with the class of 2027, 10.5 elective courses out of 27.5 total credits are required for graduation.

At the secondary level, Professional Learning Community teams are going through the process of curriculum mapping through a system of prioritizing and identifying standards and benchmarks that align with each unit of their courses.

BHM EVIDENCE OF ACHIEVEMENT

Students in CTE courses learn skills beyond the content of each course. For example, students develop life and academic skills, learn to utilize different types of technology, work collaboratively with other classmates of all abilities and viewpoints, and think critically about course content. A main goal is to teach and prepare students to be 21st Century global citizens.

In addition to learning skills, some BHM students are earning college credits. College In the Schools (CIS) courses are offered in Landscaping, Animal Science, College & Academic Prep, College & Career Prep, Business, Entrepreneurship, Child Development, Intro to Early Childhood Education, Woods II / III, Competitive Engineering, 3D Mechanical Drawing, and Auto Service Maintenance.

Agriculture

With the addition of a second agriculture teacher, there has been an increase in the variety of class options to include staples such as landscaping, animal science, and companion animal science, while now introducing new courses such as agriculture business and unified agriculture,

and making courses such as natural resource management and veterinary science offered more regularly. In conjunction with the classroom learning, the Buffalo FFA chapter has routinely qualified teams for the national competition. The program also has developed a farm-to-table opportunity at the high school with a school garden, which is maintained by both agriculture classes and FFA members.

Business

As a department, there is a strong desire to deliver a variety of real-world courses for students. There is an intentional focus on a diverse range of subjects to best meet students' needs that reflect state and national trends. Through relationships with students and deeper discussions with the business community, the department is able to create and provide interesting and hands-on experiences for students. The program offers all-encompassing courses that include business, marketing, personal finance, college and career readiness, and technology courses that utilize the latest software. New and modified courses being offered for the Trimester are Sports & Entertainment Marketing, Computer Applications, College & Career Exploration, and Digital & Graphic Design.

Technology Education

The Technology Education program in BHM schools has many strengths. There are offerings of a broad based technology education curriculum ranging from traditional to "high tech." As a 6-12 Technology Education department, there is commitment to the continuous improvement process and want to strengthen curriculum to better serve students tomorrow. Some examples follow...

- Great blend of traditional technologies such as woodworking and metalworking and "high tech" technologies including laser engraving, CNC plasma cutting, 3D printing, vinyl cutting, robotics, and CNC machining
- Industry level 3D modeling software (mechanical and architectural).
- Opportunities for problem solving and critical thinking.
- Utilizing the STEAM concept with-in class activities/assignments.
- Most current CAD softwares in the CAD computer lab
- Maintained FTEs even as graduation requirements have increased
- Students of all future plans have participated in a Tech Ed class
- Students enjoyed the hands-on experience they encountered in Tech Ed classes

Family and Consumer Sciences

The Family and Consumer Sciences (FCS) department provides a diverse selection of hands-on course material which includes real-life application. Courses meet a variety of student interests while also reinforcing skills deemed necessary by community business partners. The program offers content in the areas of human development, culinary foods, textile and design, and life skills. Student registration for FCS classes has remained high over the past several years.

STATE AND NATIONAL TRENDS

The various course offerings and standards in the CTE field focus on critical thinking, life skills, valuing different career / college tracks, and engaging in courses that promote an interest in a career path, college path, or hobbies.

Below are sites and resources that support teacher learning about current CTE trends and best instructional practices.

BHM Schools also supports a career fair at the high school during conferences which supports community involvement in instruction and promotes businesses and connections for students and staff.

Agriculture

- AET- agricultural education tracking, allows students to document and track their skills, activities, and accomplishments with their proficiencies (ag projects/jobs)
- Simulators (equipment driving, artificial insemination)
- Connections with local industry experts
- Career exploration- FFA national convention, state FFA convention, Green Expo, Ag Bowl

Business

- Business Professionals of America
- Virtual Business (on-line simulation used in Personal Finance, Intro to Business, and Marketing)
- Investopedia & The Stock Market Game
- Adobe Creative Suite (Photoshop, Illustrator, etc.)
- Google Suite Apps for Education
- MindTap On-line Accounting

- Microsoft Office
- Typing Club
- Big Interview (SCSU)
- Job Shadow Experience
- Mock Interview

Tech Ed

- Robotics, Construction, and Engineering competitions
- Industry Partnerships
- Career Exploration Days
- Career Fairs (every area)
- Computer controlled equipment

Family and Consumer Sciences

- RealCare Infant Simulators
- Google Suite Apps for Education

PROGRAM STRENGTHS

By the end of their high school career, 98% of seniors at Buffalo High School will have taken multiple courses in Career Technical Education. This data supports the numerous ways career technical education courses and instructors are reaching students. As a program, we surveyed students who have taken CTE courses at the high school level including questions like:

- Why have you taken / why are you taking this CTE course?
- Have you taken other CTE courses?
- Do you intend to take higher level CTE courses?
- What other classes do you wish we offered in CTE at BHS?
- Other questions / comments

Common themes from students included the fact that CTE courses tend to be more hands-on, students enjoy and learn from the instructors, the content is enjoyable and applicable for what post-secondary options students may have.

Additionally, a survey was given to community industry members inquiring about technical skills

needed to carry out a job in the field, further training and education needed to pursue, a focus on apprenticeship and partnering, and trends in the industry.

Common themes from these surveys included soft skills (personal / social responsibility), computer skills, exposure to technology, time management, as well as verbal and written communication skills.

The responses from both students and industry professionals confirmed what the data from the high school population displays - students are interested in and taking CTE courses (and learning necessary skills) to further their post-secondary options and because of the educators that are providing the instruction to further their education and skills.

PROGRAM LIMITATIONS OR CHALLENGES

A survey was also given to students who have not yet taken a CTE course. Prior to administering the survey, students were shown a video that encompassed CTE options and what courses might be included. Questions including the following were asked of students:

- Why haven't you taken a CTE class before?
- Does the CTE field interest you?
- What classes do you wish we offered in CTE at BHS
- What are your career goals?
- Other questions / comments

The common themes that emerged were:

Students shared that a lack of time in their high school career with other courses was a barrier. There was also a significant lack of knowledge of what a CTE course might be (for example, students shared that they wanted a course in personal finance – there is one offered at BHS). Students also shared that they were on a “track” – knowing exactly what their post-secondary plans are and wanting / needing to take courses to support that work through college in the schools or post secondary enrollment options.

Educators instructing within the program identified the following as limitations / challenges:

- Students may be uninformed about what CTE is
- Infinite Campus (where students might search for a course) may be limiting when they are searching for a subject instead of a course
- No “required” CTE course to gain exposure or interest in the program
- Software / technology that needs to be consistently updated - limits on funding and access

NEXT STEPS

Program	2023-2024	2024 - 2025
CAREER / TECH ED	EXPLORE	RESEARCH

Next year, the career & technical education team will be in the “Explore” phase of the BHM district’s continuous improvement process. Goals will be to look at career / technical education programming around the state in districts that are a similar size to BHM, as well as exploring what is offered in neighboring districts. The department will stay informed about decisions that are being made as well as the impact that those decisions will have on curriculum.