November 22, 2019

The Honorable Stephen D. Newman
Senate of Virginia
P.O. Box 480
Forest, VA 24451

The Honorable L. Louise Lucas
Senate of Virginia
P.O. Box 700
Portsmouth, VA 23705

The Honorable Roslyn C. Tyler
Virginia House of Delegates
25359 Blue Star Highway
Jarratt, VA 23867

Dear Chairman Newman and Chairwomen-designate Lucas and Tyler:

In response to House Bill 2662 (2019 session), the Board of Education approved guidelines for local school boards to develop and implement a senior capstone as a requirement for graduation. These guidelines, which were developed following meetings with various stakeholder groups including K-12 division teachers and administrators, institutions of higher education, and educational professional organizations and were approved at our meeting on October 17, 2019.

The Board does not recommend that a senior capstone project, portfolio, performance-based assessment, or structured experiment be mandated as a statewide graduation requirement. However, if the General Assembly decides to approve this mandate, we recommend use of the enclosed guidelines.
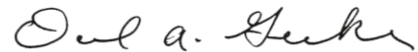
A senior capstone project was considered as a new requirement as the Board developed the *Profile of a Virginia Graduate*. After extensive engagement with local school divisions and the public, the Board decided that a senior capstone project was not appropriate for inclusion in the *Profile*. While some local school divisions either require or allow for a senior capstone

project for graduation, maintaining local flexibility ensures there is not an overextension of local capacity. Additionally, a state-level requirement for capstone projects, portfolios, performance-based assessments, or structured experiments would be an unfunded mandate for local school divisions, requiring them to meet the financial and professional demands of implementation. Accordingly, the Board advises the General Assembly not to reenact the provisions of HB 2662 during the 2020 General Assembly session.

If you have questions or require additional information, please do not hesitate to contact Dr. David Eshelman at (802)225-2051 or david.eschelman@doe.virginia.gov.
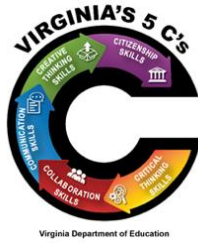
Sincerely,

Daniel A. Gecker
President

DAG/evw/lms

Enclosure

Cc: The Honorable Atif Qarni Secretary of Education
Holly Coy, Deputy Secretary of Education

Virginia Department of Education
Senior Capstone Guidelines

Introduction

The Profile of a Virginia Graduate establishes a new set of expectations – known as the 5 C's: critical thinking, creative thinking, communication, collaboration, and citizenship skills. This approach will prepare every student with the content knowledge they need and the skills they need to apply it successfully after graduation.

A successful Virginia Graduate will:

- Achieve and apply academic & technical knowledge;
- Demonstrate workplace skills, qualities, & behaviors;
- Build connections and value interactions with others as a responsible & responsive citizen; and
- Align knowledge, skills & personal interests with interests with career opportunities.

In an effort to provide all students with an education that leads them to being college and career ready, the following guidelines have been established to help divisions and schools implement Senior Capstones with the expressed aim of preparing students for college and the workforce.

What is a Senior Capstone?

A Senior Capstone is defined as a multifaceted assignment that serves as a culminating academic and intellectual experience for students, typically during their final ar of high school. While similar in some ways to a college thesis, a capstone may take a wide variety of forms, but most are long-term investigative projects that culminate in a final product, presentation, or performance. They are generally designed to encourage students to think critically, solve challenging real-world problems, and develop skills such as oral communication, public speaking, research skills, media literacy, teamwork, planning, self-sufficiency, or goal setting - i.e., skills that will help prepare them for college, modern careers, and adult life. In most cases, capstones are also interdisciplinary, in the sense that they require students to apply skills or investigate issues across many different subject areas or domains of knowledge. Capstones also encourage students to connect their projects to community issues or problems, and to integrate outside-of-school learning experiences.

A Senior Capstone are a way to allow students to uniquely showcase their talents related to college or career pathway. This capstone allows students the opportunity to reflect on who they are while allowing students to demonstrate their ability to synthesize and apply the knowledge and skills acquired in their academic program to real-world issues and problems. Capstones may also provide students with the opportunity to explore a career of personal or professional interest and to address the latest trends or issues through focused study and applied research. The Senior Capstone should affirm students' ability to think critically and creatively, to solve practical problems, to make reasoned and ethical decisions, and to communicate effectively.

Senior Capstone should be challenging. They should require considerable effort on the part of the student in showing how they have applied their learning. If a student approaches the project step by step and meets the deadlines, he or she will be able to manage the project successfully. There are many benefits involved in a Senior Capstone such as:

1. Engages students completing the Senior Capstone as an "active learner" capable of solving complex problems and constructing meaning that is grounded in the world beyond the classroom that encourages collaborative learning with industry and community partners
2. Organizes curriculum around authentic student projects which serve as a basis for learning from technical and academic disciplines in an inter-disciplinary approach
3. Expands teaching methodologies providing students the ability to work independently, use problem solving skills which involves students as expert-practitioners who use and demonstrate their knowledge and skills, etc.
4. Engages students in complex, challenging tasks which allows for the integration of learning, generation of knowledge, reflection, and creation of a product, and provides the student with the opportunity to work with community partners
5. Meets rigorous and measurable standards for academic and technical performance that reflect global demands making a diploma meaningful
6. Serves as a capstone in the students' Career Pathway

Timeline
Divisions or schools may design their senior capstones to be completed during the senior year of high school because research shows that senior year rigor and productivity are important predictors of postsecondary success. While other divisions or schools may choose to have students building their capstone as early as 8th grade. Teachers may work with 9th and 10th grade students to prepare preliminary portfolios and the formal Capstone begins in 11th grade. The timeline may vary based on the school's type of grading schedule, i.e. semester, year-long, or block. The Capstone may be carried out over multiple years, over a single year, or be completed in a specified amount of time, such as a nine-week period or a semester. Several components of the Capstone may be conducted simultaneously while others are independent of each other. An example would be participating with the mentor while conducting research for the paper. However, the presentation, if applicable, should not be conducted until the research has been completed.

Types of Senior Capstones
Senior Capstones can take a variety of forms from division to division, school to school or student to student. Divisions/schools may choose to allow students to pick among the four different types of capstones while others may choose to have all seniors complete the same type of capstone. It is possible to combine the types of capstone into a requirement for students. For example, traditionally many capstones include a project and a portfolio. In the next section, each type of capstone is described to illustrate both the concept and the general intentions.

> **(A) Capstone Project**
> A Capstone Project challenges students to demonstrate their academic knowledge in an experiential way. Students should choose a topic to address an issue currently impacting the school, local, national, and/or global community. Students may also choose topics

related to their career interest. This student-selected exploration of a topic results in a written research paper, a project or a product, and a presentation. This approach is one which allows students to use a variety of skills including complex problem-solving, creativity, evaluation and synthesis of research, writing, speaking, research, organization, time management, and technology skills.

A Capstone Project involves several steps as indicated below.
    a. Student selects a topic, gathers information, writes a research paper and keeps a portfolio of project activities.
    b. Student produces a product/process that applies some aspect of the research.
    c. Student makes a formal presentation to a panel composed of teachers and business and community leaders who know about and are interested in the topic. After the presentation, panel members ask questions about the research and the product/process and find out what the student learned during the project as well as review the student's portfolio.

(B) Capstone Portfolio
Student portfolios are collections of student work that are typically used for an alternative assessment grade in the classroom. They may be in a notebook form or kept electronically. Student portfolios can take a couple of forms. One type of student portfolio contains work that shows the student's progression throughout their academic school year. For example, writing samples might be taken from the beginning, middle, and end of the school year. This can help show growth and provide teachers, students, and parents with evidence of how the student has progressed. The second type of portfolio involves the student and/or teacher selecting examples of their best work from their entire secondary experience. For example, a student choosing a career interest in the arts may choose to include assignments and projects completed throughout the arts pathway.

Each school division/school/teacher will determine the required components of the portfolio. Listed below are suggested components of the Senior Capstone Portfolio.

- A written log or timeline of the student's hours
- A journal highlighting student's experiences
- Pictures
- Letters of support from business and industry
- Detailed notes or data analytics
- A copy of the research paper

(C) Capstone Performance-Based Assessment
Performance assessment measures subject-matter proficiency, requires students to apply the content and skills they have learned, and should present opportunities for students to demonstrate acquisition of the "Five C's" – critical thinking, creativity, communication, collaboration and citizenship – described in the Board of Education's Profile of a Virginia Graduate.

As students learn new skills and content, they should be given multiple opportunities to demonstrate mastery through the use of performance tasks. Both summative and formative performance assessments allow teachers and students alike to identify content that has been mastered, misconceptions, and gaps in learning. A course of study or program of study could include a series of performance-based assessments that culminate student preparedness for college and career. Divisions, schools, or students may choose this as an option for a Senior Capstone.

All performance-based assessments should align to the Virginia Quality Criteria Tool for Performance Assessments.

(D) Capstone Structured Experiment
A more commonly known name for a Structured Experiment is an Independent Science or Engineering Research Project. The project should actively engage students in exploring and making sense of science-oriented questions and engineering solutions in the world in which they live. Students should develop driving questions that have grown from their observations of the world and their interests.   Students then engage further by researching, observing, designing and conducting investigations, collecting and analyzing data, using and developing models and solutions to understand their question. Students communicate their understanding of the science or engineering solutions with evidence generated from their data to support their claims. All projects should culminate in both a written and oral presentation of findings to demonstrate student reasoning and understanding. Students should be encouraged to present their work at a local or regional science fair, Virginia Junior Academy of Science Research Symposium (VJAS), International Science and Engineering Fair (ISEF), or any other state or national competition.

Components of a Senior Capstone
- **Written Research Component**
  A formal paper or collection of papers that encourages students to develop and demonstrate proficiency in conducting research and writing about a chosen topic. The paper should be research-based, utilize difference sources of informationand conform to MLA or APA standards.
- **Oral Presentation**
  Regardless of the type of project, all senior capstones should include a formal presentation of work before a teacher or a panel of judges. The presentation consists of a speech, an explanation of how learning was applied, and discussion of lessons learned.
- **Demonstration of the 5 C's**
  Throughout the planning, implementation, and documentation of a Capstone Project each student connects and aligns their work to the 5 C's identified in the Virginia Profile of a Graduate. This connection should be documented throughout the entire process in a manner specified by each local school division.

Recommendations for Implementation
Schools will have flexibility in the implementation of the Senior Capstone. One suggestion would be a team approach so that one person would not have the sole responsibility of all pieces of the capstone. An example would be the Language Arts teacher assisting with the written component while the counselor or media specialist assists by taking classes into computer labs for research. Additionally, work-based learning coordinators can assist in locating possible mentors for students that are having difficulty locating a mentor. The media specialists or the school council might also be beneficial in helping with the presentations. By taking this approach, students are exposed to multiple resources and there will be opportunities for involvement by all school personnel. Another suggestion would be for the student to pick a teacher in the school to work during the duration of the capstone. This spreads out the responsibility beyond just senior teachers, but all teachers having impact on students during their secondary academic experience.

Grading of Senior Capstones will be determined by the local school division or school.   The local schools will determine weighting for the grades given (if applicable) to the research paper and portfolio. Local systems will also determine the class for which the grade will be associated should the decision be made to assign a grade. It is recommended for each school division or school to create sample rubrics that might be helpful.

It is recommended for each student to meet regularly with the teacher supervising the Senior Capstone and/or a mentor. The student may also work with other teachers and or business and community members based on the student's field of study.

Examples of School Senior Capstone Manuals
Below you will find examples of school manuals or handbooks for a Senior Capstone Project. It is important to note many of the examples include two or more types of capstones including project, portfolio, and/or science research. It is up to the school division or school to determine the capstone type(s) required of students.

- [Tech Prep Senior Project Manual](#)
- [Rock Ridge Capstone Handbook](#)
- [AP Capstone](#)