Unit 9: CADD and Careers

Content Area: **Applied Technology**
Course(s):
Time Period: **Marking Period 2**
Length: **2 weeks**
Status: **Published**

Summary

Students will explore fields where CADD technologies and skills are employed. Architecture, engineering, interior design, landscape architecture, building performance, and environmental impact are examples where CADD is used. Career paths will also be explored. This is an ongoing unit and material will be covered throughout the course.

Revision Date: July 2024

Essential Questions/Enduring Understandings

Essential Questions:

What fields and professions use CADD?

What is the role of CADD in manufacturing, architecture, engineering, interior design, and landscape architecture?

When are CADD drawings produced?

Enduring Understandings:

most everything that is manufactured involves CADD drawings.

The list of who uses CAD is extensive and includes engineering professionals as well as manufacturing personnel, architects, interior designers, landscape architects, city planners, environmental engineers, and set designers who use CADD.

industries that intensively use CAD include aerospace, defense, and automotive.

Objectives

Students will know:

vocabulary and terms including but not limited to professional, CAD operator, CAM, working drawings,

construction documents, shop drawings,

many engineering professions use CAD. These include mechanical, civil, and environmental engineers-in addition to others,

manufacturers, fabricators, steel workers, and many other professions use CAD. Some of these jobs require a college degree and others do not,

Architects, interior designers, landscape architects, city planners, environmental engineers, and set designers use CAD,

CAD files are used with 3-D printers.

Each profession requires specialized education in addition to CAD skills.

Students will be skilled at:

Determining what requisite coursework is required for any profession they wish to pursue.

Learning Plan

Preview the essential questions and connect to learning throughout the unit. This unit is ongoing and will be referenced with many units throughout the semester.

Teacher will provide formative and summative assessments of skills attainment.

Teacher will initiate lectures and class discussions about careers and how they use CAD. Teacher will supply drawings from different disciplines for students to analyze the content.

Possible activity: Guest speakers who use CAD will be invited to visit the class.

Possible activity: Students will view INTERNET resources that feature CAD users.

Assessment

Formative Assessment:

participation in discussions on various careers

exit tickets

demonstrate knowledge and understanding of vocabulary through correct usage.

Summative assessment:

answer the essential questions.

complete writing prompt: Example: Explain how drawings are part of how an idea becomes a reality. Include possible job titles.

Benchmark assessment:

final exam.

Alternate Assessment:

Research career and present

Shadow a professional and report

Materials

core book list

Smartboard

Internet

Possible guest speakers-architects, engineers.

Standards

ELA.K-12.1	Developing Responsibility for Learning: Cultivating independence, self-reflection, and responsibility for one's own learning.
ELA.K-12.6	Understanding Self and Others: Using literacy as a vehicle to affirm all the aspects of one's own identity, as well as understand, connect to and respect other perspectives and cultures.
	Integration of Knowledge and Ideas
SCI.HS-ESS3	Earth and Human Activity
SCI.HS-ESS3-5	Analyze geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth systems.
	Assessment is limited to one example of a climate change and its associated impacts.
	Analyzing and Interpreting Data
	Analyzing data in 9–12 builds on K–8 experiences and progresses to introducing more detailed statistical analysis, the comparison of data sets for consistency, and the use of models to generate and analyze data.

	Analyze data using computational models in order to make valid and reliable scientific claims.
SCI.HS.ESS3.D	Global Climate Change
	Though the magnitudes of human impacts are greater than they have ever been, so too are human abilities to model, predict, and manage current and future impacts.
SCI.HS-ETS1	Engineering Design
SCI.HS-ETS1-4	Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.
SCI.HS.ETS1.B	Developing Possible Solutions
	Both physical models and computers can be used in various ways to aid in the engineering design process. Computers are useful for a variety of purposes, such as running simulations to test different ways of solving a problem or to see which one is most efficient or economical; and in making a persuasive presentation to a client about how a given design will meet his or her needs.
CS.9-12.ED	Engineering Design
WRK.9.2.12.CAP	Career Awareness and Planning
WRK.9.2.12.CAP.4	Evaluate different careers and develop various plans (e.g., costs of public, private, training schools) and timetables for achieving them, including educational/training requirements, costs, loans, and debt repayment.
WRK.9.2.12.CAP.5	Assess and modify a personal plan to support current interests and post-secondary plans.
WRK.9.2.12.CAP.6	Identify transferable skills in career choices and design alternative career plans based on those skills.
WRK.9.2.12.CAP.7	Use online resources to examine licensing, certification, and credentialing requirements at the local, state, and national levels to maintain compliance with industry requirements in areas of career interest.
WRK.9.2.12.CAP.8	Determine job entrance criteria (e.g., education credentials, math/writing/reading comprehension tests, drug tests) used by employers in various industry sectors.
TECH.9.4.12.CI	Creativity and Innovation
TECH.9.4.12.CI.1	Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).
TECH.9.4.12.CI.2	Identify career pathways that highlight personal talents, skills, and abilities (e.g., 1.4.12prof.CR2b, 2.2.12.LF.8).
TECH.9.4.12.CI.3	Investigate new challenges and opportunities for personal growth, advancement, and transition (e.g., 2.1.12.PGD.1).
TECH.9.4.12.CT	Critical Thinking and Problem-solving
	Innovative ideas or innovation can lead to career opportunities.
	With a growth mindset, failure is an important part of success.
	Collaboration with individuals with diverse experiences can aid in the problem-solving process, particularly for global issues where diverse solutions are needed.
	Engineering design evaluation, a process for determining how well a solution meets requirements, involves systematic comparisons between requirements, specifications, and constraints.
	There are strategies to improve one’s professional value and marketability.
	Engineering design is a complex process in which creativity, content knowledge, research, and analysis are used to address local and global problems. Decisions on trade-offs involve systematic comparisons of all costs and benefits, and final steps that may involve

redesigning for optimization.

An individual's income and benefit needs and financial plan can change over time.

Career planning requires purposeful planning based on research, self-knowledge, and informed choices.

Integrated Accommodation and Modifications...

Integrated Accommodation and Modifications, Special Education students, English Language Learners, At-Risk students, Gifted and Talented students, Career Education and those with 504s