Unit 6: Search Engines & Big Brother (Grades 10-12)

Content Area: **Computer Science**
Course(s):
Time Period: **Marking Period 3**
Length: **4-6 Weeks**
Status: **Published**

Summary

Introduction: Search Engines are useful tools to scour the internet for information, but how do they work? Students will explore different search engines and their algorithms to attempt to get their own site higher in the results. Students will also explore web resources that assist in tracking details about who is viewing their websites in order to adjust content and navigation on the website. Students will become Google Analytic certified during this process.

Revision Date: July 2026

Information Literacy: This unit challenges students to locate, evaluate, and use information effectively. Information literacy includes, but is not limited to, digital, visual, media, textual, and technological literacy. Lessons may include the research process and how information is created and produced; critical thinking and using information resources; research methods, including the difference between primary and secondary sources; the difference between facts, points of view, and opinions, accessing peer-reviewed print and digital library resources; the economic, legal, social, and ethical issues surrounding the use of information.

P.1	Act as a responsible and contributing community members and employee.
1	Make sense of problems and persevere in solving them
L.SS.11–12.1	Demonstrate command of the system and structure of the English language when writing or speaking.
3	Construct viable arguments and critique the reasoning of others
P.5	Utilize critical thinking to make sense of problems and persevere in solving them.
P.6	Model integrity, ethical leadership and effective management.
L.KL.11–12.2	Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.
P.8	Use technology to enhance productivity increase collaboration and communicate effectively.
P.9	Work productively in teams while using cultural/global competence.
8.1.12.IC.3	Predict the potential impacts and implications of emerging technologies on larger social, economic, and political structures, using evidence from credible sources.
8.1.12.DA.1	Create interactive data visualizations using software tools to help others better understand real world phenomena, including climate change.
8.1.12.DA.2	Describe the trade-offs in how and where data is organized and stored.
8.1.12.DA.5	Create data visualizations from large data sets to summarize, communicate, and support

	different interpretations of real-world phenomena.
8.1.12.DA.6	Create and refine computational models to better represent the relationships among different elements of data collected from a phenomenon or process.
8.1.12.AP.3	Select and combine control structures for a specific application based upon performance and readability, and identify trade-offs to justify the choice.
8.2.12.ED.5	Evaluate the effectiveness of a product or system based on factors that are related to its requirements, specifications, and constraints (e.g., safety, reliability, economic considerations, quality control, environmental concerns, manufacturability, maintenance and repair, ergonomics).
8.2.12.NT.2	Redesign an existing product to improve form or function.

Essential Questions/Enduring Understandings

- How do search engines work?
- How do you track viewers of a website?
- Search engines are powerful tools for exploring the internet.
- The algorithms for various search engines are closely guarded secrets.
- knowing your audience's computer is an important aspect in designing sites they will use.

Objectives

Students Will Know

- what a search engine is.
- how to view user statistics about their website.
- what information entities know about them when they visit websites.

Students Will be Skilled At

- using search engines to accurately and efficiently find information.

Learning Plan

- Preview the essential questions and connect to learning throughout the unit.
- Research on search engine functionality.
- Class discussions on algorithms used by search engines.
- Class discussion on proper search engine usage.
- Class discussion on viewer tracking programs (ex. Google Analytics).
- Implementation of a viewer tracking system onto projects from previous unit.
- After a couple weeks of data gathering, discussion on various aspects of the tracking program.

Assessment

Assessments

- Formative: Daily assessments using examples from class notes and CodeHS.com, AP Classroom/Albert Checks for Understanding
- Summative: Teacher-created assessments/projects and CodeHS Computer Science Projects, AP Classroom/Albert Unit Assessments
- Benchmark: Check for understanding benchmark assessments on CodeHS, AP Classroom/Albert/Khan Academy Diagnostics
- Alternative Assessments: Student-centered activities such as a doorbell coding project, game design projects, and other activities listed below:
- Create a website-based resume.
- Present the resume in a mock interview based setting.
- Receive feedback from rubrics and comments from students/teachers/administration.
- Make adjustments and complete self assessment.
- Answer the essential questions.
- Complete performance tasks, including but not limited to:
    - preparing a visual display on search engines.
    - incorporating a statistical tool into their live website to track viewers.
    - interpreting a statistical report on the viewers of a website.

Materials

- Core instructional materials: Core Book List

Supplemental materials:

- District Approved Textbook
- HTML5 Resources
- CSS3 Resources
- Internet Access
- Khan Academy
- Codeacademy
- Codehs
- Computers

Integrated Accommodation and Modifications

Possible accommodations/modification for Web Design 2