Middle & High School DLCS Content Standards with Related GAISE II Concepts

Middle School (6-8)

DLCS Research [6-8.DTC.c2] Evaluate quality of digital sources for reliability, including currency, relevancy, authority, accuracy, and purpose of digital information.

Related GAISE II concepts that can be addressed while focused on this DLCS standard:

- Collect Data/ Consider Data II.B.4 Recognize that data can be collected using surveys and measurements, and develop a critical attitude in analyzing data collection methods

DLCS Research [6-8.DTC.c3] Gather, organize, and analyze information from digital sources by quoting, paraphrasing, and/or summarizing.

Related GAISE II concepts that can be addressed while focused on this DLCS standard:

- Collect Data/ Consider Data II.B.7 Understand that data can be collected (primary data) or existing data can be obtained from other sources (secondary data)

DLCS Research [6-8.DTC.c4] Create an artifact, individually and collaboratively, that answers a research question and communicates results and conclusions.

Related GAISE II concepts that can be addressed while focused on this DLCS standard:

- Interpret Results IV.A.2 Make statements about the group or population from which the data were collected, recognizing that conclusions are limited to these groups and cannot be generalized to other groups

DLCS Collaboration and Communication [6-8.DTC.b1] Communicate and publish key ideas and details individually or collaboratively in a way that informs, persuades, and/or entertains using a variety of digital tools and media-rich resources.

Related GAISE II concepts that can be addressed while focused on this DLCS standard:

- Interpret Results IV.C.1 Use statistical evidence from analyses to answer the statistical investigative questions and communicate results through more formal reports and presentations

DLCS Computing Devices [6-8.CS.a6] Use a variety of computing devices [e.g., probes, sensors, handheld devices, Global Positioning System (GPS)] to individually and collaboratively collect, analyze, and present information for content-related problems.

Related GAISE II concepts that can be addressed while focused on this DLCS standard:

- Collect Data/ Consider Data II.B.7 Understand that data can be collected (primary data) or existing data can be obtained from other sources (secondary data)

DLCS Human and Computer Partnerships [6-8.CS.b1] Explain why some problems can be solved more easily by computers or humans based on a general understanding of types of tasks at which each excels.

Related GAISE II concepts that can be addressed while focused on this DLCS standard:

- Collect Data/ Consider Data II.B.6 Understand how to interrogate the data to determine how the data were collected, from whom they were collected, what types of variables are in the data, how the variables were measured (including units used), and the possible outcomes for the variables

DLCS Interpersonal and Societal Impact [6-8.CAS.c5] Evaluate the bias of digital information sources, including websites.

Related GAISE II concepts that can be addressed while focused on this DLCS standard:

- Collect Data/ Consider Data II.C.6 Understand the issues of bias and confounding variables in observational studies and their implications for interpretation

DLCS Data [6-8.CT.c4] Perform a variety of operations such as sorting, filtering, and searching in a database to organize and display information in a variety of ways such as number formats (scientific notation and percentages), charts, tables, and graphs.

Related GAISE II concepts that can be addressed while focused on this DLCS standard:

- Analyze the Data III.A.2 Represent the variability of categorical variables or quantitative variables using appropriate displays (e.g., tables, picture graphs, dotplots, bar graphs)
- Analyze the Data III.B.1 Represent the variability of quantitative variables using appropriate displays (e.g., dotplots, boxplots)
- Analyze the Data III.C.1 Use technology to subset and filter data sets and transform variables, including smoothing for time series data
- Analyze the Data III.C.2 Identify appropriate ways to summarize quantitative or categorical data using tables, graphical displays, and numerical summary statistics, which includes using standard deviation as a measure of variability and a modified boxplot for identifying outliers

High School (6-8)

DLCS Research [9-12.DTC.c1] Generate, evaluate, and prioritize questions that can be researched through digital resources or tools.

Related GAISE II concepts that can be addressed while focused on this DLCS standard:

- Formulate Statistical Investigative Questions I.A.1 Understand when a statistical investigation is appropriate
- Formulate Statistical Investigative Questions I.A.2 Pose statistical investigative questions of interest to students where the context is such that students can collect or have access to all required data
- Formulate Statistical Investigative Questions I.A.3
- Pose summary (or descriptive) statistical investigative questions about one variable regarding small, well-defined groups (e.g., subset of a classroom, classroom, school, town) and extend these to include comparison and association statistical investigative questions between variables

DLCS Research [9-12.DTC.c2] Perform advanced searches to locate information and/or design a data-collection approach to gather original data (e.g., qualitative interviews, surveys, prototypes, simulations).

Related GAISE II concepts that can be addressed while focused on this DLCS standard:

- Formulate Statistical Investigative Questions I.C.2 Pose summary, comparative, and association statistical investigative questions for surveys, observational studies, and experiments using primary or secondary data

DLCS Research [9-12.DTC.c4] Gather, organize, analyze, and synthesize information using a variety of digital tools

Related GAISE II concepts that can be addressed while focused on this DLCS standard:

- Analyze the Data III.B.1 Represent the variability of quantitative variables using appropriate displays (e.g., dotplots, boxplots)

DLCS Research [9-12.DTC.c5] Create an artifact that answers a research question, communicates results and conclusions, and cites sources.

Related GAISE II concepts that can be addressed while focused on this DLCS standard:

- Interpret Results IV.A.2 Make statements about the group or population from which the data were collected, recognizing that conclusions are limited to these groups and cannot be generalized to other groups

- Interpret Results IV.B.1 Use statistical evidence from analyses to answer the statistical investigative questions and communicate results with comprehensive answers and some teacher guidance

DLCS Data [9-12.CT.c5] Identify different problems (e.g., large or multipart problems, problems that need specific expertise, problems that affect many constituents) that can benefit from collaboration when processing and analyzing data to develop new insights and knowledge.

Related GAISE II concepts that can be addressed while focused on this DLCS standard:

- Formulate Statistical Investigative Questions I.B.3 Pose summary, comparative, and association statistical investigative questions about a broader population using samples taken from the population

DLCS Data [9-12.CT.c.1] Describe how data types, structures, and compression in programs affect data storage and quality (e.g., digital image file sizes are affected by resolution and color depth).

Related GAISE II concepts that can be addressed while focused on this DLCS standard:

- Collect Data/ Consider Data II.B.1 Understand that data are information collected and recorded with a purpose and can be organized and stored in a variety of structures (e.g., spreadsheets)

DLCS Data [9-12.CT.c2] Create an appropriate multidimensional data structure that can be filtered, sorted, and searched (e.g., array, list, record).

Related GAISE II concepts that can be addressed while focused on this DLCS standard:

- Analyze the Data III.C.1 Use technology to subset and filter data sets and transform variables, including smoothing for time series data

DLCS Data [9-12.CT.c3] Create, evaluate, and revise data visualization for communication and knowledge.

Related GAISE II concepts that can be addressed while focused on this DLCS standard:

- Analyze the Data III.A.2 Represent the variability of categorical variables or quantitative Variables using appropriate displays (e.g., tables, picture graphs, dotplots, bar graphs)
- Analyze the Data III.B.1 Represent the variability of quantitative variables using appropriate displays (e.g., dotplots, boxplots)
- Analyze the Data III.C.2 Identify appropriate ways to summarize quantitative or categorical data using tables, graphical displays, and numerical summary statistics, which includes using standard deviation as a measure of variability and a modified boxplot for identifying outliers

DLCS Data [9-12.CT.c4] Analyze a complex data set to answer a question or test a hypothesis (e.g., analyze a large set of weather or financial data to predict future patterns).

Related GAISE II concepts that can be addressed while focused on this DLCS standard:

- Analyze the Data III.C.1 Use technology to subset and filter data sets and transform variables, including smoothing for time series data
- Interpret Results IV.C.1 Use statistical evidence from analyses to answer the statistical investigative questions and communicate results through more formal reports and presentations

DLCS Data [9-12.CT.c5] Identify different problems (e.g., large or multipart problems, problems that need specific expertise, problems that affect many constituents) that can benefit from collaboration when processing and analyzing data to develop new insights and knowledge.

Related GAISE II concepts that can be addressed while focused on this DLCS standard:

- Interpret Results IV.B.3 Generalize beyond the sample providing statistical evidence for the generalization and including a statement of uncertainty and plausibility when needed

DLCS Abstraction [9-12.CT.a] Discuss and give an example of the value of generalizing and decomposing aspects of a problem in order to solve it more effectively.

Related GAISE II concepts that can be addressed while focused on this DLCS standard:

- Collect Data/ Consider Data II.A.6 Understand that data are not always pristine but may contain errors, have missing values, etc., and that decisions have to be made about how to account for these issues

DLCS Modeling and Simulation [9-12.CT.e1] Create models and simulations to help formulate, test, and refine hypotheses.

Related GAISE II concepts that can be addressed while focused on this DLCS standard:

- Analyze the Data III.C.8 Use simulations to investigate associations between two categorical variables and to compare groups