Section VI: Teacher Resources

The American Statistical Association (ASA) is the world's largest community of statisticians. The ASA supports excellence in the development, application, and dissemination of statistical science through meetings, publications, membership services, education, accreditation, and advocacy. Members serve in industry, government, and academia in more than 90 countries, advancing research and promoting sound statistical practice to inform public policy and improve human welfare.

Statistics and probability concepts are included in K–12 curriculum standards, particularly the Common Core State Standards, and on state and national exams. One of the ASA's goals is to improve statistics education at the K–12 grade level and provide support for K–12 classroom teachers. Following are some of the online K–12 educational resources the ASA provides.

For more information, visit *www.amstat.org/education*.

Online Resources

STatistics Education Web (STEW)

STatistics Education Web (STEW) is an online, searchable database of peer-reviewed lesson plans for K–12 teachers. Its content identifies both the statistical concepts being developed and the age range appropriate for its use. The statistical concepts follow the recommendations of the *Guidelines for Assessment and Instruction in Statistics Education.*

Teachers can navigate the site by grade level and statistical topic. For more information, visit *www.amstat.org/education/stew*.

Statistics Teacher

Statistics Teacher (*ST*) is an online journal published three times per year by the American Statistical Association/National Council of Teachers of Mathematics Joint Committee on Curriculum in Statistics and Probability for Grades K–12. *ST* is a free publication whose purpose is to keep K–12 teachers informed about statistical workshops; programs; and reviews of books, software, and calculators. In addition, articles include describing statistical activities that have been successful in the classroom. Contributors come from all levels of statistical expertise. For more information, visit *www.statisticsteacher.org*.

Census at School

US Census at School is an international classroom project that engages students in grades 4–12 in statistical problem solving. Students complete a brief online survey, analyze their class census results, and compare their class data with those of random samples of students in the United States and other countries.

This international program began in the United Kingdom in 2000 to promote statistical literacy in school children by using their own real data. The program is operative in the UK, New Zealand, Australia, Canada, South Africa, Ireland, Japan, and the United States. The US component of Census at School is hosted by the ASA's Education Outreach Program and cosponsored by partner Population Association of America.

The online survey asks students about topics such as the length of their right foot, height, favorite subject in school, and how long it takes them to get to school. Thirteen questions are common to every country participating in Census at School, but each country adds its own questions specific to the interests of its students. Periodically, the national data from the 13 common questions go to an international database maintained in the UK. For more information, visit *www.amstat.org/censusatschool*.

K–12 Statistics Education Webinars

The ASA offers free recorded web-based seminars on K–12 statistics education topics. This series was developed as part of the follow-up activities for Meeting Within a Meeting (MWM), a statistics workshop for math and science teachers held in conjunction with the Joint Statistical Meetings. For more information about the workshop, visit *www.amstat.org/asa/education/MWM/home*.

Some of the webinar topics available include the following:

» A Statistician's Tour of the Common Core

» Exploring Census at School Data with Fathom

» What You Need to Know About the ASA Project Competition

» Math Is Music: Statistics Is Literature

» CSI Stats: Helping Students Become Data Detectives with the GAISE Framework

» Doing Data Analysis in the Middle School with TinkerPlots

» Working with K–12 Students to Create a Statistics Poster

For more information, visit *www.amstat.org/asa/education/K-12-Statistics-Education-ebinars.aspx*.

What's Going On in This Graph?

What's Going On in This Graph is a free, weekly online feature of the ASA and New York Times Learning Network. *New York Times* graphs of different types and context act as a springboard for middle- and high-school students in any course (college also welcome) to think critically about graphs. On most Wednesdays from September to April, graphs are released. Students respond to three questions: What do you notice? What do you wonder? What's going on in this graph? Teachers moderate their responses online from 9 a.m. – 2 p.m. ET. On Friday, the original article, additional questions, and "stat nuggets" —definitions of statistical terms and where they are seen in the graph—are revealed. No statistics background is necessary.

Publications

Bridging the Gap Between Common Core State Standards and Teaching Statistics

Bridging the Gap Between Common Core State Standards and Teaching Statistics includes 20 data analysis and probability investigations for teachers to use in their K–8 classrooms. Each investigation is based on the four-step statistical process as defined in the *Guidelines for Assessment and Instruction in Statistics Education (GAISE) Report: A Pre-K–12 Curriculum Framework*.

www.statisticsteacher.org/statistics-teacher-publications.

Statistical Education of Teachers

The *Statistical Education of Teachers* (*SET*) report outlines the content and conceptual understanding teachers require to assist their students in developing statistical reasoning skills. *SET* is intended for everyone involved in the statistical education of teachers, both the initial preparation of prospective teachers and the professional development of practicing teachers.

www.statisticsteacher.org/statistics-teacher-publications.

Making Sense of Statistical Studies

The *Making Sense of Statistical Studies* (*MSSS*) student module consists of 15 hands-on investigations that help students design and analyze statistical studies. It is written for an upper-middle-school or high-school audience having some background in exploratory data analysis and basic probability. The teacher's module includes supporting resources to help teachers use *MSSS*, as well as all the pages from the student module.

www.statisticsteacher.org/statistics-teacher-publications.

Data-Driven Mathematics

Data-Driven Mathematics is a series of modules funded by the National Science Foundation and written by statisticians and mathematics teachers. Intended to complement a modern mathematics curriculum in the secondary schools, the modules offer materials that integrate data analysis with topics typically taught in high-school mathematics courses and provide realistic, real-world data situations for developing mathematical knowledge. Scanned copies of these books are freely available to download (PDF).

» *Advanced Modeling and Matrices - Teacher's Edition*, by Gail Burrill, Jack Burrill, James Landwehr, and Jeffrey Witmer

www.amstat.org/asa/files/pdfs/ddmseries/AdvancedModelingandMatrices--TeachersEdition.pdf

» *Advanced Modeling and Matrices*, by Gail Burrill, Jack Burrill, James Landwehr, and Jeffrey Witmer

www.amstat.org/asa/files/pdfs/ddmseries/AdvancedModelingandMatrices.pdf

» *Exploring Centers - Teacher's Edition*, by Henry Kranendonk and Jeffrey Witmer

www.amstat.org/asa/files/pdfs/ddmseries/ExploringCenters--TeachersEdition.pdf

» *Exploring Centers*, by Henry Kranendonk and Jeffrey Witmer

www.amstat.org/asa/files/pdfs/ddmseries/ExploringCenters.pdf

» *Exploring Linear Relations - Teacher's Edition*, by Gail Burrill and Patrick Hopfensperger

www.amstat.org/asa/files/pdfs/ddmseries/ExploringLinearRelations--TeachersEdition.pdf

» *Exploring Linear Relations*, by Henry Kranendonk and Jeffrey Witmer

www.amstat.org/asa/files/pdfs/ddmseries/ExploringLinearRelations.pdf

» *Exploring Projects - Teacher's Edition*, by Emily Errthum, Maria Mastromatteo, Vince O'Connor, and Richard Scheaffer

www.amstat.org/asa/files/pdfs/ddmseries/ExploringProjects--TeachersEdition.pdf

» *Exploring Projects*, by Emily Errthum, Maria Mastromatteo, Vince O'Connor, and Richard Scheaffer

www.amstat.org/asa/files/pdfs/ddmseries/ExploringProjects.pdf

» *Exploring Regression - Teacher's Edition*, by Gail Burrill, Jack Burrill, Patrick Hopfensperger, and James Landwehr

www.amstat.org/asa/files/pdfs/ddmseries/ExploringRegression--TeachersEdition.pdf

» *Exploring Regression*, by Gail Burrill, Jack Burrill, Patrick Hopfensperger, and James Landwehr

www.amstat.org/asa/files/pdfs/ddmseries/ExploringRegression.pdf

» *Exploring Symbols - Teacher's Edition*, by Gail Burrill, Miriam Clifford, and Richard Scheaffer

www.amstat.org/asa/files/pdfs/ddmseries/ExploringSymbols--TeachersEdition.pdf

» *Exploring Symbols*, by Gail Burrill, Miriam Clifford, and Richard Scheaffer

www.amstat.org/asa/files/pdfs/ddmseries/ExploringSymbols.pdf

» *Exploring Systems of Inequalities - Teacher's Edition*, by Gail Burrill and Patrick Hopfensperger

www.amstat.org/asa/files/pdfs/ddmseries/ExploringSystemsofIneqalities--TeachersEdition.pdf

» *Exploring Systems of Inequalities*, by Gail Burrill and Patrick Hopfensperger

www.amstat.org/asa/files/pdfs/ddmseries/ExploringSystemsofIneqalities.pdf

» *Mathematics in a World of Data - Teacher's Edition*, by Jack Burrill, Miriam Clifford, Emily Errthum, Henry Kranendonk, Maria Mastromatteo, and Vince O'Connor

www.amstat.org/asa/files/pdfs/ddmseries/MathematicsinaWorldofData--TeachersEdition.pdf

» *Mathematics in a World of Data*, by Jack Burrill, Miriam Clifford, Emily Errthum, Henry Kranendonk, Maria Mastromatteo, and Vince O'Connor

www.amstat.org/asa/files/pdfs/ddmseries/MathematicsinaWorldofData.pdf

» *Modeling with Logarithms - Teacher's Edition*, by Jack Burrill, Miriam Clifford, and James Landwehr

www.amstat.org/asa/files/pdfs/ddmseries/ModelingwithLogarithms--TeachersEdition.pdf

» *Modeling with Logarithms*, by Jack Burrill, Miriam Clifford, and James Landwehr

www.amstat.org/asa/files/pdfs/ddmseries/ModelingwithLogarithms.pdf

» *Probability Models - Teacher's Edition*, by Patrick Hopfensperger, Henry Kranendonk, and Richard Scheaffer

www.amstat.org/asa/files/pdfs/ddmseries/ProbabilityModels--TeachersEdition.pdf

» *Probability Models*, by Patrick Hopfensperger, Henry Kranendonk, and Richard Scheaffer

www.amstat.org/asa/files/pdfs/ddmseries/ProbabilityModels.pdf

» *Probability Through Data - Teacher's Edition*, by Patrick Hopfensperger, Henry Kranendonk, and Richard Scheaffer

www.amstat.org/asa/files/pdfs/ddmseries/ProbabilityThroughData--TeachersEdition.pdf

» *Probability Through Data*, by Patrick Hopfensperger, Henry Kranendonk, and Richard Scheaffer

www.amstat.org/asa/files/pdfs/ddmseries/ProbatilityThroughData.pdf

Student Competitions

The ASA/NCTM Joint Committee on Curriculum in Statistics and Probability and the ASA's education department encourage students and their advisers to participate in its annual Data Visualization Poster Competition and Project Competition.

ASA Data Visualization Poster Competition for Grades K–12

A data visualization poster is a display containing two or more related graphics that summarize a set of data, look at the data from different points of view, and answer specific questions about the data.

www.amstat.org/asa/education/ASA-Statistics-Poster-Competition-for-Grades-K-12.aspx

ASA Statistics Project Competition for Grades 7–12

A statistical project is the process of answering a research question using statistical techniques and presenting the work in a written report.

www.amstat.org/asa/education/ASA-Statistics-Project-Competition-for-Grades-7-12.aspx