The University of Texas at Austin
Environmental Science Institute

CSI – Texas

The Science of Sleuthing

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This file contains suggestions for how to incorporate information from this CD-ROM into curriculum using Texas Essential Knowledge and Skills for Science

§112.47. Physics.

§112.48. Astronomy.

§112.49. Geology, Meteorology, and Oceanography.

§112.2. Science, Kindergarten.

2) Scientific processes. The student develops abilities necessary to do scientific inquiry in the field and the classroom. The student is expected to:

(A) ask questions about organisms, objects, and events; Before CSI Investigators can begin their analysis of evidence, they have to ask questions to direct their search.

(B) plan and conduct simple descriptive investigations; CSI has many types of investigations and procedures that they perform on a regular basis (Slides 8-11, 14-15, 25-27, 41-44).

(C) gather information using simple equipment and tools to extend the senses; Scientists have to use all kinds of tools to obtain accurate information (slides 8-11, 24, and 34).

(D) construct reasonable explanations using information; CSI uses all of the evidence it obtains to figure out exactly what happened and to determine who was responsible (slide 3).

(E) communicate findings about simple investigations. A great way to enforce steps in the Scientific Process is to bring in games such as “Guess Who” or “Clue” to practice gathering information, and then use the information to draw conclusions. After the game, discuss strategies the winner used to choose the right answer.

(3) Scientific processes. The student knows that information and critical thinking are used in making decisions. The student is expected to:

(A) make decisions using information; Pick an object in the room and give a few descriptive clues as to which object you have chosen. Then have the students use the information you gave to decide which object you are talking about.

(B) discuss and justify the merits of decisions; Once they have chosen the correct object ask the students which specific characteristics led them to the object.

(4) Scientific processes. The student uses age-appropriate tools and models to verify that organisms and objects and parts of organisms and objects can be observed, described, and measured. The student is expected to:

(B) make observations using tools including hand lenses, balances, cups, bowls, and computers. Scientists have to use all kinds of tools to obtain accurate information (slides 8-11, 24, and 34).

§112.3. Science, Grade 1.

(2) Scientific processes. The student develops abilities necessary to do scientific inquiry in the field and the classroom. The student is expected to:

(A) ask questions about organisms, objects, and events; Before CSI Investigators can begin their analysis of evidence, they have to ask questions to direct their search.

(B) plan and conduct simple descriptive investigations; CSI has many types of investigations and procedures that they perform on a regular basis (slides 8-11, 14-15, 25-27, 41-44).

(C) gather information using simple equipment and tools to extend the senses; Scientists have to use all kinds of tools to obtain accurate information (slides 8-11, 24, and 34).

(D) construct reasonable explanations and draw conclusions; CSI uses all of the evidence it obtains to figure out exactly what happened and to determine who was responsible (Slide 3).

(E) communicate explanations about investigations. A great way to enforce steps in the Scientific Process is to bring in games such as “Guess Who” or “Clue” to practice gathering information, and then use the information to draw conclusions. After the game, discuss strategies the winner used to choose the right answer.

(3) Scientific processes. The student knows that information and critical thinking are used in making decisions. The student is expected to:

(A) make decisions using information; Pick an object in the room and give a few descriptive clues as to which object you have chosen. Then have the students use the information you gave to decide which object you are talking about.

(B) discuss and justify the merits of decisions; Once they have chosen the correct object ask the students which specific characteristics led them to the object.

(4) Scientific processes. The student uses age-appropriate tools and models to verify that organisms and objects and parts of organisms and objects can be observed, described, and measured. The student is expected to:

(A) collect information using tools including hand lenses, clocks, computers, thermometers, and balances; Scientists have to use all kinds of tools to obtain accurate information (slides 8-11, 24, and 34).

(B) record and compare collected information; CSI evidence is stored and organized meticulously (slides 7 and 36).

(5) Science concepts. The student knows that organisms, objects, and events have properties and patterns. The student is expected to:

(A) sort objects and events based on properties and patterns; CSI evidence is stored and organized meticulously (slides 7 and 36).

(B) identify, predict, and create patterns including those seen in charts, graphs, and numbers. CSI studies the way different guns work in order to see these types of patterns (slides 19-23).

§112.4. Science, Grade 2.

2) Scientific processes. The student develops abilities necessary to do scientific inquiry in the field and the classroom. The student is expected to:

(A) ask questions about organisms, objects, and events; Before CSI Investigators can begin their analysis of evidence, they have to ask questions to direct their search.

(B) plan and conduct simple descriptive investigations; CSI has many types of investigations and procedures that they perform on a regular basis (lides 8-11, 14-15, 25-27, 41-44).

(D) gather information using simple equipment and tools to extend the senses; Scientists have many different tools they use to obtain accurate information (slides 8-11, 24, and 34).

(E) construct reasonable explanations and draw conclusions using information and prior knowledge; CSI uses all of the evidence it obtains to figure out exactly what happened and to determine who was responsible (Slide 3).

(F) communicate explanations about investigations. A great way to enforce steps in the Scientific Process is to bring in games such as “Guess Who” or “Clue” to practice gathering information, and then use the information to draw conclusions. After the game, discuss strategies the winner used to choose the right answer.

(3) Scientific processes. The student knows that information and critical thinking are used in making decisions. The student is expected to:

(A) make decisions using information; Pick an object in the room and give a few descriptive clues as to which object you have chosen. Then have the students use the information you gave to decide which object you are talking about.

(B) discuss and justify the merits of decisions; Once they have chosen the correct object ask the students which specific characteristics led them to the object.

(4) Scientific processes. The student uses age-appropriate tools and models to verify that organisms and objects and parts of organisms and objects can be observed, described, and measured. The student is expected to:

(A) collect information using tools including rulers, meter sticks, measuring cups, clocks, hand lenses, computers, thermometers, and balances; Scientists have to use all kinds of tools to obtain accurate information (slides 8-11, 24, and 34).

(5) Science concepts. The student knows that organisms, objects, and events have properties and patterns. The student is expected to:

(A) classify and sequence organisms, objects, and events based on properties and patterns; CSI evidence is stored and organized meticulously (slides 7 and 36).

(B) identify, predict, replicate, and create patterns including those seen in charts, graphs, and numbers. CSI studies the way different guns work in order to see these types of patterns (slides 19-23).

§112.5. Science, Grade 3.

(2) Scientific processes. The student uses scientific inquiry methods during field and laboratory investigations. The student is expected to:

(A) plan and implement descriptive investigations including asking well-defined questions, formulating testable hypotheses, and selecting and using equipment and technology; Take something that is always visible in the room and hide it, then let students know

that something is missing. Ask them to come up with a plan to figure out what item is gone. Have them follow through their investigation by adhering to the Scientific Process.

(B) collect information by observing and measuring; CSI has all kinds of strategies and techniques for gaining information (slides 8-11, 24, 34).

(C) analyze and interpret information to construct reasonable explanations from direct and indirect evidence; CSI analyzes and interprets all of the evidence it obtains to figure out exactly what happened and to determine who was responsible (slide 3).

(D) communicate valid conclusions; A great way to enforce steps in the Scientific Process is to bring in games such as "Guess Who" or "Clue" to practice gathering information, and then use the information to draw conclusions. After the game, have the winner discuss strategies he/she used to choose the right answer.

(E) construct simple graphs, tables, maps, and charts to organize, examine and evaluate information. CSI evidence is stored and organized meticulously (slides 7 and 36).

(4) Scientific processes. The student knows how to use a variety of tools and methods to conduct science inquiry. The student is expected to:

(A) collect and analyze information using tools including calculators, microscopes, cameras, safety goggles, sound recorders, clocks, computers, thermometers, hand lenses, meter sticks, rulers, balances, magnets, and compasses; Scientists have many different tools they use to obtain accurate information (slides 8-11, 24, and 34).

§112.6. Science, Grade 4.

(2) Scientific processes. The student uses scientific inquiry methods during field and laboratory investigations. The student is expected to:

(A) plan and implement descriptive investigations including asking well-defined questions, formulating testable hypotheses, and selecting and using equipment and technology; Take something that is always visible in the room and hide it, then let students know that something is missing. Ask them to come up with a plan to figure out what item is gone. Have them follow through their investigation by adhering to the Scientific Process.

(B) collect information by observing and measuring; CSI has all kinds of strategies and techniques for gaining information (slides 8-11, 24, 34).

(C) analyze and interpret information to construct reasonable explanations from direct and indirect evidence; CSI analyzes and interprets all of the evidence it obtains to figure out exactly what happened and to determine who was responsible (slide 3).

(D) communicate valid conclusions; A great way to enforce steps in the Scientific Process is to bring in games such as "Guess Who" or "Clue" to practice gathering information, and then use the information to draw conclusions. After the game, have the winner discuss strategies he/she used to choose the right answer.

(E) construct simple graphs, tables, maps, and charts to organize, examine, and evaluate information. CSI evidence is stored and organized meticulously (slides 7 and 36).

4) Scientific processes. The student knows how to use a variety of tools and methods to conduct science inquiry. The student is expected to:

(A) collect and analyze information using tools including calculators, safety goggles, microscopes, cameras, sound recorders, computers, hand lenses, rulers, thermometers, meter sticks, timing devices, balances, and compasses; Scientists have many different tools they use to obtain accurate information (slides 8-11, 24, and 34).

§112.7. Science, Grade 5.

(2) Scientific processes. The student uses scientific methods during field and laboratory investigations. The student is expected to:

(A) plan and implement descriptive and simple experimental investigations including asking well-defined questions, formulating testable hypotheses, and selecting and using equipment and technology; Take something that is always visible in the room and hide it, then let students know that something is missing. Ask them to come up with a plan to figure out what item is gone. Have them follow through their investigation by adhering to the Scientific Process.

(B) collect information by observing and measuring; CSI has all kinds of strategies and techniques for gaining information (slides 8-11, 24, 34).

(C) analyze and interpret information to construct reasonable explanations from direct and indirect evidence; CSI analyzes and interprets all of the evidence it obtains to figure out exactly what happened and to determine who was responsible (slide 3).

(D) communicate valid conclusions; A great way to enforce steps in the Scientific Process is to bring in games such as “Guess Who” or “Clue” to practice gathering information, and then use the information to draw conclusions. After the game, have the winner discuss strategies he/she used to choose the right answer.

(E) construct simple graphs, tables, maps, and charts using tools including computers to organize, examine, and evaluate information. CSI evidence is stored and organized meticulously (slides 7 and 36).

(4) Scientific processes. The student knows how to use a variety of tools and methods to conduct science inquiry. The student is expected to:

(A) collect and analyze information using tools including calculators, microscopes, cameras, sound recorders, computers, hand lenses, rulers, thermometers, compasses, balances, hot plates, meter sticks, timing devices, magnets, collecting nets, and safety goggles; Scientists have many different tools they use to obtain accurate information (slides 8-11, 24, and 34).

.§112.22. Science, Grade 6.

(2) Scientific processes. The student uses scientific inquiry methods during field and laboratory investigations. The student is expected to:

(A) plan and implement investigative procedures including asking questions, formulating testable hypotheses, and selecting and using equipment and technology; Take something that is always visible in the room and hide it, then let students know that something is missing. Ask them to come up with a plan to figure out what item is gone. Have them follow through their investigation by adhering to the Scientific Process.

(B) collect data by observing and measuring; CSI has all kinds of strategies and techniques for gaining information (slides 8-11, 24, 34).

(C) analyze and interpret information to construct reasonable explanations from direct and indirect evidence; CSI analyzes and interprets all of the evidence it obtains to figure out exactly what happened and to determine who was responsible (slide 3).

(D) communicate valid conclusions; A great way to enforce steps in the Scientific Process is to bring in games such as “Guess Who” or “Clue” to practice gathering information, and then use the information to draw conclusions. After the game, have the winner discuss strategies he/she used to choose the right answer.

(E) construct graphs, tables, maps, and charts using tools including computers to organize, examine, and evaluate data. CSI evidence is stored and organized meticulously (lides 7 and 36).

(4) Scientific processes. The student knows how to use a variety of tools and methods to conduct science inquiry. The student is expected to:

(A) collect, analyze, and record information using tools including beakers, petri dishes, meter sticks, graduated cylinders, weather instruments, timing devices, hot plates, test tubes, safety goggles, spring scales, magnets, balances, microscopes, telescopes, thermometers, calculators, field equipment, compasses, computers, and computer probes; Scientists have many different tools they use to obtain accurate information (slides 8-11, 24, and 34).

§112.23. Science, Grade 7.

(2) Scientific processes. The student uses scientific inquiry methods during field and laboratory investigations. The student is expected to:

(A) plan and implement investigative procedures including asking questions, formulating testable hypotheses, and selecting and using equipment and technology; Take something that is always visible in the room and hide it, then let students know that something is missing. Ask them to come up with a plan to figure out what item is gone. Have them follow through their investigation by adhering to the Scientific Process.

(B) collect data by observing and measuring; CSI has all kinds of strategies and techniques for gaining information (slides 8-11, 24, 34).

(C) organize, analyze, make inferences, and predict trends from direct and indirect evidence; CSI analyzes and interprets all of the evidence it obtains to figure out exactly what happened and to determine who was responsible (slide 3).

(D) communicate valid conclusions; A great way to enforce steps in the Scientific Process is to bring in games such as “Guess Who” or “Clue” to practice gathering information, and then use the information to draw conclusions. After the game, have the winner discuss strategies he/she used to choose the right answer.

(E) construct graphs, tables, maps, and charts using tools including computers to organize, examine, and evaluate data. CSI evidence is stored and organized meticulously (slides 7 and 36).

(4) Scientific processes. The student knows how to use tools and methods to conduct science inquiry. The student is expected to:

(A) collect, analyze, and record information to explain a phenomenon using tools including beakers, petri dishes, meter sticks, graduated cylinders, weather instruments, hot plates, dissecting equipment, test tubes, safety goggles, spring scales, balances, microscopes, telescopes, thermometers, calculators, field equipment, computers, computer probes, timing devices, magnets, and compasses; Scientists have many different tools they use to obtain accurate information (slides 8-11, 24, and 34).

§112.24. Science, Grade 8.

(2) Scientific processes. The student uses scientific inquiry methods during field and laboratory investigations. The student is expected to:

(A) plan and implement investigative procedures including asking questions, formulating testable hypotheses, and selecting and using equipment and technology; Take something that is always visible in the room and hide it, then let students know that something is missing. Ask them to come up with a plan to figure out what item is gone. Have them follow through their investigation by adhering to the Scientific Process.

(B) collect data by observing and measuring; CSI has all kinds of strategies and techniques for gaining information (slides 8-11, 24, 34).

(C) organize, analyze, evaluate, make inferences, and predict trends from direct and indirect evidence; CSI analyzes and interprets all of the evidence it obtains to figure out exactly what happened and to determine who was responsible (slide 3).

(D) communicate valid conclusions; A great way to enforce steps in the Scientific Process is to bring in games such as "Guess Who" or "Clue" to practice gathering information, and then use the information to draw conclusions. After the game, have the winner discuss strategies he/she used to choose the right answer.

(E) construct graphs, tables, maps, and charts using tools including computers to organize, examine, and evaluate data. CSI evidence is stored and organized meticulously (slides 7 and 36).

(4) Scientific processes. The student knows how to use a variety of tools and methods to conduct science inquiry. The student is expected to:

(A) collect, record, and analyze information using tools including beakers, petri dishes, meter sticks, graduated cylinders, weather instruments, hot plates, dissecting equipment, test tubes, safety goggles, spring scales, balances, microscopes, telescopes, thermometers, calculators, field equipment, computers, computer probes, water test kits, and timing devices; Scientists have many different tools they use to obtain accurate information (slides 8-11, 24, and 34).

112.42. Integrated Physics and Chemistry.

(2) Scientific processes. The student uses scientific methods during field and laboratory investigations. The student is expected to:

(A) plan and implement investigative procedures including asking questions, formulating testable hypotheses, and selecting equipment and technology; Make a list of the types of questions investigators have to ask in order to start their research. What type of procedures do they go through? (There are several procedures presented in the Powerpoint presentation – on slides 8-13, 15, 18, 25, 27, 34, 38 and 41).

(B) collect data and make measurements with precision; CSI has all kinds of strategies and techniques for gaining information (slides 8-11, 24, 34).

(C) organize, analyze, evaluate, make inferences, and predict trends from data; CSI evidence is stored and organized

meticulously (slides 7 and 36). They then analyze and interpret all of the evidence they obtain to figure out exactly what happened and to determine who was responsible (slide 3).

(D) communicate valid conclusions. In order to solve a case Investigators must draw a conclusion and then prove it. Play the game "Clue" and then discuss the strategies the winner took in order to draw the correct conclusions.

§112.43. Biology.

(2) Scientific processes. The student uses scientific methods during field and laboratory investigations. The student is expected to:

(A) plan and implement investigative procedures including asking questions, formulating testable hypotheses, and selecting equipment and technology; Make a list of the types of questions investigators have to ask in order to start their research. What type of procedures do they go through? (There are several procedures presented in the Powerpoint presentation – on slides 8-13, 15, 18, 25, 27, 34, 38 and 41).

(B) collect data and make measurements with precision; CSI has all kinds of strategies and techniques for gaining information (slides 8-11, 24, 34).

(C) organize, analyze, evaluate, make inferences, and predict trends from data; CSI evidence is stored and organized meticulously (slides 7 and 36). They then analyze and interpret all of the evidence they obtain to figure out exactly what happened and to determine who was responsible (slide 3).

(D) communicate valid conclusions. In order to solve a case Investigators must draw a conclusion and then prove it. Play the game "Clue" and then discuss the strategies the winner took in order to draw the correct conclusions.

(6) Science concepts. The student knows the structures and functions of nucleic acids in the mechanisms of genetics. The student is expected to:

(A) describe components of deoxyribonucleic acid (DNA), and illustrate how information for specifying the traits of an organism is carried in the DNA; There is a picture of the DNA strand and cell on slide 12.

§112.44. Environmental Systems.

(2) Scientific processes. The student uses scientific methods during field and laboratory investigations. The student is expected to:

(A) plan and implement investigative procedures including asking questions, formulating testable hypotheses, and selecting equipment and technology; Make a list of the types of questions investigators have to ask in order to start their research. What type of procedures do they go through? (There are several procedures presented in the Powerpoint presentation– on slides 8-13, 15, 18, 25, 27, 34, 38 and 41).

(B) collect data and make measurements with precision; CSI has all kinds of strategies and techniques for gaining information (slides 8-11, 24, 34).

(C) organize, analyze, evaluate, make inferences, and predict trends from data; CSI evidence is stored and organized meticulously (slides 7 and 36). They then analyze and interpret all of the evidence they obtain to figure out exactly what happened and to determine who was responsible (slide 3).

(D) communicate valid conclusions. In order to solve a case Investigators must draw a conclusion and then prove it. Play the game "Clue" and then discuss the strategies the winner took in order to draw the correct conclusions.

§112.45. Chemistry.

(2) Scientific processes. The student uses scientific methods during field and laboratory investigations. The student is expected to:

(A) plan and implement investigative procedures including asking questions, formulating testable hypotheses, and selecting equipment and technology; Make a list of the types of questions investigators have to ask in order to start their research. What type of procedures do they go through? (There are several procedures presented in the Powerpoint presentation– on slides 8-13, 15, 18, 25, 27, 34, 38 and 41).

(B) collect data and make measurements with precision; CSI has all kinds of strategies and techniques for gaining information (slides 8-11, 24, 34).

(D) organize, analyze, evaluate, make inferences, and predict trends from data; CSI evidence is stored and organized meticulously (slides 7 and 36). They then analyze and interpret all of the evidence they obtain to figure out exactly what happened and to determine who was responsible (slide 3).

(E) communicate valid conclusions. In order to solve a case Investigators must draw a conclusion and then prove it. Play the game “Clue” and then discuss the strategies the winner took in order to draw the correct conclusions.

§112.46. Aquatic Science.

(2) Scientific processes. The student uses scientific methods during field and laboratory investigations. The student is expected to:

(A) plan and implement investigative procedures including asking questions, formulating testable hypotheses, and selecting equipment and technology; Make a list of the types of questions investigators have to ask in order to start their research. What type of procedures do they go through? (There are several procedures presented in the Powerpoint presentation – on slides 8-13, 15, 18, 25, 27, 34, 38 and 41).

(B) collect data and make measurements with precision; CSI has all kinds of strategies and techniques for gaining information (slides 8-11, 24, 34).

(D) organize, analyze, evaluate, make inferences, and predict trends from data; CSI evidence is stored and organized meticulously (slides 7 and 36). They then analyze and interpret all of the evidence they obtain to figure out exactly what happened and to determine who was responsible (slide 3).

(E) communicate valid conclusions. In order to solve a case Investigators must draw a conclusion and then prove it. Play the game “Clue” and then discuss the strategies the winner took in order to draw the correct conclusions.

§112.47. Physics.

(2) Scientific processes. The student uses scientific methods during field and laboratory investigations. The student is expected to:

(A) plan and implement experimental procedures including asking questions, formulating testable hypotheses, and selecting equipment and technology; Make a list of the types of questions investigators have to ask in order to start their research. What type of procedures do they go through? (There are several procedures presented in the Powerpoint presentation– on slides 8-13, 15, 18, 25, 27, 34, 38 and 41).

(B) make quantitative observations and measurements with precision; CSI has all kinds of strategies and techniques for gaining information (slides 8-11, 24, 34).

(C) organize, analyze, evaluate, make inferences, and predict trends from data; CSI evidence is stored and organized meticulously (slides 7 and 36). They then analyze and interpret all of the evidence they obtain to figure out exactly what happened and to determine who was responsible (slide 3).

(D) communicate valid conclusions; In order to solve a case Investigators must draw a conclusion and then prove it. Play the game "Clue" and then discuss the strategies the winner took in order to draw the correct conclusions.

§112.48. Astronomy.

(2) Scientific processes. The student uses scientific methods during field and laboratory investigations. The student is expected to:

(A) plan and implement investigative procedures including asking questions, formulating testable hypotheses, and selecting equipment and technology; Make a list of the types of questions investigators have to ask in order to start their research. What type of procedures do they go through? (There are several procedures presented in the Powerpoint presentation– on slides 8-13, 15, 18, 25, 27, 34, 38 and 41).

(B) collect data and make measurements with precision; CSI has all kinds of strategies and techniques for gaining information (slides 8-11, 24, 34).

(C) organize, analyze, evaluate, make inferences, and predict trends from data; CSI evidence is stored and organized meticulously (slides 7 and 36). They then analyze and interpret all of the evidence they obtain to figure out exactly what happened and to determine who was responsible (slide 3).

(D) communicate valid conclusions. In order to solve a case Investigators must draw a conclusion and then prove it. Play the game "Clue" and then discuss the strategies the winner took in order to draw the correct conclusions.

§112.49. Geology, Meteorology, and Oceanography.

(2) Scientific processes. The student uses scientific methods during field and laboratory investigations. The student is expected to:

(A) plan and implement investigative procedures including asking questions, formulating testable hypotheses, and selecting equipment and technology; Make a list of the types of questions investigators have to ask in order to start their research. What type of procedures do they go through? (There are several procedures presented in the Powerpoint presentation – on slides 8-13, 15, 18, 25, 27, 34, 38 and 41).

(B) collect data and make measurements with precision; CSI has all kinds of strategies and techniques for gaining information (slides 8-11, 24, 34).

(C) organize, analyze, evaluate, make inferences, and predict trends from data; CSI evidence is stored and organized meticulously (slides 7 and 36). They then analyze and interpret all of the evidence they obtain to figure out exactly what happened and to determine who was responsible (slide 3).

(D) communicate valid conclusions. In order to solve a case Investigators must draw a conclusion and then prove it. Play the game “Clue” and then discuss the strategies the winner took in order to draw the correct conclusions.