Iowa Core Curriculum
K–12 Mathematics

Essential Skills in a World-Class Curriculum in Mathematics

Students need powerful skills to be successful in the globally competitive workforce of the 21st century. Business and industry demand workers who can solve problems, work in teams, and are able to apply learning to new and changing situations, especially as workers change jobs and careers many times in their lifetimes. Therefore, students must acquire powerful, flexible, and widely-applicable mathematical skills by the time they graduate from high school. Many such skills have been discussed in surveys of businesses (e.g., SCANS 1991, NCEE 2006) and in the NCTM Process Standards (NCTM 2000). The skills identified here are taken substantively from the NCTM Process Standards.

Essential Skills in a World-Class Mathematics Curriculum

- Problem Solving
- Communication
- Reasoning and Proof
- Ability to Recognize, Make, and Apply Connections
- Ability to Construct and Apply Multiple Connected Representations

Problem Solving

All students should be able to:

- Build new mathematical knowledge through problem solving
- Solve problems that arise in mathematics and in other contexts
- Apply and adapt a variety of appropriate strategies to solve problems
- Monitor and reflect on the process of mathematical problem solving

"Problem solving means engaging in a task for which the solution method is not known in advance. In order to find a solution, students must draw on their knowledge, and through this process, they will often develop new mathematical understandings. Solving problems is not only a goal of learning mathematics but also a major means of doing so. Students should have frequent opportunities to formulate, grapple with, and solve complex problems that require a significant amount of effort and should then be encouraged to reflect on their thinking. By learning problem solving in mathematics, students should acquire ways of thinking, habits of persistence and curiosity, and confidence in unfamiliar situations that will serve them well outside the mathematics classroom. In everyday life and in the workplace, being a good problem solver can lead to great advantages." (NCTM, 2000, p. 52)

Implications for Curriculum, Instruction, and Assessment

Problem solving is not just a skill that all students must develop; it is also the means for effectively teaching and learning mathematics. Problem-based instructional tasks should be used in the classroom to teach important mathematics. These tasks should be chosen carefully, addressing real-world problems that allow students to have multiple ways to solve the problems, centered on an important mathematical idea, concept, or skill that is part of a course of study. These tasks should encourage the connection across curricular strands of mathematics. Teachers should choose tasks that require a high level of cognitive demand to promote the development of a deep knowledge of mathematics. Assessments designed to check for understanding should allow for problem solving to be demonstrated. Assessments should focus on the process of solving the problems as well as on correct solutions. (Adapted from *Teaching Mathematics through Problem Solving,* Schoen, NCTM, 2003)

"Problem solving is an integral part of all mathematics learning, and so it should not be an isolated part of the mathematics program. Problem solving in mathematics should involve all [mathematical strands]. The contexts of the problems can vary from familiar experiences involving students' lives or the school day to applications involving the sciences or the world of work. Good problems will integrate multiple topics and will involve significant mathematics." (NCTM, 2000, p. 52)

Communication (Reading, Writing, Speaking, Listening, Viewing)

All students should be able to:

- Organize and consolidate their mathematical thinking through communication
- Communicate their mathematical thinking coherently and clearly to peers, teachers, and others
- Analyze and evaluate the mathematical thinking and strategies of others
- Use the language of mathematics to express mathematical ideas precisely

Changes in the workplace increasingly demand teamwork, collaboration, and communication. To be prepared for the future, students must be able to communicate mathematical ideas effectively. As students interact with their classmates, teachers, and others, opportunities arise for exchanging and reflecting on ideas; hence, communication is a fundamental element of mathematics learning. Listening to others' explanations gives students opportunities to develop their own understandings. Students should be able to formulate ideas to share information or arguments to convince others. As students develop clearer and more-coherent communication (using verbal explanations and appropriate mathematical notation and representations), they will become better mathematical thinkers. (Adapted from NCTM, 2000)

Implications for Curriculum, Instruction, and Assessment

Communication should be addressed throughout curriculum, instruction, and assessment. The curriculum materials used in a classroom should reflect this emphasis on communication by providing lessons that promote student-to-student, student-to-teacher, and teacher-to-student communication. Instructional practices should provide opportunities for students to communicate with each other as they study mathematics in the classroom. Teachers should act as facilitators for learning, encouraging student discourse. In doing this, students should be encouraged to explain their thinking and listen to each other as they solve problems.

"Students who have opportunities, encouragement, and support for speaking, writing, reading, and listening in mathematics classes reap dual benefits: they communicate to learn mathematics, and they learn to communicate mathematically. … Students need to work with mathematical tasks that are worthwhile topics of discussion. Procedural tasks for which students are expected to have well-developed algorithmic approaches are usually not good candidates for such discourse. Interesting problems that 'go somewhere' mathematically can often be catalysts for rich conversations." (NCTM, 2000, p. 60)

The students' ability to communicate is vital to assessing their mathematical understanding. Students' understanding should be assessed through the use of good questions that promote the need for communication among students. Assessments in the mathematics classroom should include open-ended questions as well as peer and self-assessment. Assessments should ask students to describe and explain mathematical concepts and methods in multiple ways (with multiple representations) to demonstrate deep understanding.

Reasoning and Proof

All students should be able to:

- Reason in a wide range of mathematical and applied settings
- Recognize reasoning and proof as fundamental aspects of mathematics
- Make and investigate mathematical conjectures
- Develop and evaluate mathematical arguments and proof
- Select and use various types of reasoning and methods of proof

"Being able to reason is essential to understanding mathematics. By developing ideas, exploring phenomena, justifying results, and using mathematical conjectures in all content areas and—with different expectations of sophistication—at all grade levels, students should see and expect that mathematics makes sense. Building on the considerable reasoning skills that children bring to school, teachers can help students learn what mathematical reasoning entails. By the end of secondary school, students should be able to understand and produce mathematical proofs—arguments consisting of logically

rigorous deductions of conclusions from hypotheses—and should appreciate the value of such arguments." (NCTM, 2000, p. 56)

Implications for Curriculum, Instruction, and Assessment
Reasoning and proof should be addressed throughout curriculum, instruction, and assessment. These skills should be taught as an integral part of classroom instruction in all areas of mathematics. As the context for reasoning and proof, teachers should choose problems rich in mathematical content and accessible and challenging to all students. Students build confidence in their abilities to develop and defend their own arguments as they solve problems in a classroom environment that supports questioning, discussion, and listening. In such a supportive, inquiry-based classroom environment students will use their mathematical knowledge to make conjectures about problems. Students will analyze various approaches to investigate their conjectures. They will develop a carefully reasoned mathematical argument to support their conclusion. This justification of their conjecture will be communicated through interactions with classmates and teacher and validated against conventional arguments.

"Reasoning and proof cannot simply be taught in a single unit on logic, for example, or by "doing proofs" in geometry. Proof is a very difficult area for undergraduate mathematics students. Perhaps students at the postsecondary level find proof so difficult because their only experience in writing proofs has been in a high school geometry course, so they have a limited perspective (Moore 1994). Reasoning and proof should be a consistent part of students' mathematical experience in prekindergarten through grade 12. Reasoning mathematically is a habit of mind, and like all habits, it must be developed through consistent use in many contexts." (NCTM, 2000, p. 56)

Connections
All students should be able to:

- Recognize and use connections among mathematical ideas
- Understand how mathematical ideas interconnect and build on one another to produce a coherent whole
- Recognize and apply mathematics in contexts outside of mathematics

When students are able to see the connections across different mathematical content areas, they develop a view of mathematics as an integrated whole. As students build on their previous mathematical understandings while learning new concepts, students become increasingly aware of the connections among various mathematical topics. This focus on connections while learning mathematics develops students' ability to recognize, make, and apply connections more generally. (Adapted from NCTM, 2000)

Implications for Curriculum, Instruction, and Assessment
"As the Learning Principle [in NCTM's *Principles and Standards*] emphasizes, understanding involves making connections" (NCTM, 2000, p. 64). A connected

and coherent mathematics curriculum helps students make connections across the strands of mathematics. Problem-based instructional tasks provide connections to other disciplines and to the real world. Instruction should emphasize important mathematics across and within the disciplines. Questions should be posed that encourage students to make connections, including connections to their previous mathematical knowledge.

Representation

All students should be able to:

- Create and use representations to organize, record, and communicate mathematical ideas
- Select, apply, and translate among mathematical representations to solve problems
- Use representations to model and interpret physical, social, and mathematical phenomena

"The ways in which mathematical ideas are represented is fundamental to how people can understand and use those ideas. When students gain access to mathematical representations and the ideas they represent, they have a set of tools that significantly expand their capacity to think mathematically" (NCTM, 2000, p. 67). Students should be able to choose appropriate representations in order to gain particular insights or achieve particular ends. Students should understand that different representations represent different ways of thinking about and manipulating mathematical objects. An object can be better understood when viewed through multiple lenses. As students encounter new representations for mathematical concepts, they need to be able to convert flexibly among those representations. (Adapted from NCTM, 2000)

<u>Implications for Curriculum, Instruction, and Assessment</u>

Teachers should introduce students to multiple connected mathematical representations and help them use those representations effectively. They should highlight ways in which different representations can convey different information and emphasize the importance of selecting representations suited to the particular mathematical tasks at hand. Assessments should allow for students to have choices when representing problems and solutions. Students should be encouraged to evaluate which representation is best to use when solving a problem or investigating a mathematical idea. (Adapted from NCTM, 2000)

"Representations should be treated as essential elements in supporting students' understanding of mathematical concepts and relationships; in communicating mathematical approaches, arguments, and understandings to one's self and to others; in recognizing connections among related mathematical concepts; and in applying mathematics to realistic problem situations through modeling. New forms of representation associated with electronic technology create a need for even greater instructional attention to representation." (NCTM, 2000, p. 67)

Essential Concepts and Skill Sets of the Iowa Core Curriculum

Social Studies

Grades K - 8

Introduction

Social studies is the integrated study of the social sciences and humanities to promote civic competence. Within the school program, social studies provides coordinated, systematic study drawing upon such disciplines as anthropology, archaeology, economics, geography, history, law, philosophy, political science, psychology, religion, and sociology, as well as appropriate content from the humanities, mathematics, and natural sciences. The primary purpose of social studies is to help young people develop the ability to make informed and reasoned decisions for the public good as citizens of a culturally diverse, democratic society in an interdependent world.

Definition of Social Studies
National Council for the Social Studies (NCSS)

The founders of our country emphasized that the vitality and security of a democracy depends upon the education and willingness of its citizens to participate actively in society. This level of participation requires civic competence. In other words, it is imperative that our future generations gain an understanding of the core concepts of social studies. Life in the United States within our democratic system is constantly changing which creates varying social circumstances. As a result, citizens need to adapt to such changes in order to sustain vital democratic traditions. Meeting this need is the mission of social studies.

In social studies, students develop knowledge, skills and dispositions including but not limited to:

- basic knowledge and ways of thinking drawn from many academic disciplines,
- expressing ideas in written form,
- reading reflectively and critically,
- analyzing their own and others' opinions on social issues,
- becoming motivated to participate in civic and community life as active and informed citizens.

As we work to carry on the ideals of the founders, we are compelled to revisit our fundamental beliefs and institutions and to construct new social contexts and relationships.

The Iowa Social Studies Core Curriculum reflects the belief that the informed social studies student comprehends and applies to personal and public experiences the core content perspectives of the many academic fields of the social studies. Our entire social experiences, as well as our republic, are established upon the principles of individual citizenship. Therefore, it is necessary that attention be paid to the education of those future citizens.

The Iowa Social Studies Core Curriculum has been structured around five core social studies content areas. They are:

- Behavioral Sciences
- Economics
- Geography
- History
- Political Science/Civic Literacy

For each area, knowledge and skills have been identified and defined in terms of detailed understandings that students should be able to apply. It is of key importance that students possess the knowledge and skills associated with the economic, political, and social forces that make up the human systems in which they live. In addition, they must possess the historical knowledge, which created the spatial, temporal and cultural perspectives present in our world.

This document is premised upon a rigorous and relevant K-12 social studies program. Engaging students in the pursuit of active informed citizenship will require a broad range of understandings and skills. It will also require an articulated curriculum which connects student to the social world through informed instructional experiences led by teachers who are committed to active civic participation. This document represents a bold step toward a vision of social and civic literacy for all of Iowa's students.

Primary Elementary Grades

Curricular Area	Essential Concept or Skill Set
Behavioral Sciences	Understand the changing nature of society.
	Understand all people have individual traits.
	Understand interactions between self and the peer group.
	Understand the relationship of the individual to the components of society and culture.
Economics	Understand the role of scarcity and economic trade-offs and how economic conditions impact people's lives.
	Understand that the basic nature of economics is an exchange of resources.
	Understand how governments throughout the world influence economic behavior.
	Understand people in all parts of the world trade with one another.
	Understand that changes in technology impact individuals and society.
	Understand the universal economic concept of needs and wants.
Geography	Understand the use of geographic tools to locate and analyze information about people, places, and environments.
	Understand how geographic and human characteristics create culture and define regions.
	Understand how human factors and the distribution of resources affect the development of communities and the movement of populations.
	Understand how geographic processes and human actions modify the environment and how the environment affects humans.
History	Understand people construct knowledge of the past from multiple and various types of sources.
	Understand how and why people create and participate in governance.
	Understand culture and cultural diffusion affects the development and maintenance of societies.
	Understand individuals and groups within a society may promote change or the status quo.
	Understand economic needs and wants affect individual and group decisions.
	Understand relationships between geography and historical events.
	Understand cause and effect relationships and other historical thinking skills in order to interpret events and issues.

Political Science/Civic Literacy	Understand the basic concepts of government and democracy and that the U.S. Constitution defines the rights and responsibilities of citizens.
	Understand how government affects citizens and how citizens affect government.
	Understand the United States has a role in current world affairs.

Intermediate Elementary Grades

Curricular Area	Essential Concept or Skill Set
Behavioral Sciences	Understand the changing nature of society.
	Understand the influences on individual and group behavior and group decision making.
	Understand how personality and socialization impact the individual.
	Understand the process of how humans develop, learn, adapt to the environment, and internalize their culture.
	Understand current social issues to determine how the individual formulates opinions and responds to issues.
	Understand how to evaluate social research and information.
Economics	Understand the role of scarcity and economic trade-offs and how economic conditions impact people's lives.
	Understand the functions of economic institutions
	Understand how governments throughout the world influence economic behavior.
	Understand factors that create patterns of interdependence in the world economy.
	Understand that advancing technologies impact the global economy.
	Understand that all economies throughout the world rely upon universal concepts.
Geography	Understand the use of geographic tools to locate and analyze information about people, places, and environments.
	Understand how geographic and human characteristics create culture and define regions.
	Understand how human factors and the distribution of resources affect the development society and the movement of populations.
	Understand how physical processes and human actions modify the environment and how the environment affects humans.

History	Understand historical patterns, periods of time, and the relationships among these elements.
	Understand how and why people create, maintain, or change systems of power, authority, and governance.
	Understand the role of culture and cultural diffusion on the development and maintenance of societies.
	Understand the role of individuals and groups within a society as promoters of change or the status quo.
	Understand the effect of economic needs and wants on individual and group decisions.
	Understand the effects of geographic factors on historical events.
	Understand the role of innovation on the development and interaction of societies.
	Understand cause and effect relationships and other historical thinking skills in order to interpret events and issues.
Political Science/Civic Literacy	Understand the rights and responsibilities of each citizen and demonstrate the value of lifelong civic action.
	Understand how the government established by the Constitution embodies the enduring values and principles of democracy and republicanism.
	Understand the purpose and function of each of the three branches of government established by the U.S. Constitution.
	Understand the differences among local, state, and national government.
	Understand the role of the United States in current world affairs.

Middle School

Curricular Area	Essential Concept or Skill Set
Behavioral Sciences	Understand the changing nature of society.
	Understand how personality and external social forces impact the individual.
	Understand the influences on individual and group behavior and group decision making.
	Understand the process of how humans develop, learn, adapt to the environment, and internalize their culture.
	Understand current social issues to determine how the individual is able to formulate opinions and respond to those issues.
	Understand how to evaluate social research and information.

Economics	Understand the role of scarcity and economic trade-offs and how economic conditions impact people's lives.
	Understand the functions of economic institutions.
	Understand how governments throughout the world influence economic behavior.
	Understand factors that create patterns of interdependence in the world economy.
	Understand the impact of advancing technologies on the global economy.
	Understand how universal economic concepts present themselves in various types of economies throughout the world.
	Understand the function of common financial instruments.
Geography	Understand the use of geographic tools to locate and analyze information about people, places, and environments.
	Understand how geographic and human characteristics create culture and define regions.
	Understand how human factors and the distribution of resources affect the development society and the movement of populations.
	Understand how physical processes and human actions modify the environment and how the environment affects humans.
History	Understand historical patterns, periods of time, and the relationships among these elements.
	Understand how and why people create, maintain, or change systems of power, authority, and governance.
	Understand the role of culture and cultural diffusion on the development and maintenance of societies.
	Understand the role of individuals and groups within a society as promoters of change or the status quo.
	Understand the effect of economic needs and wants on individual and group decisions.
	Understand the effects of geographic factors on historical events.
	Understand the role of innovation on the development and interaction of societies.
	Understand cause and effect relationships and other historical thinking skills in order to interpret events and issues.

Political Science/Civic Literacy	Understand the rights and responsibilities of each citizen and demonstrate the value of lifelong civic action.
	Understand how the government established by the Constitution embodies the principles of democracy.
	Understand the purpose and function of each of the three branches of government established by the U.S. Constitution.
	Understand the similarities and differences among the complex levels of local, state, and national government.
	Understand strategies for effective political action that impacts local, state, and national governance.
	Understand how laws are established at the local, state, and national levels.
	Understand how various political systems throughout the world define the rights and responsibilities of the individual.
	Understand the role of the United States in current world affairs.

Essential Concepts and Skill Sets of the Iowa Core Curriculum

21st Century Skills

Grades K - 8

Introduction

Each Iowa student must graduate with the 21st century skills necessary for a productive and satisfying life in a global knowledge-based environment. Descriptions of the new global reality are plentiful and the need for new 21st century skills in an increasingly complex environment is well documented. In one form or another, authors cite (1) the globalization of economics; (2) the explosion of scientific and technological knowledge; (3) the increasingly international dimensions of the issues we face, (i.e. global warming and pandemic diseases); and (4) changing demographics as the major trends that have resulted in a future world much different from the one that many of us faced when we graduated from high school (Friedman, 2005 and Stewart, 2007). The trends are very clear that each Iowa student will need essential 21st century skills to lead satisfying lives in this current reality.

As Ken Kay, president of the *Partnership for 21st Century Skills*, stated, the 21st century skills set "is the ticket to economic upward mobility in the new economy" (Gewertz, 2007). Our world economy has evolved from an industrial era to an information era and is now on the way to the creativity era, while at the same time our schools are stagnant in the industrial model. The 21st century skills are key elements in supporting our youth not only in surviving but excelling in the new global environment.

> "It is a world in which comfort with ideas and abstractions is the passport to a good job, in which creativity and innovation are the keys to the good life, in which high levels of education – a very different kind of education than most of us have had – are going to be the only security there is."
>
> *-New Commission on the Skills of the American Workforce, 2006*

The *Framework for 21st Century Learning* stated, "We believe schools must move beyond a focus on basic competency in core subjects to promoting understanding of academic content at much higher levels by weaving 21st century interdisciplinary themes into core subjects" (2007). 21st century skills bridge the knowledge, skills, and dispositions of students from the core academic areas to real life applications. Robert Sternberg described the necessity for 21st century skills when he stated, "…When we teach only for facts, rather than for how to go beyond facts, we teach students how to get out of date… " (2008).

Descriptions of what constitute essential 21st century skills are plentiful as well. In the 2007 legislative session, the Iowa Legislature established the Iowa 21st century skills framework as

(1) employability skills
(2) financial literacy
(3) health literacy
(4) technology literacy
(5) civic literacy

Within this 21st century skill framework we must identify common strands, or learning skills that will allow students to thrive in the world of work and to be productive citizens. Tony Wagner, Harvard Graduate School of Education, labels these "survival skills" as (1) critical thinking and problem solving; (2) collaboration and leadership; (3) agility and adaptability; (4) initiative and entrepreneurialism; (5) effective oral and written communication; (6) accessing and analyzing information; and (7) curiosity and imagination. Wagner proposes that schools use academic content to teach these skills at every grade level, and be accountable for a new standard of rigor. (Wagner, 2008.)

The development of the Iowa 21st century essential concepts and skills was a collaborative process engaging the expertise of p – 16 educators, business, and industry representatives. Sources used for this work included the *Framework for 21st Century Learning*, from the Partnership for 21st Century Skills, enGauge, and the 1991 SCANS report, *What Work Requires of Schools*. The committee surveyed the literature and endeavored to bring together the common elements of these frameworks. The members outlined the concepts, dispositions and habits of mind believed essential for success in the 21st century.

The reality of building capacity for the 21st century is that we do not know what the work of the future will be like (Darling-Hammond, 2007) or how technology will influence health, or the balance of financial issues. The challenge is to prepare students to think critically, to engage in mental activity or habits of mind, that "…use facts to plan, order, and work toward an end; seek meaning or explanations; to be self-reflective; and use reason to question claims and make judgments…" (Noddings, 2008). It may be that our task is not only to prepare students to "fit into the future" but to shape it. "…If the complex questions of the future are to be determined… by human beings… making one choice rather than another, we should educate youths - all of them - to join in the conversation about those choices and to influence that future…" (Meier, 2008)

Primary Elementary Grades

Curricular Area	Essential Concept or Skill Set
Financial Literacy	Demonstrate the ability to set goals based on wants and needs.
	Identify monetary resources and distribution options for those resources.
	Demonstrate an understanding of the concept of credit.
	Develop awareness that each person has an identity.
	Recognize various ways to save and the reasons individuals decide to save.
	Distinguish between appropriate spending choices.

Illustration of ***Demonstrate the ability to set goals based on wants and needs*** in the ICLE's Rigor and Relevance Framework

Quadrant C The student will compare characteristics of wants and needs. Each student will create a chart to represent three ways that they are the same and three ways that they are different.	Quadrant D Students will interview 2 family members or neighbors to determine their top 2 wants and needs. They will compare the responses and explain why the lists might be similar or different from personal wants and needs.
Quadrant A Each student will define wants and give three examples and define needs and give three examples.	Quadrant B Each student will sort pictures cards into categories of personal wants and needs. She/He will select the most important want and need in their life right now.

Health Literacy	Understand and use basic health concepts to enhance personal, family, and community health.
	Understand and use interactive literacy and social skills to enhance personal, family, and community health.
	Recognize critical literacy/thinking skills related to personal, family and community wellness.
	Identify influences that affect personal health and the health of others.
	Demonstrate behaviors that foster healthy, active lifestyles for individuals and the benefit of society.

Illustration of ***Understand and use basic health concepts to enhance personal, family, and community health*** in the ICLE's Rigor and Relevance Framework

Quadrant C Working in cooperative groups, students will create a list of responses to stressful life events. Students will distinguish between positive and negative stress management strategies. Each small group will develop skits that model positive stress management strategies to share with classmates.	**Quadrant D** Each student will interview family members about stress management strategies that are typically practiced. Students will develop a communication tool (ie: brochure, poster, flier, etc.) that could be posted at home to remind family members of positive stress management strategies.
Quadrant A Students will view and discuss a teacher demonstration explaining the concept of stress.	**Quadrant B** As a class students will discuss personal stressors and strategies for managing personal stress.

Technology Literacy	Use technology to create projects, identify patterns, and make predictions.
	Use a variety of technology tools and media-rich resources to work collaboratively with others.
	Utilize predetermined digital resources and tools to answer questions or solve problems.
	Use technological resources to investigate given questions or problems.
	Understand and practice appropriate and safe uses of technology.
	Understand basic technology hardware and software and their application.

Illustration of ***Apply predetermined digital resources and tools to answer questions or solve problems*** in the ICLE's Rigor and Relevance Framework

The community is examining the possibility of building a new zoo in their town. They want the students to provide information on which animals the children of the community think should be included in the zoo.

Quadrant C Groups are assigned a traditional zoo animal. Using a variety of resources, both print and digital, each group researches the given animal and it's habitat. Create a description of the animal, what it's habitat should include, and why the animal is a good choice for the new zoo.	**Quadrant D** As a group, chose an animal to be included in the new zoo. Learn about the animal. Compose a description of why it would be a good choice for the zoo. Design a habitat, either on paper, with a drawing program, or in a 3D format (diarama), for the animal to live in at the zoo. Be sure to include all the things in the habitat the animal will need to survive. Also include any special requirements that might be necessary for viewing the animal at the zoo (an aquarium, an enclosed cage, etc.)
Quadrant A Using a variety of print and digital resources provided by the teacher, research an animal and write a report about the animal that could be included in the zoo. The report includes predetermined information.	**Quadrant B** Using a variety of print and digital resources provided by the teacher, research an animal of choice and create a product to demonstrate what has been learned about the animal and why it would be a good choice for the zoo.

Employability	Communicate and work appropriately with others to complete tasks.
	Recognizes different roles and responsibilities and is open to change.
	Learn leadership skills and demonstrate integrity, ethical behavior, and social responsibility.
	Develop initiative and demonstrate self-direction in activities.
	Work productively and are accountable for their actions.

Illustration of ***Learn leadership skills and demonstrate integrity, ethical behavior, and social responsibility*** in the ICLE's Rigor and Relevance Framework

Quadrant C The class will analyze a list of characteristics of class pets and their care and decide which animal would make the best pet. Students will design a poster to tell others about the pet and how to treat animals. The teacher will lead a discussion on comparing and contrasting how to treat all living things.	**Quadrant D** Given the idea of a class pet the students will conduct research and evaluate which pet would be the best to have. Using the pet of their choice they will research how to treat living things and how to care responsibly for their pet. Students will be given opportunities to demonstrate being responsible for caring for the class pet. The students will create a chart to record caretaking activities.
Quadrant A The students are told they are getting a class pet. The teacher will present information on the care of rabbits and how to treat living things. The students will answer questions based on information they learned including being responsible and treating animals appropriately and with respect.	**Quadrant B** Choosing an animal the student likes, the student will make a list of what they know about that animal and how animals should be treated. The students will write in a journal how to be responsible for an animal and how they would care for a class pet.

Intermediate Elementary Grades

Curricular Area	Essential Concept or Skill Set
Financial Literacy	Create long and short term goals based on a prioritization of wants and needs.
	Recognize how one's personal career choice and attitude can impact financial planning decisions.
	Identify the concept of debt and an individual's responsibility for that debt.
	Recognize common risks to one's identity and demonstrate the ability to protect that identity.
	Determine the importance of saving/investing in relation to future needs.
	Recognize that spending choices differ between groups of people and settings.

Illustration of ***Recognize common risks to an identity and the need to protect one's identity*** in the ICLE's Rigor and Relevance Framework

Quadrant C After looking at the many ways an identity can be stolen, draw a picture or cartoon representation of how people can protect their identity.	Quadrant D Since much of identity theft occurs through discarded mail or receipts, develop a persuasive speech to convince your family members to properly dispose of personal documents. Create a poster to support the speech that can be displayed in your home.
Quadrant A Explain what an identity is and why it should be protected.	Quadrant B Complete an Internet search regarding identity theft. Make a chart of the different ways an identity can be stolen and the areas where you see your family or people you know are negligent in protecting their identity.

Health Literacy	Obtain, interpret, understand and use basic health concepts to enhance personal, family, and community health.
	Utilize interactive literacy and social skills to establish personal family, and community health goals.
	Demonstrate critical literacy/thinking skills related to personal, family, and community wellness.
	Recognize that media and other influences affect personal, family and community health.
	Demonstrate behaviors that foster healthy, active lifestyles for individuals and the benefit of society.

Illustration of **Utilize interactive literacy and social skills to establish personal family, and community health goals** in the ICLE's Rigor and Relevance Framework

Quadrant C The students will work in cooperative groups to create "conflict" scenarios. The students will develop a script for the scenario that demonstrates the steps of conflict resolution. The student will videotape the scripted conflicts to share with other classes.	**Quadrant D** Students will serve as trained conflict managers for younger students, modeling the resolution process and guiding younger students to an agreeable solution.
Quadrant A The students will discuss the specific steps of conflict resolution.	**Quadrant B** Working in small groups, the students will demonstrate knowledge of conflict resolution strategies by role-playing teacher created scenarios based upon playground and principal referrals.

Technology Literacy	Use technology resources to create original products, identify patterns and problems, make predictions, and propose solutions.
	Use interactive technologies in a collaborative group to produce digital presentations or products in a curricular area.
	Utilize digital tools and resources to investigate real-world issues, answer questions, or solve problems.
	Use technological resources to develop and refine questions for investigation.
	Understand and practice appropriate, legal, and safe uses of technology for lifelong learning.
	Understand technology hardware and software system operations and their application.

Illustration of ***Use technology resources to create original products, identify patterns and problems, make predictions, and propose solutions*** in the ICLE's Rigor and Relevance Framework

Quadrant C Choose two music-making technology tools and compare and contrast their uses. Identify the strengths and weaknesses of each.	**Quadrant D** Choose a music-making technology tool to create an original composition or live performance to share with the class.
Quadrant A Given a list of music-making technology tools, students will look up information online, write a report using text, images, and links to online sources.	**Quadrant B** Conduct a survey of students to identify and report what tools they use to create music (i.e., *Guitar Hero*, *Garage Band*). Using technology, create a chart to show the data

Employability	Communicate and work productively with others emphasizing collaboration and cultural awareness to produce quality work.
	Adjust to various roles and responsibilities and understand the need to be flexible to change
	Practice leadership skills, and demonstrate integrity, ethical behavior, and social responsibility in all activities.
	Demonstrate initiative, creativity, self-direction, and entrepreneurial thinking to produce successful outcomes.
	Demonstrates productivity and accountability by producing quality work.

Illustration of ***Demonstrates productivity and accountability by producing quality work*** in the ICLE's Rigor and Relevance Framework

Quadrant C Students will apply a rubric instrument created by project/display evaluators to others' projects/displays, supplying constructive comments and recommendations for improvements.	**Quadrant D** Students will create and publish a workable rubric instrument that could be used to evaluate work completed by a worker in a specific career area chosen by the student. Students will be prepared to present and discuss the importance of each of the performance areas addressed in the rubric.
Quadrant A Students will produce a list and describe qualities that would make a project or display outstanding.	**Quadrant B** Students will choose a career area that interests them, and produce a list of skills, habits, and duties that assure success in that career area.

Middle School

Curricular Area	Essential Concept or Skill Set
Financial Literacy	Model the process of financial planning based on personal prioritization of wants and needs.
	Create an effective spending plan using informed decision-making skills.
	Recognize appropriate uses of credit and its impact on an individual's financial security.
	Evaluate various risks to personal identity and create a plan for ongoing protection.
	Evaluate possible options for investing as a means to attain one's goals.
	Demonstrate ethical financial decision making skills and assess how these decisions might impact the broader community.

Illustration of ***Recognize appropriate uses of credit and its impact on an individual's financial security*** in the ICLE's Rigor and Relevance Framework

Quadrant C Select an item with its identified cost from a list. Determine the final cost of the item if a credit card is used and only a minimum balance is paid monthly. How long would it take to pay off the balance? Write a justification for using this method, not using credit at all, or for using the credit method and paying more than the minimum amount due.	**Quadrant D** Identify an item you would like to have--one where using credit would be appropriate. Select 3 credit sources and compare the amount needed to pay off the debt using each source. Determine which credit source you feel would be best for your situation and assess the long-term impact on your financial situation. Rank the importance of this purchase against other needs and wants that you have.
Quadrant A From a list of expenditures, select two and explain how credit could be used to purchase both (credit card, on account, loan, etc.)	**Quadrant B** Select an item you would like to have that costs more than you have. List possible sources of funding and give the pros and cons of each source. Identify which source would be the easiest to pay off and why.

Health Literacy	Demonstrate functional health literacy skills to obtain, interpret, understand and use basic health concepts to enhance personal, family and community health.
	Utilize interactive literacy and social skills to establish personal, family, and community health goals.
	Apply critical literacy/thinking skills related to personal, family and community wellness.
	Employ media literacy skills to analyze media and other influences to effectively manage personal, family and community health situations.
	Demonstrate behaviors that foster healthy, active lifestyles for individuals and the benefit of society.

Illustration of ***Use media literacy skills to analyze media and other influences to effectively manage health risk situations*** in the ICLE's Rigor and Relevance Framework

Quadrant C The student will select one print advertisement or commercial that encourages unhealthy behavior. S(He) will compose a letter to the company that produces the product promoted in the ad. The letter will minimally include a justification of three reasons to request the ad or commercial be taken off the market.	**Quadrant D** Each student will create either a health related print advertisement or commercial utilizing at least one advertisement technique. The ad or commercial must encourage middle school students to engage in a health enhancing behavior. Ads will be posted throughout the school and commercials viewed during homeroom and shared with elementary classes.
Quadrant A The student will be provided materials to view and define print examples of various media techniques used to influence consumers.	**Quadrant B** Student will bring a favorite magazine to critique health related magazine advertisements and commercials. The students will consider the following criteria: •Describe the ad/commercial •State the advertising technique(s) used •Identify the target audience •Discuss the effectiveness of the ad/commercial

Technology Literacy	Demonstrate creative thinking in the design and development of innovative technology products and problem solving.
	Collaborate with peers, experts, and others using interactive technology.
	Plan strategies utilizing digital tools to gather, evaluate, and use information.
	Use critical thinking skills to conduct research, solve problems, and make informed decisions using appropriate technological tools and resources.
	Understand the legal and ethical issues of technology as related to individuals, cultures, and societies.
	Understand the underlying structure and application of technology systems.

Illustration of ***Understand the underlying structure of technology systems in order to apply technology in various situations*** in the ICLE's Rigor and Relevance Framework

Quadrant C Use a CADD program to design a piece of wooden furniture, providing sufficient details for a carpenter to construction the furniture item.	**Quadrant D** In a group, design a self-sufficient space colony that can support a population of 1000 humans. Use CADD software to design a 3-D model of the colony, and create a multimedia presentation of the colony plan.
Quadrant A Following the teacher demonstration, students will use the basic functions of a CADD program.	**Quadrant B** Using basic CADD functions, create a simple model to share with the class.

Employability	Communicate and work productively with others, considering different perspectives, and cultural views to increase the quality of work.
	Adapts and adjusts to various roles and responsibilities in an environment of change.
	Demonstrate leadership, integrity, ethical behavior, and social responsibility in all environments.
	Demonstrate initiative, self-direction, creativity, and entrepreneurial thinking while exploring individual talents and skills necessary to be successful.
	Demonstrate productivity and accountability while aspiring to meet high expectations.

Illustration of ***Communicate and work productively with others, considering different perspectives, and cultural views to increase the quality of work*** in the ICLE's Rigor and Relevance Framework

Quadrant C Students research a successful team or group of people who work together, i.e. sports team, government body, or groups of entrepreneurs. Using this team/group, students create an essay presentation or infomercial about what made this team successful. Explore personal qualities the group members possess, how the team capitalized on the strengths, talents, and ideas of group members and strategies the team used to communicate with their group in a productive and positive manner.	**Quadrant D** Student teams develop instructional presentations using a variety of communication channels that demonstrate to their parents how to use a piece of technology. Team members will outline the process and members will self-identify their strongest skill and select which part of the presentation development they will lead.
Quadrant A Students create a poster describing the personal qualities they feel are essential to being a productive team member.	**Quadrant B** Working with a team, students assemble a 50-75 piece puzzle without speaking to each other. Following the activity, students separately analyze the experience from their point of view. They list what they personally did to overcome the communication barriers and which communication channels they prefer.

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