Model Career Education Standards and Benchmarks Including Employability Skills

2002

Introduction

2002

To Friends of Iowa's youth:

You might read the salutation and say, *"Friends of Iowa's youth?* That should be all of us!", and you'd be absolutely right. Whether educator, employer, government employee or social worker, we are all friends of Iowa's youth. And what do friends do but help each other…and, in this document, we are helping youth build their skills towards a successful career.

"Model Career Education Standards & Benchmarks Including Employability Skills 2002" is a tool designed to help our youth prepare for the choices they will make regarding their future. These standards and benchmarks provide a guide to developing basic *Employability Skills* and *Exploring Careers* through all aspects of career pathways. This tool can also assist with the integration of Career Education K-12 as required in a school district's Comprehensive School Improvement Plan (CSIP).

This 2002 revised edition is a compilation of results derived from a series of modified DACUMs held from April to December in 2001. Employers, representing all career pathways, participated in the conversations by reviewing the existing standard and benchmark document and updating the skills needed in the workplace.

The process of reviewing skills is needed at least every 3 years to insure that our youth are benefiting from the most current advice and counsel from employers. Consider this document as a tool to:

- affirm your own standards and benchmarks are current,
- incorporate career related standards and benchmarks throughout your curriculum, or
- replace your current standards with this updated version.

You will notice significant changes in this document as compared to the previous Employability Skills and Career Pathways standards and benchmarks. The most significant change in the Employability Skills is the addition of a standard for Basic Skills. This is a *direct link* to the connection between academic classes and workforce preparation. Employers were adamant that reading, writing and arithmetic be included as an employability skill.

The most significant change in Career Pathway is simplification. No longer are there six separate documents representing each of the pathways. Now, one document based on 'all aspects of the industry' addresses the skills needed, regardless of pathway, and allows our youth to explore a variety career options based on their interest in a certain aspect.

Special thanks go to our employer participants who shared so much of their time and expertise in defining the skill sets and to Liz Weinstein, Elizabeth Weinstein and Associates, for expertly facilitating the modified DACUM discussions. Sue Updegraff, of Keystone AEA 1, converted the skills discussions results into grade level appropriate standards and benchmarks…Thank you!

Jeanne T. Wells
Executive Director
Association of Business and Industry Foundation

Laurie Phelan
Director
Iowa School-to-Work Office

Acknowledgements

Department of Education Consultants

Dale Gruis, Iowa Department of Education
Colleen Hunt, Iowa Department of Education
Ken Maguire, Iowa Department of Education
Rod Thompson, Iowa Department of Education
Catherine Vance, Ph.D., Iowa Dept. of Education
Janet Woodruff, Iowa Department of Education

Employability Skills Participants

Michelle Carley, Delavan
Diane Crookham-Johnson, Musco Corp.
Julie Dixon, On With Life, Inc.
Gregg Drije, Panel Components Corp.
Ron Hanser, Hanser & Associates
Rhea Heintz, Right Consulting
Kerri McKim, Hearth Technologies
Jenny Morlan, Aura Consulting, Inc.
Paige Peterson, Iowa Network Services, Inc.

Facilitator

Elizabeth Weinstein, Ph.D., Elizabeth Weinstein and Associates

Modified DACUM Participants

Mark Ash
Chuck Betts, Roquette America, Inc.
Jeffery Chelesvig, Civic Center of Des Moines
Renee Clancy, Compensation & Benefits Analyst
Cheryl Clarke, Medicap Pharmacy
Tina Dunphy, IA Commission on Volunteer Service
Betty Fairy, Telegraph Herald
Marvin Feller, Earl May Seeds & Nursery, LC
Sarah Fosdick, Marsh
Linda Goeldner, Iowa Nurses' Association
Janelle Hart Goemaat, ITA Group, Inc.
Tim Hill, Sauer Danfoss
Althea Holcomb, Big Brothers-Big Sisters
Erin Hurley Smidt, Porter & Associates
Barbara Lukavsky, Barbican Enterprises/Merle Norman
Mike Lydon, Lydon Company, PC
Kathie Lyman, Polk County Medical Society
Tom McMahon, Barker Company, Ltd.
Jeth Mill, Des Moines Symphony
James Mincks, FBL Financial Group, Inc.
Deanna Roelfs, Iowa Select Farms, LP
Jen Sandbulte, Advance Brands, LLC
Mike Schreurs, Strategic America
Diane Schroeder, Delta Dental Plan of Iowa
Karen Spring, Children and Families of Iowa
Carrie Steffen, The Whetstone Group
James Stevens, Maytag Dairy Farms, Inc.
Paul Tunakan, Holiday Inn-Gateway Center
Denny Warrick, Manpower, Inc.
Gail Wortman, Iowa Teacher of the Year, Ottumwa School District
Vicki Wehrle, Mercy Medical Center
Jack Williams, Construction Careers Training
Missy Winterboer, Holmes Murphy & Associates
Paul Woodard, Woodard Hearing Aid Centers

School-to-Work Administrative Team

Laurie Phelan, Iowa School-to-Work Office, State Director
Judy Jeffrey, Iowa Department of Education
Jan Friedal, Iowa Department of Education
Roger Foelske, Iowa Department of Education
Jeff Nall, Iowa Workforce Development
Tony Dietsch, Iowa Workforce Development
Jane Barto, Iowa Workforce Development
Mary Lawyer, Iowa Department of Economic Development
Jeanne T. Wells, Iowa Association of Business and Industry Foundation

Standards & Benchmarks Curriculum Consultant

Sue Updegraff, Keystone AEA

Table of Contents

Introduction ★★★★★★★ 3

Acknowledgements ★★★★★★★ 4

Model Career Education Standards & Benchmarks including Employability Skills ★★★★★★★ 6

Employability Standards & Benchmarks ★★★★★★★ 11

Exploring Careers Through All Aspects of the Industry ★★★★★★★ 17

Curriculum Framework View 1: *Appendix A* ★★★★★★★ 21

Curriculum Framework View 2: *Appendix B* ★★★★★★★ 22

Resources: *Appendix C* ★★★★★★★ 23

Classroom Ideas Crosswalked by Standards: *Appendix D* ★★★★★★★ 25

Classroom Ideas*: Appendix E* ★★★★★★★ 27

Crosswalk to Chapter 12: *Appendix F* ★★★★★★★ 34

Model Career Education Standards & Benchmarks including Employability Skills

12.5(7) Career Education: Each school or school district shall incorporate school-to-work career educational programming into its comprehensive school improvement plan. Curricular and cocurricular teaching and learning experiences regarding career education shall be provided from the prekindergarten level through grade 12. Career education shall be incorporated into the total educational program and shall include, but is not limited to, awareness of self in relation to others and the needs of society; exploration of employment opportunities, at a minimum, within Iowa; experiences in personal decision making; experiences that help students connect work values into all aspects of their lives; and the development of employability skills.

One of the main goals of K-12 education is to prepare students for a lifetime of work; it is the responsibility of K-12 systems to ensure that students graduate with the skills they can rely on time and time again as they are a productive member of society.

This charge leads to providing students with understanding and experience in all the aspects of any industry/enterprise/business. Exploring Careers Standards have become the vehicle to provide these broad transferable skills. These Standards were identified during the fall of 2001 by business people representing Career Pathways during a modified DACUM process. The eight aspects of all industries or Career Pathways, based upon federal legislation, are:

- ★ Leadership/Planning
- ★ Management
- ★ Health, Safety and Environment
- ★ Community Issues
- ★ Principles of Technology
- ★ Work Processes
- ★ Human Resources/Labor
- ★ Finance

Curriculum Framework

All students, in order to become productive citizens and workers, need a strong continuing foundation in reading/communication/language arts, math, science, social studies and **employability** skills; these are essential standards and benchmarks throughout the K-12 educational cycle.

These essential skills, in six basic areas, should take on more of an applied focus as students enter grades 6-12 and begin looking at Exploring Careers. Problem-solving and problem-based learning become the process linking Employability Skills and Exploring Careers with delivery via curriculum and instruction. The Curriculum Framework View 1 and 2 (see Appendix A and B) are pictorial views of how curriculum might proceed through the educational cycle.

SYSTEM Strategies for Implementing Exploring Careers

The implementation of Exploring Careers is more of a spirit than a series of check off steps. It is a conceptual framework that leads to a rich range of linkages across curricular areas. Analyzing and solving the problems facing an industry and the enterprises within it involves utilizing skills in reading, writing, math, science, and social studies. Teaching Exploring Careers gives students transferable skills allowing for adaptability to change throughout their lives.

Remembering that the Exploring Careers standards and benchmarks are organized by the eight aspects of all industries, a ninth standard is included to introduce students to the six career pathways. This allows students to see the transferability of the same career skill between career pathways.

Following are some organizational ways to incorporate Exploring Careers into the curriculum:

1. Academies or School-within-a-School

This type of program involves students in studying of a career/theme using a variety of curricular areas. Teachers from several disciplines participate in joint planning and team teaching. Often academies have a strong link with firms in their industry; this system may provide mentors, guest speakers, and student internships. Academic skills are deepened.

Examples of Academies:
- ★ Arts and Communication
- ★ Health Services
- ★ Natural Resources/Agriculture
- ★ Personal and Business Services
- ★ Iowa Graphics Communication Academy
- ★ Central Academy

2. Community Development

In this approach school curriculum focuses on creation of student-run enterprises. After researching and assessing their community's resources and needs, students select, develop, and run an enterprise. The enterprise serves an unmet community need, is economically viable, and is democratically managed in order to give each student experience in all aspects of Exploring Careers.

Examples of this are:
- ★ Micro-Society
- ★ Housing Construction Project
- ★ Child Care Center
- ★ Catering business
- ★ Company that produces marketing materials for the Health Clinic

3. Applied Learning

This approach requires students to master essential academic concepts while performing tasks basic to a career area (the 8 aspects of Exploring Careers). Teachers use a variety of different strategies to help students use academic and Exploring Careers knowledge for creating products and performing real tasks. It becomes a connection of symbolic academic content to concrete circumstances and events.

Applied learning is characterized by lively classroom discussions, group projects, lab experiments, presentations, and other hands-on activities.

Mote, Morton and Marshall in 1986 cited that student performance improved when instruction was personal and applied. In general, cognitive research suggests that relating learning to work can strengthen academic learning.

Examples of Applied Learning:

- ★ Using a computer to design a brochure (use of standards/benchmarks from language arts, art, technology, employability and exploring careers).
- ★ Use of a creek, a farm and neighborhoods to conduct field tests.
- ★ Use of a converted internal combustion engine to burn an alternative fuel (social studies, business, science, language arts, employability, transportation and exploring careers standards).

4. Problem-Based Learning

This approach becomes progressively more demanding from elementary to high school. Each project involves the standards for language arts, math, science, social studies, employability, and exploring careers. Often problem-solving projects focus on:

a) designing a product, service, or a system
b) improving a system
c) planning and organizing an event or an activity

Skills include teamwork, complex behaviors and reasoning, contextual learning, self-reflection, and decision making.

Examples of Problem-based Learning:

- ★ Students conduct a needs assessment of city's public transportation system and recommend improvements (involves standards from history, math, English, employability and exploring careers).
- ★ Students write a plan to open a school-based health clinic and present it to the school board and local Health Foundation Board. (Involves standards from economics, science, and health as well as employability and exploring careers).

CLASSROOM Strategies for Implementing Exploring Careers:

1. Student activities connect and apply classroom learning to out-of-the-classroom context. Use of a career theme context may motivate a student to understand relevant academic skills.

2. Academic skills may be tied to a series of scenarios each of which presents a real-life work situation consisting of a routine procedure and an unanticipated problem to be solved.

3. Integrated simulations can connect basic skills with Exploring Careers Standards.

> Example: You are planning to open a small business. Although you have saved some of your own money for this enterprise, you need additional funds to buy up-to-date equipment. Prepare a business plan that will convince the bank that you are a good business risk and that it should lend you the money.

4. Standards from academic skills and Exploring Careers can be used to create projects and curricula. An example is the Automotive Industry; this industry has had profound effects on humankind and affords many opportunities for Exploring Careers and to integrate curricular themes.

5. Portfolios, project-based work, student presentations and work in real settings, and other authentic assessments are effective in assessing a student's understanding of the complex relationships among Exploring Careers Standards.

6. Schools can be creative about linking the classroom and the workplace. For example, a student is enrolled in a program with "Law and Justice" as the theme.

> Example: The work-based placement is with a deputy court clerk. The student would be assigned work that builds on that placement: exploring labor issues, exploring technology by preparing electronic exhibits that could be used in a courtroom and by analyzing the impact of video and CD ROM technology on the design of courtrooms and the delivery of courtroom presentations.

7. Involvement of employers in curriculum and professional development helps to insure that content, expectations, examples and standards reflect the actual industry.

8. Emphasis on demonstrations, performance modeling and supervisor coaching as a primary method of teaching students prepares them for an industry setting.

9. Specific strategies that can be related to a career theme are: learning contracts; work teams; work orders (assignments); emphasis on quality and time; use of actual industry-based materials, such as manuals, installation instructions, safety materials, tools, etc.; and organization of classroom as a career work area.

Summary

Use of the basic academic skills, employability skills, and Exploring Careers Standards help to yoke “learning to know” and “learning to do”. This involves changing how instruction is delivered, how schools are administered, and getting community involvement in the process. Cognitive research shows that effective learning engages both head and hand and requires both knowing and doing. Every student needs to know that people work in order to live and that there is a positive connectedness between the schooling process and the living of productive lives. How are we as educators, parents and citizens fostering the use of basic and advanced academic skills in all subject areas and a strong understanding of and experience in all Exploring Careers?

Employability Standards and Benchmarks K-12

Career: Career is a dynamic, life-style concept that involves a sequence of work or leisure activities in which one engages throughout a lifetime. Careers are unique to each person and are dynamic. They include not only the particular occupations but also the career development experiences which precede entry into the work force and those experiences which occur after one no longer works, as well as how persons integrate their work life with their other life roles.

Standard 1: Technology

Applies a broad range of technology tools and devices.

Level I (Grades K-2)

- ★ Works cooperatively and collaboratively with peers, family members and others when using technology.
- ★ Demonstrates positive social and ethical behaviors when using technology.
- ★ Practices responsible use of technology systems and software.
- ★ Uses a variety of media and technology resources for directed and independent learning, problem solving, communication, and illustration of thoughts, ideas, and stories.
- ★ Communicates about technology using developmentally appropriate and accurate terminology.
- ★ Uses input and output devices successfully.

Level II (Grades 3-5)

- ★ Discusses common uses of technology in daily life and the advantages and disadvantages those uses provide.
- ★ Uses technology resources for problem-solving, self-directed learning, and extended learning activities.
- ★ Uses keyboards and other common input and output devices efficiently and effectively.
- ★ Discusses basic issues related to responsible use of technology and information.
- ★ Determines when technology is useful and selects the appropriate tools and technology resources to address a variety of tasks and problems.

Classroom Ideas

Have students draw from a hat the name of a scientific or technological device, i.e. copy machine, digital camera, television, lasers, automobile, braces for teeth, and write a description for a historical figure explaining how the device works and used today.

Level III (Grades 6-8)

- ★ Demonstrates knowledge of current changes in information technologies and the effect those changes have on the workplace and society.
- ★ Selects and uses appropriate tools and technology resources to accomplish a variety of tasks and solve problems.
- ★ Applies technology tools to support personal productivity, group collaboration, and learning throughout the curriculum.
- ★ Applies strategies for identifying and solving routine hardware and software problems that occur during everyday use.
- ★ Demonstrates an understanding of concepts underlying hardware, software, and connectivity, and of practical applications to learning and problem solving.
- ★ Exhibits legal and ethical behaviors when using information and technology, and discusses consequences of misuse.

Classroom Ideas

Given the following careers, perhaps drawn from a jar, ask students to project the type of reading style/purpose required for the following careers: lawyer, auto mechanic, speech writer, computer troubleshooter, doctor, hotel desk clerk.

Level IV (Grades 9-12)

- ★ Identifies examples of emerging technologies and how they impact society.
- ★ Describes the role of technology in a variety of careers.
- ★ Uses state-of-the-art hardware.
- ★ Uses state-of-the-art software for the interchange and exchange of data.
- ★ Uses the Internet for information and communication.
- ★ Uses multiple communication devices.

Standard 2: Business Fundamentals

Understands the major components that contribute to the success of a company.

Level I (Grades K-2)

- ★ Identifies personal strengths and weaknesses.
- ★ Identifies academic skills needed in several occupational groups.
- ★ Identifies different types of work.
- ★ Describes jobs that are present in the local community.
- ★ Demonstrates positive ways of performing work activities.
- ★ Describes the various roles an individual may have.
- ★ Describes work-related activities in the home, community and school.
- ★ Describes how work is important to all people.

Level II (Grades 3-5)

- ★ Demonstrates group membership skills.
- ★ Describes school tasks that are similar to skills essential for job success.
- ★ Describes how one's role as a student is like that of an adult worker.
- ★ Identifies the working conditions of occupations.

★ Describes the importance of cooperation among workers to accomplish a task.
★ Describes ways in which work can help overcome social and economic problems.

Level III (Grades 6-8)

★ Understands the organization's basic goals and values.
★ Develops strategies/plans that identifies how personal skills can be used to increase organizational effectiveness.
★ Displays reliability and a basic work ethic.
★ Manages money effectively.
★ Identifies sources of employment in the community.
★ Describes the relationship between work and economic and societal needs.

Classroom Ideas

In conjunction with the study of the industrial revolution/post industrial revolution, students research the benefits and liabilities of third world vs. local manufacturing. Could extend the project by identifying four products and having teams of students determine (given labor, materials and transportation costs) where in the world they would locate the production facility for the product and why.

Level IV (Grades 9-12)

★ Understands financial factors, such as profitability and their impact on a business.
★ Understands economic principles.
★ Understands the role of entrepreneurship in the business world.
★ Understands a variety of organizational structures.

Classroom Ideas

Invite young entrepreneurs to talk about their business, the inspiration and the risks they took to start their businesses. Preface the class by explaining the difference between corporations, partnerships and sole proprietorships.

★ Recognizes a broad range of industries.
★ Understands the critical role of the customer.
★ Uses ethical business practices.
★ Practices process improvement.

Standard 3: Interpersonal

Understands the importance of relationships that an individual has with other people.

Level I (Grades K-2)

★ Demonstrates effective skills for interacting with others.
★ Understands established rules and reasons for following them.
★ Identifies how people are unique.

Classroom Ideas

Students organize a panel of local leaders to discuss the relationship between communication style and leadership skills.

Level II (Grades 3-5)

★ Recognizes differences between decisions and accomplishments made by individuals and by group.
★ Uses personal skills to contribute to a productive school and work ethic.
★ Understands general aspects of one's own culture, the cultures of others, and how cultures differ.

- ★ Understands the difference between constructive and destructive criticism.
- ★ Uses teamwork skills and works with people of different ages, abilities and backgrounds.
- ★ Understands one's role as a team member.

Level III (Grades 6-8)

- ★ Describes how one's behavior influences the feelings and actions of others.
- ★ Uses a variety of strategies to work as a member of a team.
- ★ Identifies work ethics and behaviors for success within the school and community.
- ★ Demonstrates skills in responding to criticism.
- ★ Understands the importance of respecting people of different races, ages, religions, ethnicity and gender.

Classroom Ideas

Given three health insurance or auto insurance information packets (provided by the companies), students select the best insurance plans for a single male age 22, a head of household with a family of five and a retiree age 70.

Level IV (Grades 9-12)

- ★ Practices leadership skills in a variety of situations.
- ★ Participates effectively as a team player.
- ★ Exhibits a strong work ethic.
- ★ Resolves conflicts.
- ★ Recognizes and values the contributions of diverse members.

Standard 4: Planning

Understands what it takes to plan for the future both personally and professionally.

Level I (Grades K-2)

- ★ Understands why people work.
- ★ Allocates time, space, and materials needed for a project.
- ★ Demonstrates an understanding of the importance of practice, effort, and learning.

Level II (Grades 3-5)

- ★ Manages the allocation of resources as part of planning and goal-setting.
- ★ Understands the value of work to the individual and society.
- ★ Identifies personal interests, aptitudes, and abilities.
- ★ Demonstrates effective study and information-seeking habits
- ★ Describes the importance of cooperation among workers to accomplish a task.

Level III (Grades 6-8)

- ★ Understands the nature of change in the work force.
- ★ Understands the importance of planning and preparing for one's future in the world of work.
- ★ Allocates sufficient time, materials, and resources to achieve goals.
- ★ Demonstrates an understanding of the relationship of personal attitudes, beliefs, abilities, and skills to personal and professional success.

★ Describes advantages and disadvantages of various life role options.
★ Develops an individual career plan.

Level IV (Grades 9-12)

★ Identifies and uses appropriate resources.
★ Establishes a process to set goals, make plans, evaluate and modify those plans.
★ Practices the skills for successfully entering the workplace.
★ Recognizes the latest workplace trends and anticipates the future.
★ Understands the importance of lifelong learning.

Standard 5: Basic Skills

Uses the traditional 3R's and a variety of other basic skills, including communication.

Level I (Grades K-2)

★ Understands the importance of reading, math and communication in being successful at home and at school.
★ Demonstrates effective skills for communicating with others.

Classroom Ideas

Local reporter speaks with students about interviewing skills then, based on interview activity, students write biographies of elders in the community.

Level II (Grades 3-5)

★ Uses a variety of communication strategies.
★ Uses basic mathematical concepts and computations to solve problems.
★ Applies the reading process and strategies to developmentally appropriate situations.
★ Compares the ways language is used in assessing real life situations.

Level III (Grades 6-9)

★ Describes the connections between academic and career skills.
★ Understands multiple viewpoints on a topic.
★ Uses a variety of mathematical operations to solve problems.
★ Describes individual strengths and weaknesses in school subjects.
★ Reflects on what has been learned after reading.
★ Reads for a variety of purposes.
★ Communicates effectively in more than one form.

Level IV (Grades 9-12)

★ Uses mathematical reasoning.
★ Uses communication skills appropriate to the situation (verbal, electronic, listening, writing).
★ Uses objectivity in assessing the viewpoint of others.
★ Uses reading and comprehension skills appropriate to the situation.

Standard 6: Problem Solving

Practices effective problem solving.

Level I (Grades K-2)

- ★ Makes and defends decisions about daily activities.
- ★ Understands that decisions need to be supported by good reasons.

Level II (Grades 3-5)

- ★ Describes how choices are made.
- ★ Describes what can be learned from making mistakes.
- ★ Identifies strategies used in solving problems.
- ★ Understands that everyone makes mistakes.

Level III (Grades 6-8)

- ★ Uses decision-making and problem-solving models.
- ★ Identifies situations in the community and in one's personal life in which a decision is required.
- ★ Takes action to implement decisions.
- ★ Takes initiative when needed.
- ★ Weighs risks in making decisions.

Level IV (Grades 9-12)

- ★ Utilizes complex thinking skills.
- ★ Develops creative solutions to solve problems.
- ★ Takes risks recognizing that everyone makes mistakes.
- ★ Develops long-term solutions to problems.
- ★ Evaluates the efficiency of working alone or with others.

Classroom Ideas

The old 'package an egg and drop it off the roof experiment' **OR** go to a local company and ask them to identify a current problem confronting them and have students work in teams to solve the problem.

Exploring Careers through All Aspects of the Industry:

Standards and Benchmarks Grades 6-12

Making the connection from the classroom to career choices is a tremendous value to students with a myriad of opportunities.

All Aspects of an Industry (defined by the School-to-Work Opportunities Act of 1994): "All aspects of an industry" means exposure to each of the different components of an industry or industry sector a student is preparing to enter, including planning, management, finances, technical and production skills, underlying principles of technology, labor and community issues, health and safety issues, and environmental issues related to the industry or industry sector.

Standard 1: Leadership/Planning

The student uses organizational skills to promote goals and objectives of the organization or team.

Level III (Grades 6-8)

- ★ Makes decisions
- ★ Assesses resources
- ★ Uses organizational skills
- ★ Uses effective listening skills
- ★ Identifies goals and objectives
- ★ Creates a timeline

Classroom Ideas

Have students write assembly instructions for a bicycle or set up instructions for a new computer and printer. Have local bike or computer shop staff evaluate instructions for clarity and tone.

Level IV (Grades 9-12)

- ★ Takes responsibility for decisions
- ★ Uses critical thinking skills
- ★ Develops and communicates a vision
- ★ Practices business ethics
- ★ Delegates to others
- ★ Pursues customer satisfaction
- ★ Applies negotiation skills
- ★ Uses strategic planning
- ★ Sets priorities
- ★ Plans activities to meet goals and objectives
- ★ Evaluates the accuracy of information
- ★ Recognizes both leadership and management skills
- ★ Uses creativity in the workplace

Standard 2: Management

The student understands the general process of management.

Level III (Grades 6-8)

- ★ Uses the problem-solving process
- ★ Evaluates behavior appropriate to particular situations
- ★ Communicates effectively with others

Level IV (Grades 9-12)

- ★ Defines and delegates tasks
- ★ Manages multiple tasks and projects
- ★ Works with a diverse group of people

- ★ Allocates resources
- ★ Assesses needs of a project or organization
- ★ Provides feedback to others
- ★ Practices continuous improvement
- ★ Presents information that is accurate and convincing
- ★ Recognizes different and successful management styles

Standard 3: Health, Safety and Environment

The student recognizes the health and safety risks involved in working in the industry.

Level III (grades 6-8)

- ★ Understands need to follow policies
- ★ Faces hazards in a methodical, thought-out manner
- ★ Practices personal safety
- ★ Identifies stress and conflict
- ★ Practices personal wellness
- ★ Understands principles of environmentally safe living

Level IV (Grades 9-12)

- ★ Thinks pro-actively in a hazardous situation
- ★ Manages stress and conflict
- ★ Uses environmentally appropriate principles
- ★ Understands the consequences of decisions
- ★ Understands the importance of risk management

Standard 4: Community Issues

The student understands the multiple aspects of the relationship of the industry and the community.

Level III (Grades 6-8)

- ★ Develops the ability to work with others in the community
- ★ Understands the benefits and opportunities with volunteering

Level IV (Grades 9-12)

- ★ Understands a company's effect on the local economy
- ★ Understands that community activities affect the company
- ★ Develops community partnerships

- ★ Works with diverse populations
- ★ Understands how the political system works

Standard 5: Principles of Technology

The student understands the principles underlying the technologies utilized by the industry.

Level III (Grades 6-8)

- ★ Keyboards effectively
- ★ Uses basic computer skills
- ★ Uses basic math skills

Level IV (Grades 9-12)

- ★ Recognizes the impact of technology on an industry
- ★ Uses internet for research
- ★ Applies database skills to a specific situation
- ★ Uses technology-based learning, both low and high end
- ★ Understands when technology versus face-to-face communication is effective

Classroom Ideas

Students visit the National Park Service location on the free Web site. Students can connect to descriptions of geographic phenomenon at each National Park. Using downloaded information conduct a tour of each site describing its geographical significance

Standard 6: Work Processes

The student uses skills and procedures that promote an efficient and effective workplace.

Level III (Grades 6-8)

- ★ Works with others (practices teamwork)
- ★ Communicates effectively
- ★ Exhibits readiness to work
- ★ Comprehends the written word

Level IV (Grades 9-12)

- ★ Applies problem-solving processes
- ★ Understands quality assurance
- ★ Accepts responsibility for own work
- ★ Works independently
- ★ Manages conflict
- ★ Makes decisions
- ★ Practices collaboration/cooperation
- ★ Applies analytical thinking
- ★ Uses basic tools of the industry
- ★ Applies the principles of time management
- ★ Exhibits continuous desire for learning

Classroom Ideas

Use the uniform building code for your county and assign students specific code related questions (Is a fan required in a bathroom?) and challenge them to go to the Internet, library or county offices to locate the answers. This might be done in conjunction with designing their dream house.

Standard 7: Human Resources/Labor

The student understands the nature of organizations as systems and the responsibilities and rights of employment.

Level III (Grades 6-8)

- ★ Uses basic workplace readiness skills
- ★ Practices effective interpersonal skills

Level IV (Grades 9-12)

- ★ Understands organizational systems
- ★ Understands the typical benefits of employment

- ★ Exhibits work ethics
- ★ Understands the expectations of employers
- ★ Understands career pathways in different industries
- ★ Understands the value of credentials/certificates/licenses

Classroom Ideas

Students visit free job search services on the Internet, such as www.monster.com. Students can use the resources to develop a resume and search for jobs in fields in which they are interested.

Standard 8: Finance

The student understands the financial basics of an organization.

Level III (Grades 6-8)

- ★ Develops a budget
- ★ Exhibits basic math skills

Level IV (Grades 9-12)

- ★ Understands different cash flow needs of business
- ★ Develops a business plan
- ★ Uses accounting basics
- ★ Reads and interprets data
- ★ Understands credit finance
- ★ Analyzes cost versus benefits
- ★ Understands business development

Standard 9:

Introduction to Career Pathways

The student demonstrates knowledge of the common career pathways and the transferability of skills across career pathways.

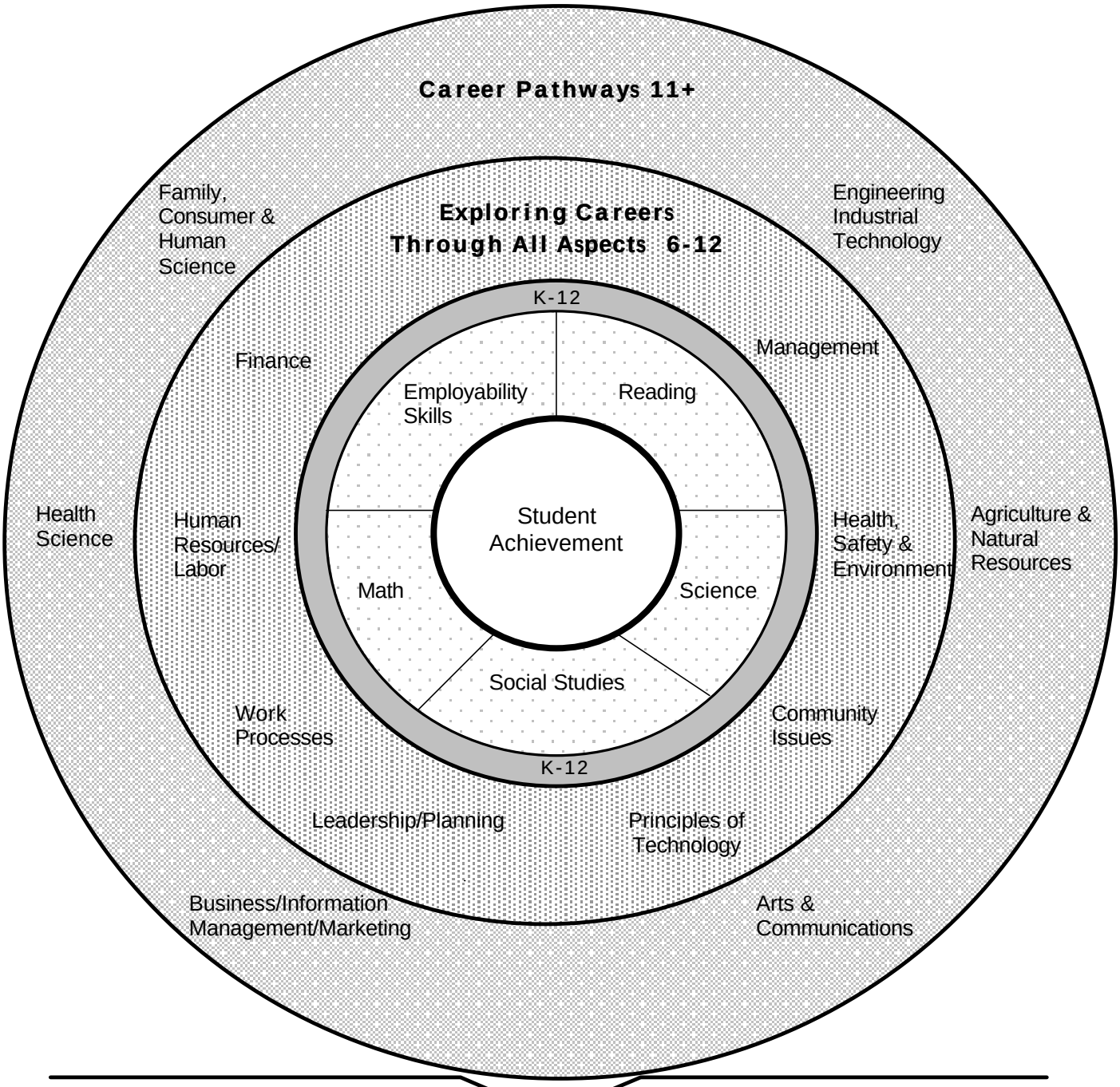
Level III (Grades 6-8)

- ★ Identifies various ways that occupations can be classified.
- ★ Examines clusters of occupations within career pathways.
- ★ Identifies the characteristics and skills which are common and unique among career pathways.
- ★ Investigates the training and personal requirements for advancement within a given career pathway and/or occupation
- ★ Uses school and community resources to learn about career pathways.

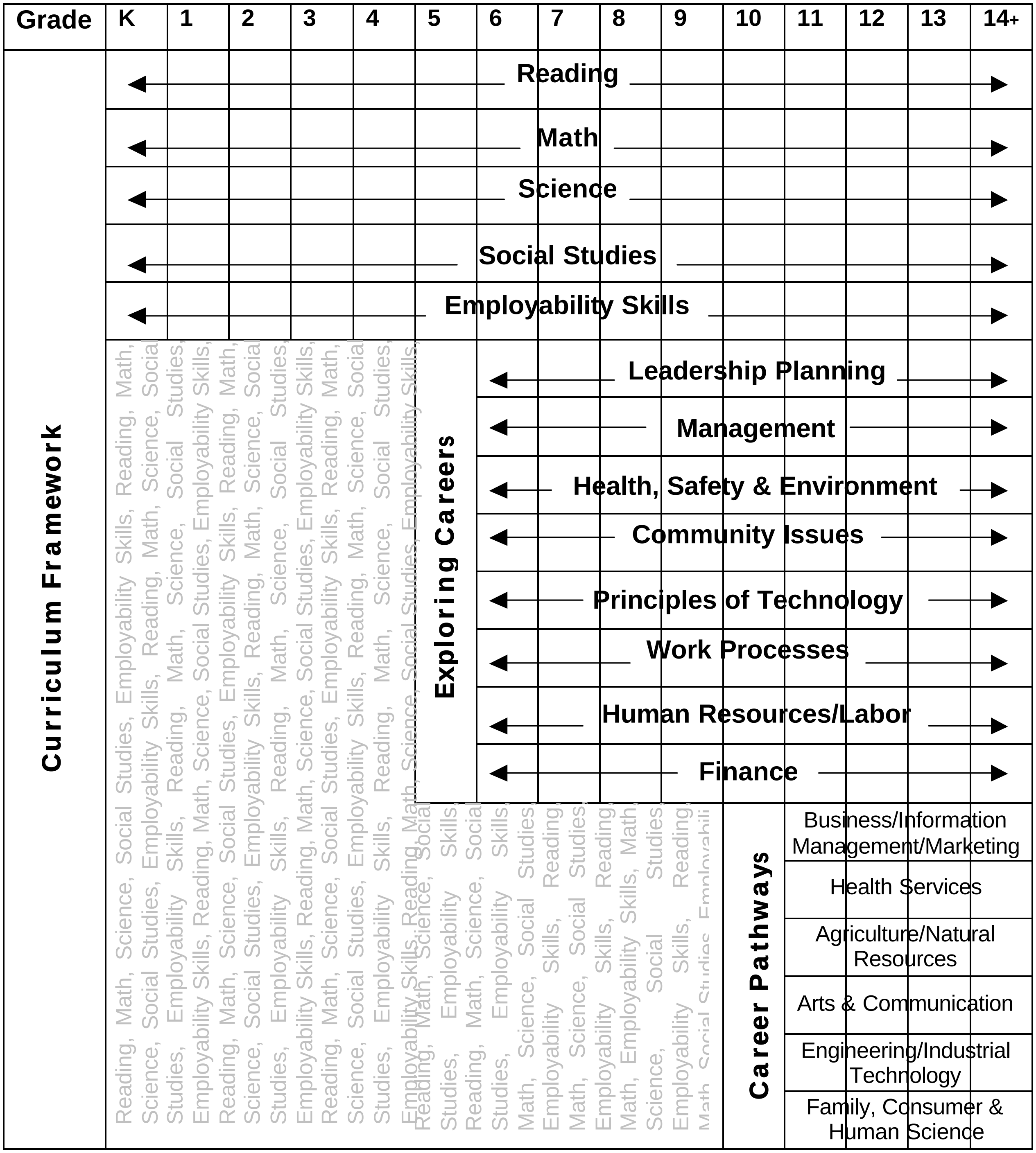
Level IV (Grades 9-12)

- ★ Demonstrates transferable skills that can apply to a variety of career pathways and occupations.
- ★ Demonstrates use of a range of resources to locate, evaluate and interpret career information.
- ★ Describes the concept of career ladders.
- ★ Identifies how employment trends relate to education and training.
- ★ Prepares a career plan or career portfolio that includes projected plans, research material, and work samples.

Curriculum Framework View 1: Appendix A



Curriculum Framework View 2: Appendix B



Resources: Appendix C

1. “Agriscience and Natural Resources Career Pathway,” DACUM Resource Center, 1997.

2. "All Aspects of the Industry," Center for Law and Education, Washington, D.C., no date.

3. "All Aspects of the Industry," Instructional Materials Laboratory, University of Missouri, Columbia, Missouri, no date.

4. "Applied Learning Performance Standards," New Standards Project, National Center on Education and the Economy, Washington, D.C., 1996.

5. Berryman, Sue E., "Cognitive Science: Challenging Schools to Design Effective Learning Environments," Technical Paper No.23, National Council on Vocational Education and the Employment and Training Administration of the U.S. Department of Labor, 1991.

6. “Business/Information Management/Marketing Career Pathway Tier II Skill Standards,” McRel Institute, March 1999.

7. Broeker, Ed.S., Arlene, “All Aspects of a…Business…Industry…Company,” July 1999.

8. "Career Education Objectives," Iowa Department of Education, no date.

9. “Career Pathway Tier II Skill Standards, Career Pathways Agriscience/Natural Resources,” McRel Institute, February 2000.

10. “Career Pathway Tier II Skill Standards, Career Pathways Arts and Communication,” McRel Institute, February 2000.

11. “Career Pathway Tier II Skill Standards, Career Pathways Engineering/Industrial/Technological Sciences,” McRel Institute, February 2000.

12. “Career Pathway Tier II Skill Standards, Career Pathways Family and Human Services,” McRel Institute, February 2000.

13. “Career Pathway Tier II Skill Standards, Career Pathways Health Occupations,” McRel Institute, February 2000.

14. “Connecting Workplace Competencies with the Learning Standards,” Massachusetts School-to-Work Office, http://www.doe.mass.edu/stw/, 1999.

15. Crook, Tom, “Core Competencies Correlation to the Washington State Essential Academic Learning Requirements,” http://www.stw.edu.gov/Database/Subject2.cfm?RECNO=609, 1996.

16."Dive Right In! Work-based Learning," National Center for Research in Vocational Education, Volume 4, Number 3, September 1994.

17. "Employability Standards and Benchmarks," adapted from "Opportunities for All," Spencer, Clay Central/Everly, Spirit Lake, Harris-Lake Park, Okoboji and Terril Community Districts and from the 13 Necessary Skills endorsed by the Iowa Association of Business and Industry, 1997.

18. Fong, Marko, “Evaluating All Aspects of the Industry (AAI),” http://www.cleweb.org, no date.

19. Hoerner, James L., "Work-Based Learning," Virginia Polytechnic Institute and State University, 1993.

20. “Manufacturing Technology (MTAG) Competency Correlation With Washington’s Essential Academic Learning Requirements,” 2001.

21. McLaughlin, MaryAnn, “Employability Skills Profile: What Are Employers Looking For?,” http://www.ed.gov/databases/ERIC_Digests/ed399484.html, 1995.

22. Mote.L.L., Morton, J.H., and Marshall, C., "Career Training: Strategies for Training Disadvantaged Rural Youth," Bellingham, Washington, 1986.

23. "National Career Development Guidelines," National Occupational Information Coordinating Committee, Stillwater Oklahoma, 1996.

24. "National Educational Technology Standards for Students," International Society for Technology in Education, Eugene, Oregon, 1998.

25. “National Standards for Family and Consumer Sciences Education,” National Data, http://www.facse.org/nat.htm, no date.

26. Neil, Judith, “Core Abilities,” http://www.hcc.hawaii.edu/intranet/committees/FacDevCom/guidebk/teachip/m-…/m-cor-ab.html, 1989.

27. “New Jersey State Department of Education, Core Curriculum Content Standards,” New Jersey State Department of Education, May 1996.

28. "Outstanding Practices," High Schools That Work, Southern Regional Education Board, 1994.

29. SCANS, "Highlights of Learning a Living: A Blue Print for High Performance," U.S. Department of Labor, 1992.

30. Strumpf, Lori, "Skill Standards and Second Chance Education and Training Programs," Center for Strategic Change, Washington, D.C., 1995.

31. “Tech Prep Program Agreement,” WIT Community College, 2000.

32. “Wisconsin’s Model Academic Standards for Family and Consumer Education,” Wisconsin Department of Public Information, 1997.

33. “What Work Requires of Schools, A Scan Report For American 2000,” U.S. Department of Labor, June 1991.

34. Yamashiro, Kathy, “Model Business Services Skills Assessments,” http://www.hoc.hawaii.edu/intranet/committees/FacDevCom/guidebk/teachip/Bsrate.htm, 1995.

Classroom Ideas Crosswalked by Standards: Appendix D

	Reading										Writing						Communication						Math							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Employability																														
(technology)		x				x					x																			
(Bus. Fund.)		x					x							x		x	x		x				x		x	x	x	x	x	
(Interpersonal)					x							x		x		x	x	x	x	x	x	x								
(Planning)					x	x	x					x		x		x	x	x	x	x	x		x					x	x	
(Basic Skills)	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x
(Prob. Solving)					x	x		x		x					x	x	x			x						x			x	
Exploration																														
(Leader./Plan.)					x	x		x		x	x	x	x	x	x	x	x	x	x	x	x	x				x	x	x	x	
(Management)					x			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				x	x	x	x	
Health/saf/env)						x		x								x						x						x		
(Comm. Iss.)								x		x						x		x	x	x	x	x			x		x			
(Prin. Of Tech)						x																	x	x	x	x		x	x	x
(Work Proc.)					x		x	x		x	x	x	x	x	x	x	x	x	x	x	x	x				x	x	x	x	
(HR/Labor)								x		x		x				x	x	x	x	x		x							x	
(finance)					x		x										x					x	x	x	x	x	x	x	x	x
(Intro to Car Pthwys)		x												x	x	x		x	x	x	x	x	x		x	x	x	x	x	

	Math								Science																		SS/Geogr./Eco			
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Employability																														
(technology)	x							x	x	x		x		x	x				x	x	x	x	x			x	x	x		
(Bus. Fund.)	x	x	x				x				x				x			x					x		x					
(Interpersonal)						x	x	x							x				x	x										
(Planning)		x	x		x	x	x			x				x	x		x		x	x							x			
(Basic Skills)	x	x	x	x	x	x	x	x			x	x	x		x			x	x	x	x	x	x	x	x	x	x		x	x
(Prob. Solving)					x		x	x		x		x			x	x					x									

	Math								Science																		SS/Geogr./Eco			
Exploring Careers																														
(Leader./Plan.)		x	x	x	x	x	x	x		x		x		x	x	x	x	x	x	x	x		x	x	x					x
(Management)		x	x	x	x	x	x	x		x						x			x	x	x	x	x	x			x		x	x
(Health/saf/env)								x	x	x		x			x		x	x			x			x		x			x	
(Comm. Iss.)						x	x																						x	x
(Prin. Of Tech)	x	x	x	x	x		x	x	x	x	x	x	x			x	x	x				x	x	x		x	x	x	x	x
(Work Proc.)		x	x	x	x	x	x	x							x				x	x		x	x		x	x			x	
(HR/Labor)																			x	x										
(finance)		x	x	x	x	x	x				x		x					x					x							
(Intro to Car Pthwys)	x	x	x		x																				x	x	x	x	x	

	Bonus Ideas								
	B1	B2	B3	B4	B5	B6	B7	B8	B9
Employability									
(technology)		x		x	x	x			x
(Bus. Fund.)								x	
(Interpersonal)						x			x
(Planning)					x	x		x	x
(Basic Skills)				x	x	x	x	x	x
(Prob. Solving)	x								
Exploration									
(Leader./Plan.)		x	x	x	x	x		x	x
(Management)			x		x	x		x	x
(Health/saf/env)									
(Comm. Iss.)	x	x	x			x		x	
(Prin. Of Tech)				x		x	x		
(Work Proc.)					x				x
(HR/Labor)						x			x
(finance)						x	x	x	
(Intro to Car Pthwys)		x							

Classroom Ideas: Appendix E

60 Ideas for Using Contextual and School-to-Career Strategies

Reading

1. Readily identify and comprehend the main idea and supporting facts and summarize ideas in own words, AND Identify the kinds of documents one might be required to read in a career setting. In-basket exercise-ask businesses to provide memos and reports that a typical manager would have in an in-basket. Have students read documents and summarize main points of each piece for their "boss" who is coming back after a two week vacation.

2. Construct general and specialized vocabularies through reading in specific fields of academic study such as science, social studies, mathematics and the arts. Students organize into career path teams of three to a team. Using classroom texts and professional publications teams identify and define 20 vocabulary words not used in common conversation but specific to discussions among workers in that career path. Ideally, students could develop "glossaries" for specific careers within a path i.e. pharmacy, physical therapy, psychiatry and the health insurance industry. This would be an appropriate activity prior to a career shadow day to integrate academic and work-based learning.

3. Apply conventional grammar such as subject/verb agreement and verb tense agreement. AND Communicate to teacher, small group, class. Involve a language arts class in teaching English to E.S.L. students.

4. Read and understand information to perform a specific task (schedules, recipes, instructions, newspaper want ads, consumer reports, travel books, first aid manuals, catalogs). Students review the state driving manual and then take mock version of state driving exam.

5. Organize information from resource materials and communicate findings effectively. As purchasing agents for local police department assigned to recommend squad car purchases, students review Consumer Reports and other auto reviews, identify the two most appropriate vehicles based on stated criteria and then compare and contrast the two to justify recommendation for purchase of one over the other. This assignment could apply to other career fields in that librarians might be purchasing computers, vets might be purchasing kennels or chefs might be purchasing ovens. All would need to conduct research and report findings and recommendations.

6. Use features of non-fiction text and computer software to locate specific information to pursue an interest or to complete a project. The uniform building code for King County is in six volumes. Assign students specific code related questions (Is a fan required in a bathroom?) and challenge them to go to the Internet, library or county offices to locate the answers. This might be done in conjunctions with designing their dream house.

7. Identify particular reading skills required for occupational career areas of interest. Given the following careers, perhaps drawn from a jar, ask students to project the type of reading style/purpose required for the following careers: lawyer, auto mechanic, speechwriter, computer troubleshooter, doctor, hotel desk clerk.

8. Analyze and interpret material to investigate a question, topic or issue. Given three health insurance or auto insurance information packets (provided by the companies), students select the best insurance plans for a single male age 22, a head of household with a family of 5 and a retiree age 70.

9. Explain how an author uses language to influence different audiences and detect bias, stereotype, over-generalization, association and other devices used by the author to influence an audience. Have students bring in from their mail examples of marketing letters for credit accounts, magazine subscriptions, resort property, sweepstakes or other opportunities. Students analyze these mailings for appeals using the above techniques.

10. Read critically to analyze, compare and contrast works of various authors and to understand multiple perspectives and issues of self and others. Students read and analyze (for perspective, accuracy and effectiveness) letters to the editor on a hot community topic. Students write their own letters on the same topic using effective appeals.

Writing

11. Write for a range of purposes including to explain procedures and to convey technical information. Have students write assembly instructions for a bicycle or set up instructions for a new computer and printer. Have local bike or computer shop staff evaluate instructions for clarity and tone.

12. Understand and follow complex information to perform tasks for a specific audience AND make well chosen and varied connections between own purposes and audiences interests and needs. Secure a grant request application from a local foundation or a federal agency. Students respond proposing a well-conceived project for funding that reflects the priorities of the foundation or RFP, and conforms to the presentation structure required. Perhaps have funding agency review the proposals.

13. Use language that is precise, engaging and well-suited to the topic and audience. For a catalog item write a description given a word limit and the charge to describe the product accurately and in a way that will “market” it to the reader.

14. Select a publishing form and produce a completed writing project to share with a given audience. Have students choose a magazine of interest, study the writing style and then write an article to submit to the magazine for publication.

15. Adjust word choice, sentence structure and correct mechanics and grammar to produce a legible, professional-looking product. Students act as editors, proofreading a jumbled up story written by a hypothetical rookie reporter. Students correct the story for spelling, sentence structure and flow. Perhaps offer the students the true story that appeared in a paper.

16. Choose content appropriate to own purpose and interests and needs of an audience. Students write announcement regarding lay-offs of workers, board members, the press and the supervisors who will inform affected employees. Consider the priorities, concerns and potential questions of each audience.

Communication

17. Communication for a range of purposes, for example, to inform, explain, persuade or entertain. Each student chooses a product and develops a speech to convince the buyer from Walmart to purchase the product for sales in the store. Perhaps have buyer judge speeches.

18. Identify and evaluate complex techniques used in mass communications such as generalization, appeal to popularity and appeal to emotion. Students collect and analyze magazine ads designed to

appeal to teens. Then they create their own ads attempting to incorporate as many appeals as possible.

19. Offer feedback on others' presentations. Toastmasters develop or introduce a classroom speech unit emphasizing why adults work on improving their speaking skills to enhance their chances of promotion and incorporating the Toastmasters method of critiquing speeches.

20. Create a comprehensive and organized presentation with a clear sequencing of ideas and translations. Student write speech for the mayor to deliver to a designated audience related to current issue of interest to the student, i.e. building skateboard park, maintaining leash-free area for dogs, teen curfew, policy on homeless.

21. Communicate for a broad range of purposes, for example to reflect, to interview and to influence. AND pay attention and respond appropriately in social interactions, i.e. eye contact, nodding and asking sequential questions. AND Write clear sequential narrative. Local reporter speaks with students about interviewing skills then, based on interviewing activity students, write biographies of elders in the community.

22. Make well chosen and varied connections between own purposes and audience interests and needs. Students organize a panel of local leaders to discuss the relationship between communication style and leadership skills.

Mathematics

23. Add, subtract, multiply and divide non-negative fractions and decimals using rules for order of operation. Chef leads students in multiplying and dividing fractions to expand/cut back recipes for families vs. banquets.

24. Understand and apply the concepts of ratio and both direct and indirect proportion. Students identify various systems that use gears. Likely multi-gear bicycles are the most available. Have students create diagrams of their mechanisms to explain the concept of ratio.

25. Represent situations that involve quantities with expressions, formulas and equations. Each student proposes a car he/she would buy. For a given down payment students calculate interest involved in loan contracts of various lengths for cars of escalating prices.

26. Measure objects or events directly or use indirect methods. Foresters use trigonometry related to sine, tangent and cosine to estimate heights of trees. Students can apply the same strategies in measuring the school flagpole.

27. Make and explain conjectures and inferences by formulating a proof or by constructing a counter example. Given several local stocks students calculate comparative cost, dividends and profit margins to determine the best projected rate of return.

28. Understand, compare, contrast and use the U.S. and metric systems. Students forecast weather for a U.S./Canadian border location, calculating temperature and wind speeds using the appropriate measurement system for each country. Students decide, based on proposed cost of gasoline in Canadian liters and American gallons, whether they should buy gas before or after crossing the border. Also, factor in exchange rate.

29. Calculate rate and other derived and indirect measurements. Students determine savings rate and rate of return necessary for them to attend the college of their choice in "X" years. After calculating a reasonable savings rate, students determine unfunded balance, research loan rates, determine

average first year salary for their preferred major and then project appropriate monthly payment such that the loan is paid off.

30. Understand and use appropriate counting procedures to determine probabilities. Students document physical characteristics of their families, such as eye/hair color. Students retain their own histories and pull from jar anonymous histories of two other students, then using Mendel's gene theory, project the hair and eye color of off-spring of the two pairs.

31. Understand and construct multiple geometric transformations using combinations of translation, reflection or rotation. Animation expert demonstrates how mathematical applications are essential in creating digital effects.

32. Recognize, create, extend, and generalize patterns. Students start with pattern for a "cool clothing item" and calculate the dimensions of each piece for a progression of sizes. An extended activity might be calculating the difference in cost of fabric for a size 6 and a size 18.

33. Recognize the extensive use of mathematics outside the classroom. Students visit construction and landscaping sites and video activities at the site, and then interview workers to determine how mathematical applications are used in construction, i.e. to set angles, to estimate fill dirt needed, to determine board feet required, to project cost of labor, to calibrate machinery, such as saws. Similar visits to hospitals, banking/brokerage firms, ad agencies and manufacturing settings would also be possible. Students in teams could then explain the applications to the class.

34. Use estimation to obtain reasonable approximations. AND Understand the benefit of standard units of measurement for both direct and indirect measurement. Students participate in "tour" of school environment and are asked to do quick eyeball estimations of, for instance: square yards of carpet needed to carpet the lunchroom, feet of wire needed to install a phone in a given classroom, yards of fabric for curtain for the stage, cubic feet of bark needed to landscape school entrance area, cubic yards of cement needed to create sidewalk in a given location.

35. Construct geometric models and scale drawings, using tools as appropriate. AND Make and explain conjectures and inferences based on analysis of problem situations. Explain how algebra is used in configuring the most efficient boat hull designs. Have students design, describe and justify hull designs that might win the America's Cup.

36. Organize and display data in appropriate forms. AND Explain how statistics can be used to support different points of view. Students construct graphs that represent the growth in the community over the last 10 years. Break out the data by age. Students project implications with regard to need for schools, teachers, likelihood of voters passing school levies, etc.

37. Apply appropriate methods, operations and processes to construct a solution. Students construct actuarial tables for various age populations at the school and project appropriate life insurance rates based on their data.

38. Understand and use coordinate grids. Invite a pilot or emergency search and rescue lead to demonstrate to the class a GPS device. Given information regarding the location of a downed plane or stranded climber have students attempt, pinpoint the location on a grid.

Science

39. Identify and examine common problems where science/technology has been used to find solutions. After studying the organs of the body, student teams research medical technology related to the various organs, i.e. kidney machine, heart defibrillator, eye laser surgery. Students describe the functions of the organ and explain how the technology interacts with the organ.

40. Analyze systems, including the inputs and outputs of a system impact on its subsystems. Using various sources, obtain information on the Biosphere Project. Identify what went wrong with that system. Create a large classroom terrarium and experiment with solutions to creating a closed system.

41. Identify various forces and their relative magnitudes and explain everyday situations in term of forces. Working in teams or alone, students analyze all forces relevant to the operation of an elevator, a ski lift and a roller coaster with attention to weight of passengers going up and down.

42. Describe how genetic information in the cell controlled at the molecular level provides genetic continuity. Join Dept. of Agriculture, Extension Service or local university project related to cloning or creating through hybrids, the perfect vegetable.

43. Describe sound and light waves relating the concept of frequency and wavelength. After introducing students to wave theory, assign student teams to explain and demonstrate to the class the following wave applications: cellular phone, radar, x-ray, AM radio, FM radio, stereo speaker, conventional phone.

44. Understand that total energy is conserved and analyze increases and decreases in energy during transfers. Students create an annotated horizontal mural depicting the flow of energy through an automobile engine.

45. Develop abilities necessary to conduct scientific inquiry. Students obtain soil sample from their yard and analyze it for content and nutrients. Then, working with local nursery, extension service or Master Gardener group, develop formula for ideal fertilizer for that location. Perhaps extend project by designing fertilizer for particular crop and growing comparison plants in original and augmented soils.

46. Identify, design and test alternative solutions to a challenge or problem. The old 'package an egg and drop it off the roof experiment' OR go to a local company and ask them to identify a current problem confronting them and have students work in team to solve the problem.

47. Identify and describe human life functions and the interconnecting organ systems necessary to maintain human life. Each student identifies a major medication such as insulin, blood pressure medication, thyroid pills. Student researches how the chemical constituents of the medication interact with the body to create the desired effect.

48. Understand that individual organisms use matter and energy for life processes and the mechanisms accomplishing these processes are complex, integrated and regulated. Invite a dietician to speak to the class to describe how intravenous formulas are developed and composed and how the body absorbs the nutrients introduced in this manner. Perhaps have advance students propose nutrient formulas for designated patient conditions.

49. Know the importance of fossils in documenting life and environmental changes over time. Students visit the National Park Service location on the FREE website. Students can connect to descriptions of

geographic phenomenon at each National Park. Using downloaded information conduct a tour of each site describing its geographical significance.

50. Compare and contrast scientific inquiry and technological design in terms of activities, results and influence on individuals and society. AND Propose, revise, and evaluate possible constraints, applications and consequences of a solution. Divide students into six teams. Each team describes the advantage/disadvantages of human cloning, the atomic bomb and injecting scanners under the skin of each citizen.

51. Analyze and evaluate the quality and standards of an investigative design. AND Analyze how scientific knowledge and technological advances influence and are influenced by human activity, for instance political, economical and ethical considerations. Invite researchers from local biotech firms to describe the development of a current drug under review by the FDA. Discuss with the scientist the checks and balances inherent in the drug review process.

52. Identify and examine common, everyday challenges or problems in which science/technology can be or has been used to design solutions. Each student draws from a hat the name of a scientific or technological device, i.e. copy machine, digital camera, television, lasers, automobile, braces for teeth, and writes a description for a historical figure explaining how the device works.

53. Correlate global climate to energy transfer by the sun, cloud cover, the earth's rotation and positions of mountain ranges and oceans. Establish Internet contact with a school in Arkansas and another in northern Alaska. Obtain various vegetable (tomato) and flower seeds from a local seed company. Students in each location plant the seeds on the same day and monitor seed growth while documenting on computer the altitude, soil quality and weather conditions in each location. Students share results and collaborate on research.

54. Develop abilities necessary to do scientific inquiry. Select and acquire, perhaps through donation, a product marketed by a local outdoor store. Duplicate the thermal (sleeping bag) and stress (climbing rope) tests that the manufacturer conducted. Compare student findings with those of the company.

55. Identify various forces and their relative magnitudes and explain everyday situations in terms of forces. Students use plumbing supplies to demonstrate concepts related to gravity, pressure and hydraulics.

56. Describe how methods of investigation relate to the validity of scientific experiments, observations and theoretical models. Each student identifies a natural health product and using promotional material, the internet and other resources, documents the nature of the research establishing the effectiveness and efficacy of the product.

Social Studies/Geography/Economics

57. Use maps, globes and other geographic tools including various map projections, satellite imagery and GIS data to interpret information from a spatial perspective. Assign students to three teams. One team researches and explains navigational techniques/technology used by the Northwest explorers in the 1800's, a second team identifies the navigational strategies used by a sailor on the Victoria to Maui Race and a third group describes the navigational tools available to the typical 747 pilot.

58. Locate physical and human features on maps and globes. Your company has sent you to a sales meeting in the Phoenix area. You have never been to Phoenix. You have been given only the name of the company you are visiting and the address. Using the Internet, find the location, print a map and draw the route you would take from the Denver airport to the meeting.

59. Describe the economic, cultural and natural resource characteristics of various regions in Iowa. Students initiate e-mail correspondence with students in other parts of the state to compare their economic/political concerns with those of students living elsewhere, i.e. Aberdeen-unemployment and logging/fishing rights, Seattle-traffic and development. Student teams submit reports in conjunction with mock economic summit.

60. Analyze the importance of supply and demand within a market economy and such terms as shortage, surplus, black market, durables, luxuries, price controls, and price supports. Compare the current U.S. market with the current emerging Russian market economy with regard to each of these terms.

Bonus Ideas

1. Describe how one person can make a difference in a community. In Washington oil is no longer poured into drains because school children paint fish pictures with water pollution warnings on all wastewater drains. In Colorado litter along the highways is no longer a problem because citizens adopt roads. What problem do you detect in your community, your country? What could you and your classmates do to solve the problem?

2. Describe the role that supply, demand, prices, incentives and profits play in determining what is produced and distributed in a competitive market system. Each student selects from a list of locally founded companies and researches using library, Internet and interview resources how the company was started and describes how the company currently contributes to the local economy.

3. Describe how trade between Iowa and other Midwest states is important to Iowa's economy. Each student selects an item from the produce section and traces that item from its origin to the grocery store, monitoring costs along the way.

4. Group events by broadly defined historical eras and develop related time lines. Antique store owner brings in a different antique for each child and each child researches how the item was used and then what was going on locally nationally and internationally when that item was produced.

5. Geography – Large companies generally develop briefing papers for their executives going abroad to inform them about current issues, key leaders and economic conditions. Students could write such briefing papers on countries they are studying.

6. Geography – Travel agents work with student teams to plan and price out a historical tour of a country. Students then "conduct" the tours for the class using multi-media images.

7. Multiplication/percent – Students plan a trip around Europe or Asia at each border they exchange their money and calculate the worth of their currency in each denomination. After exchanges at six borders they return to the U.S. Assuming that they spent no money on their hypothetical trip, and that their calculations were correct, when they convert their money back to dollars, they should have the same amount they started with.

8. Economics – In conjunction with the study of the industrial revolution/post industrial revolution, students research the benefits and liabilities of third world vs local manufacturing. Could extend the project by identifying four products and having teams of students determine given labor, materials and transportation costs where in the world they would locate the production facility for their product and why.

9. History – Students consult with local tour director and museum docents and design historical tour of their city and then conduct the tour for parents.

* Adapted from Washington State.

Crosswalk to Chapter 12: Appendix F

CROSSWALK of Career Education in Iowa Code to SCANS, Iowa Employability Standards, Iowa Exploring Careers Standards, and National Career Development Guidelines

Chapter 12 General Accreditation Standards	SCANS	Iowa Employability Standards	Iowa Exploring Careers Standards (AAI)	National Career Development Standards
Career Education 12.5(7) Awareness of Self: • In relation to others • In relation to needs of society	Systems: Understands complex interrelationships.	Interpersonal: Understands the importance of relationships that an individual has with other people.	Community Issues: Understands the multiple aspects of the relationship of the industry and the community. Human Resources – Labor: Understands the nature of organizations as systems and the responsibilities and rights of employment.	Self-Knowledge: Understanding the influence of positive self-concept. Self-Knowledge: Understanding the impact of growth and development. Educational and Occupational Exploration: Understanding how societal needs and functions influence the nature and structure of work.
Exploration of employment opportunities (at a minimum in Iowa).		Planning: Understands what it takes to plan for the future both personally and professionally.	Health, Safety and Environment: Recognizes the health and safety risks involved in working in the industry. Introduction to Career Pathways: Demonstrates knowledge of the common career pathways and the transferability of skills across career pathways.	Educational and Occupational Exploration: Understanding the relationship between educational achievement and career planning. Educational and Occupational Exploration: Skills to locate, evaluate, and interpret career information. Career Planning: Skills in Career Planning.

Experiences in personal decision making.	Resources: Identifies, organizes, plans and allocates resources.	Problem Solving: Practices effective problem solving.	Work Processes: Uses skills and procedures that promote an efficient and effective workplace.	Career Planning: Skills to make decisions.
Experiences that help students connect work values into all aspects of their lives.	Interpersonal: Work with others.	Business Fundamentals: Describes how one's role as a student is like that of an adult worker.	Management: Understands the general process of management.	Self-Knowledge: Sills to interact positively with others. Educational and Occupational Exploration: Understanding the need for positive attitudes toward work and learning. Career Planning: Understanding the interrelationships of life roles. Career Planning: Understanding the continuous changes in male/female roles.
Development of Employability Skills	Technology: Works with a variety of technologies. Information: Acquires and uses information.	Technology: Applies a broad range of technology tools and devices. Basic Skills: Uses the traditional 3R's and a variety of other basic skills, including communication.	Leadership/Planning: Uses organizational skills to promote goals and objectives of the organization or team. Principles of Technology: Understands the principles underlying the technologies utilized by the industry. Finance: Understands the financial basis of an organization.	Educational and Occupational Exploration: Skills to prepare, seek, obtain, maintain and change jobs.