

CAREER AND LIFE SKILLS EDUCATION
RENTON SCHOOL DISTRICT #403
Renton, Washington



PRINCIPLES OF TECHNOLOGY 1 - 2
Curriculum Guide

Approved by the Board: April 23, 2003

If you have special needs which require this document to be provided in an alternative format, please contact the school principal (or program director) or Kay Hermann, ADA/509 Compliance Coordinator, 425-204-2421, 300 S.W. 7th St., Renton, WA 98055-2307

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A PHILOSOPHY OF EDUCATION FOR THE RENTON PUBLIC SCHOOLS

A basic function and duty of a free society is the education of its children, youth and adults.

It is the responsibility of the schools to provide each student with the opportunities necessary to develop the scholarship, skills and attitudes which will enable the student to achieve mental, physical, emotional and social maturity.

Further, each student should, as a result of the school experience, be able to make decisions and to accept responsibility for those decisions.

POLICY: 6001

ADOPTED: February 3, 1977

Renton School District No. 403

Renton, Washington

Renton School District #403 recognizes the need for every graduate to have acquired job entry skills or at least to possess a level of knowledge and skills permitting continued training after high school.

GENERAL INSTRUCTIONAL GOALS

Policy 6010

The Renton School District fosters an educational process which helps all students achieve at their highest potential.

The Renton School District:

LEARNING

- Offers a curriculum which prepares our students for the future.
- Emphasizes that diversity contributes positively to the individual and to the community.
- Provides learning experiences matched to the needs, interests, and abilities of our diverse student population.
- Extends learning opportunities beyond the school.

INSTRUCTION

- Offers a variety of high quality instructional resources and services to students, staff, and community.
- Supports multiple instructional strategies.
- Provides resources and opportunities for continuing professional development of our staff.
- Conducts ongoing evaluations of our instructional programs.
- Maintains safe and inviting facilities that are conducive to learning.

COMMUNITY

- Creates partnerships which involve students, parents, staff and other community members and organizations.
- Promotes effective communication.
- Values and encourages development of a spirit of community service.
- Respects the rights and responsibilities of all.

As a result of the educational process in Renton, students will understand and apply:

Language skills including reading, writing and communication, with opportunities to learn world languages.

Mathematics skills including concepts, procedures, problem solving, reasoning, and mathematical language.

Science Skills including concepts, principles, and the scientific process.

Social studies skills, concepts, and processes - emphasizing history, geography, economics, international perspectives, multiculturalism, and participatory democracy.

Arts and humanities skills, concepts, and processes to create, perform, and solve problems and respond effectively.

Health and physical education skills, concepts, and processes to promote lifelong physical, mental and social well being.

In order to strengthen the above curricular areas, Renton students will understand and apply:

Thinking skills including the ability to - gather and analyze information, think logically, critically and creatively, integrate experience and knowledge in making reasoned judgments, and solve problems.

Career and life skills necessary for successful and responsible participation in family, work and community.

Technological skills to support learning, problem solving, and communication.

Skills necessary to be a lifelong learner and a contributor to the general welfare and the quality of life for all.

EVALUATION: The Renton School District regularly reviews, evaluates and modifies these General Instructional Goals to meet the changing needs of students, staff and community.

CAREER AND LIFE SKILLS EDUCATION GOALS

GOAL 1: PROVIDE HIGH QUALITY VOCATIONAL-TECHNICAL EDUCATION PROGRAMS AND SERVICE

Objectives:

- A. Assure that students completing Vocational-Technical Education programs have technical and behavioral competencies and basic skills sufficient to succeed in the workplace or higher education.
- B. Establish course and/or program transferability and articulation processes among K-12, community and technical colleges, private schools, colleges and universities, industry, apprentice-related training, and military training.
- C. Establish and regularly review standards for all Vocational-Technical Education programs.
- D. Evaluate Vocational-Technical programs based on standards, objectives, placements, job performance, costs, and community/industry acceptance.
- E. Utilize global, national, state, regional, and local data and advisory committee recommendations to identify appropriate curriculum and course offerings, program standards which meet the need of families, communities, business and industry.
- F. Provide facilities, equipment and instructional programs which meet the needs of a changing workplace.
- G. Revise or discontinue these programs that no longer meet the needs of students, business, labor, industry, and/or the community.
- H. Provide qualified instructors and administrators for Vocational-Technical Education based on relevant certification standards.
- I. Develop and utilize competency-based curricula for Vocational-Technical Education programs.

GOAL 2: CONTRIBUTE TO THE ECONOMIC DEVELOPMENT OF THE STATE

Objectives:

- A. Facilitate cooperation between public and private sector entities.
- B. Establish new Vocational-Technical programs based on existing and projected employment needs/demands and entrepreneurial opportunities.
- C. Work cooperatively with the public and private sectors, economic development organizations, labor, and educational institutions to provide creative, targeted programs that meet the needs of youth in economically depressed areas.
- D. Provide family life education programs which serve to strengthen families and contribute to the effectiveness of workers in managing their consumer and family roles and in their careers.
- E. Strengthen management skills for those seeking employment in worker owned and managed businesses.
- F. Create a stronger working partnership with Team Washington and other economic agencies and the associate development organizations.

GOAL 3: ASSURE ALL INDIVIDUALS EQUAL ACCESS TO VOCATIONAL-TECHNICAL EDUCATION PROGRAMS, SERVICES, AND ACTIVITIES

Objectives:

- A. Provide Vocational-Technical programs, services, and activities that are free from racial, socio-economic, age, ethnic or sex bias, discrimination or stereotyping.
- B. Provide access to barrier-free Vocational-Technical Education programs.
- C. Actively recruit under-represented groups to all aspects of Vocational-Technical Education.
- D. Provide supportive services which promote entrance and success in Vocational-Technical programs.

GOAL 4: PROVIDE/UTILIZE AN INTEGRATED STATE PLANNING PROCESS

Objectives:

- A. Involve business, industry, agriculture, labor and other governmental and educational agencies in the planning processes at the state and local levels to ensure that establishment of delivery objectives and budget priorities.
- B. Identify instructional area/programs based on demand, placements, training needs, program costs, and follow-up.
- C. Utilize local, regional, state, national and global employment data, trends and advisory committees/organizations in identifying program offerings.

GOAL 5: PROVIDE AND MARKET VOCATIONAL-TECHNICAL EDUCATION

Objectives:

- A. Increase public awareness, understanding, and acceptance of Vocational-Technical Education.
- B. Actively involve students, parents, community leaders, legislators, labor representatives, business organizations, industry, representatives, and other decision-makers from state and local arenas in Vocational-Technical Education program events and issues.

GOAL 6: PROVIDE INDIVIDUALS WITH CAREER DEVELOPMENT PROGRAMS AND EXPERIENCES

Objectives:

- A. Provide career orientation, exploration, occupational information, self-appraisal, and educational planning.
- B. Provide instruction in job search, job retention and job change skills and further education pursuits.
- C. Assure that Vocational-Technical Education programs encompass demands of today's workplace and include attitudinal, employability, leadership, basic interpersonal, and job specific skills.

GOAL 7: ASSURE A QUALITY STAFF DEVELOPMENT PROGRAM

Objectives:

- A. Provide appropriate channels for advisory committee recommendations in the program and policy-making process.
- B. Provide in-service training opportunities for local advisory committee members.
- C. Provide in-service training for administrators and Vocational-Technical instructors regarding the effective use of advisory committees.

Renton, Washington

Program Description

Renton School District #403 operates a comprehensive Career and Life Skills Education Program through its four comprehensive high schools and two alternative programs. The district also participates in two countywide Tech Prep consortia with local community, technical colleges as well as universities. This partnership allows students to earn college credit while still enrolled in high school programs. Secondary and post-secondary curricula are coordinated and students master and achieve skills, concepts, and technical competencies in high school that articulate with college programs. Students earn credit towards high school graduation and college technical programs at their home high schools.

The focus has changed in recent years from an emphasis on only job preparation to one of career exploration and support of core academic skill development. While skill development and employment readiness is still a primary goal, emphasis has been placed on career exploration, career pathway preparation, and post-secondary articulation.

The **Family and Consumer Science Education Program** is offered at Hazen, Lindbergh, Renton, Black River High Schools, and Sartori Education Center. The program is comprised of the following: Careers in Education; Careers with Children; Child Development; Creative Foods/Nutrition; Family Health; Health Club; Independent Living; Interior Design/Living Environments; Personal Choices; Teen Parenting/GRADS; and American Sign Language. School district and community sites provide applied work-based learning opportunities for program students.

The **Business Education Program** is offered in the District's three comprehensive high schools and two alternative high school sites. The program consists of technical business related classes sequentially arranged into a course of instruction leading to a Certificate of Proficiency or Mastery to facilitate job placement or post secondary articulation. Industry and professional certifications are also a goal for participating students. These courses are as follows: Accounting 1-4; Business Communications; Business Connections 1-2; Business Connections Work Experience 1-2; Business Law; Computer Program Design 1-2; Electronic Math Applications; Introduction to Information Technology; Information Technology 1-2; Information Technology-Project Management; Information Technology-Multimedia; Principles of Business; Web Site Development 1; and Recordkeeping. The Business Connections Work-based Learning component provides actual related job experience through workstations in the community. Several of the programs are often arranged and blocked with language arts programs to support program integration and technology use in the writing process.

A comprehensive **Work-based Learning Program** is offered in all of the facilities in the Renton School District. This program couples on-the-job experience and related classroom training to prepare students for employment during and beyond high school. The **Marketing Education Program** which offers Introduction to Marketing, Advanced Marketing, Marketing-Entrepreneurship, Marketing Education Seminar 1-2, Exploration of Travel and Tourism and

Introduction to Travel and Tourism/Hospitality, and **Diversified Occupations Programs** provide students the opportunity to combine related classroom instruction and paid work experience to earn high school credit. These programs assist and support students as they make the transition from school to work. **Volunteer experiences, Internships, Job Shadows,** and **Service Learning** are also strong components of this community based applied experiences.

The community also plays a vital role in other programs offered through the Renton School District. The **Athletic Trainer/Sports Medicine Programs** is reliant on clinical training stations and coordinated work experiences for students through local health and physical therapy facilities and community hospitals. This program is offered to all students in the Renton School District but operates only at Hazen High School and Sartori Education Center.

Technology Education Programs are offered at all three comprehensive high school facilities, and the Sartori Education Center. These programs are often integrated with the Science and Math departments to support applied learning and the development of technical skills and competencies for all students. Courses in this department are: Automotive Service Technician 1-2; Computer Aided Design and Drafting 1-6; Computer Graphics 1-8; Fundamentals of Networking Technology 1-4; Jewelry Manufacturing 1-2; Light Duty Mechanics and Related Careers 1-2; Construction Technology 1-2; Building Maintenance Technology 1-2; Power and Energy Technology 1-2; Principles of Technology/Robotics 3-4; and Video Production 1-2.

Integrated instruction has been the focus of the Career and Life Skills Education instructional team for a number of years and the results can be seen throughout the program in each of the secondary schools. Several programs have been launched and are operating very successfully in all of the secondary sites. While these programs qualify for career and technical education funding, the District has made the commitment to operate them collaboratively with a related academic instructor. These **Applied Career and Technical Education Approved Programs** are titled: Applied Communications; Applied Mathematics; Material Science Technology 1-2; and Principles of Technology.

Renton School District has made a commitment to provide career and technical education instruction and job preparation opportunities for Special Needs students in addition to mainstreaming them, when appropriate. In order to have enough students to support several offerings, the district has entered into interdistrict cooperative agreements with surrounding school districts to accept students on a space available basis. There are three such **special programs**: **Building Maintenance** operates at the Sartori Education Center; the **Career Ladders/Community Classroom** is offered at Valley Medical Center; and the **Horticulture/Landscape Design 1-2 Program** is operated at Black River High School.

CAREER AND LIFE SKILLS EDUCATION

MISSION STATEMENT

The mission of career and life skills education in the Renton School District #403 is to prepare all learners for successful roles in families, careers and communities.

THREE BELIEFS

A. Beliefs about individual needs

1. All learners have unique gifts and talents and can be successful.
2. All learners must develop self-esteem and personal confidence for productive roles in society.
3. All learners need to have and attain personal and career goals, arising from a lifespan approach to personal growth and career development.

B. Beliefs about society's expectations

1. All learners must be prepared to become ethical, responsible and contributing world citizens.
2. All learners must adapt to change and participate in lifelong learning.
3. All learners must prepare for family roles and to balance work and family responsibilities.
4. All learners must develop essential creative/critical thinking, problem solving and communication skills.
5. All learners must value and have an appreciation for diversity in their schools, communities and workplaces.
6. All learners must recognize the impact of productive work on our economy.

C. Beliefs about systems that care for and support learners

1. All learners must have equitable access to a quality education.
2. All learners deserve to participate in learning systems where programs are mutually reinforcing and interdependent and where learning is related to life applications.
3. All learners must discover that school is part of a broader set of community resources they must access for learning and for achieving success in life.
4. All school programs must be developed in cooperative with family, business, labor and community representatives.
5. All staff must be accountable to ensure that all learners have the opportunity to establish and reach their goals.

PRINCIPLES OF TECHNOLOGY 1 – 2
Washington State Essential Academic Learning Requirements

PRINCIPLES OF TECHNOLOGY 1 – 2						
This Career and Life Skills class supports the Washington State Essential Academic Learning Requirements.						
COURSE OBJECTIVES:	ARTS	COMMUNICATIONS	MATHEMATICS	SCIENCE	WRITING	READING
Unit 1: Force	*	*	*	*	*	*
Unit 2: Work	*	*	*	*	*	*
Unit 3: Rate	*	*	*	*	*	*
Unit 4: Resistance	*	*	*	*	*	*
Unit 5: Energy	*	*	*	*	*	*
Unit 6: Power	*	*	*	*	*	*
Unit 7: Force Transformers	*	*	*	*	*	*

PRINCIPLES OF TECHNOLOGY 1 – 2

History

In the spring of 1993 a committee of career and life skills and science teachers reviewed materials from the Center for Occupational Research and Development titled Principles of Technology. The Principles of Technology course has an advantage of being one of several courses that are part of the Tech Prep program. The advantage of a new course using the Principles of Technology materials was cross crediting the course for career and life skills credit or science credit. A new course proposal was submitted and approved by the Board of Directors.

The class is part of the sequence of courses offered by the Science and Career and Life Skills Education Departments. This course is team taught by career and life skills certified technology and a science certificated teacher. Any teacher assigned to this course must complete the staff development program approved by OSPI for Principles of Technology.

The course was designed to be offered to students in grades 10-12 who are pursuing a Tech Prep course of study.

A detailed curriculum guide and supplementary list of instructional materials was recommended and approved in the spring of 1995.

PRINCIPLES OF TECHNOLOGY 1 – 2
Course Goals

At the completion of this course, the students will be able to:

- Describe force, work, rate and resistance in each related energy system
- Give a unifying statement for each concept or principle (Force, Work, Rate, Resistance)
- Describe energy, power and force transformers as they apply in the energy systems studied
- Give a unifying statement(s) for energy, power and force transformers that helps the student understand how they apply in different energy systems
- Use the unifying statement(s) to write an equation or formula that applies to each energy system studied

PRINCIPLES OF TECHNOLOGY

Scope and Sequence

Unit 1: Force

1. Force in Mechanical Systems
2. Pressure in Fluid Systems
3. Voltage in Electrical Systems
4. Temperature in Thermal Systems
5. Work Place Readiness

Unit 2: Work

1. Work in Mechanical Systems
2. Work in Fluid Systems
3. Work in Electrical Systems
4. Work Place Readiness

Unit 3: Rate

1. Rate in Mechanical Systems
2. Rate in Fluid Systems
3. Rate in Electrical Systems
4. Rate in Thermal Systems
5. Work Place Readiness

Unit 4: Resistance

1. Resistance in Mechanical Systems
2. Resistance in Fluid Systems
3. Resistance in Electrical Systems
4. Resistance in Thermal Systems
5. Work Place Readiness

Unit 5: Energy

1. Energy in Mechanical and Fluid Systems I, II
2. Energy in Electrical Systems
3. Energy in Thermal Systems
4. Work Place Readiness

Unit 6: Power

1. Power in Mechanical Systems
2. Power in Fluid Systems
3. Power in Electrical Systems
4. Work Place Readiness

Unit 7: Force Transformers

1. Force Transformers in Linear Mechanical Systems
2. Force Transformers in Rotational Mechanical Systems
3. Force Transformers in Fluid Systems
4. Force Transformers in Electrical Systems
5. Work Place Readiness

PRINCIPLES OF TECHNOLOGY 1 – 2

Evaluation/Assessment

Evaluation of students in Principles of Technology 1 – 2 will be measured in a variety of ways. These include tests from the materials publisher, teacher developed materials, standardized achievement tests, and alternative assessments including competency based assessment.

PRINCIPLES OF TECHNOLOGY 1 – 2
Instructional Materials

Textbooks:

Principles of Technology, Units 1-7
Cord Communications

PRINCIPLES OF TECHNOLOGY 1 - 2
Leadership and Vocational Plan

LEADERSHIP AREAS	STUDENTS WILL:	VOCATIONAL ASPECTS	INTEGRATED INTO CURRICULUM
<p>Area 1: Introduction to Leadership Students will develop an understanding and demonstrate a knowledge for the purpose of Student Leadership in Vocational Education.</p>	<ul style="list-style-type: none"> • Discuss the purpose of developing personal and group leadership skills. • Determine the skills that will help me function in family, community and work setting. 		<ul style="list-style-type: none"> • Small group projects/activities • Help teach peer new concepts
<p>Area 2: Personal Qualities Students will demonstrate personal qualities necessary to function in a family, community and work setting.</p>	<ul style="list-style-type: none"> • Determine the importance of values and goals. • Identify short and long term goals. • Write down necessary steps to carry out goal. • Describe how personal values are reflected in work ethics. 		<ul style="list-style-type: none"> • Plan time as related to class assignments and due dates • Plan of procedures for project work
<p>Area 3: Interpersonal Skills Students will become aware of and demonstrate interpersonal skills needed to function in a global society.</p>	<ul style="list-style-type: none"> • Demonstrate how to work cooperatively with others. • Provide for positive role models in actions, behaviors and attitudes in stressful situations. • Identify and write down goals for self. • Determine whether goals are conceivable, achievable, and can be measured. • Write down necessary steps to carry out each goal. Evaluate each step. • Manage and resolve positive stress and adversity in the work setting. 		<ul style="list-style-type: none"> • Self evaluation of project work at end of each unit

<p>Area 4: Communication Skills Students will be able to communicate effectively in the community and work situations.</p>	<ul style="list-style-type: none"> • Students will actively “listen” and carry out signed and oral instructions. • Will prepare formal and informal written materials. 		<ul style="list-style-type: none"> • Follow class instructions • Written plan for procedures for project work • Written evaluation at end of each project
<p>Area 5: Community Students will develop an understanding and demonstrate a knowledge of how to work effectively in the community.</p>	<ul style="list-style-type: none"> • Recognize the values of the work professional field. 		<ul style="list-style-type: none"> • Complete projects on time
<p>Area 6: Personal and Tech Resources. Students will be able to utilize personal and technological resources to make decisions for the family, community and workplace.</p>	<ul style="list-style-type: none"> • Research and identify the use of technological tools. 		<ul style="list-style-type: none"> • Provide opportunity to use a variety of tools in a safe manner
<p>Area 7: Group Dynamics Students will demonstrate organizational skills in large and small group situations.</p>	<ul style="list-style-type: none"> • Understand team skills. • Develop group facilitation skills. • Conduct an effective small group meeting. 		<ul style="list-style-type: none"> • Small and large group activities
<p>Area 8: Employability Skills Students will understand and demonstrate effective employability skills.</p>	<ul style="list-style-type: none"> • Identify behaviors to establish successful working relationships. • Identify means of dealing with conflict resolution in the workplace. • Identify and demonstrate proper work ethic. 		<ul style="list-style-type: none"> • Demonstrate a respect for other students and for shop equipment