

Renton School District No. 403

Career and Life Skills Education

Jewelry Manufacturing

Curriculum Guide

Adopted by the Board of Directors: July 12, 2000

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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.

RENTON SCHOOL DISTRICT NO. 403

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, 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.

RENTON SCHOOL DISTRICT STRATEGIC PLAN:

MISSION AND BELIEFS

The mission of the Renton School District, a partnership of families, community, and employees, is to instill in each student, knowledge, skills, responsibility, and inspiration to become a life-long learner and a successful contributor to a changing, more technologically advanced and diverse society by ensuring academic achievement, mutual respect, and positive self-esteem.

We believe...

- student needs come first.
- all people have worth.
- all people can learn.
- all people have an equal right to quality education.
- education is key to the future.
- people need to experience the excitement of learning as a life-long process.
- education includes academic, social, emotional, physical and character development.
- diversity is valuable.
- each student is unique and deserves resources to match his/her needs.
- people learn in different ways which require varied teaching styles.
- talent and creativity exist in each person and can be developed.
- students can develop responsibility and accountability.
- it is important to measure and evaluate achievement.
- learning increases when basic needs are met.
- people with high self-esteem are better able to learn.
- people benefit when acknowledged for their accomplishments.
- an individual's full potential is attainable when perceived limitations are eliminated.
- shared decision making and responsibility lead to increased commitment and accountability.
- it is the responsibility of the community to actively participate in the education of children.
- extra-curricular activities are important.
- neighborhood schools are desirable for all students.
- continuous evaluation and refinement of goals and processes are necessary for educational excellence.
- family involvement and advocacy for students is crucial to academic success.
- students learn best in a safe environment.
- students benefit from positive peer support and collaboration.
- staff collaboration improves teaching and learning.
- a quality education encompasses disciplines that foster development of the whole person.

VOCATIONAL -TECHNICAL 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. 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.

Identify instructional area/programs based on demand, placements, training needs, program costs, and follow-up.

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 SCHOOL DISTRICT NO.403

Renton, Washington

CAREER AND LIFE SKILLS EDUCATION

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 and technical colleges. 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 exposure. 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, and Black River High Schools. The program is comprised of the following: Careers in Education; Careers with Children; Children & Parenting; Design; Eating Well/Creative Foods; Exploring Early Childhood and Exploring Early Childhood/Work Experience; Family Health; Health Club; Independent Living; Personal Choices; Teen Language. The program also includes a comprehensive Teen Parenting component connected to the operation of a full service childcare center Parenting/GRADS; and American Sign for Teen parents. The center serves both infants and toddlers and is a workbased learning site for students enrolled in related programs. Other school district and community sites provide applied workbased learning opportunities for program students.

The **Business Education Program** is offered in the District's three comprehensive high schools and at the Sartori Learning Center. 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. These courses are as follows: Business Communications; Business Connections 1-2; Business Connections Work Experience 1-2; Business law; Business Management; Computer Applications; Electronic Math Applications; Information Processing; Machine Transcription; Principles of Business; Record keeping; Word Processing 1-2; and Advance Word Processing. The Business Connections Workbased Learning component provides actual related job experience through workstations in the community. Business programs are often arranged and blocked with language arts programs to support program integration and technology use in the writing process.

A comprehensive **Workbased 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** 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 **Health Careers/ Sciences Program** is reliant on clinical training stations and coordinated

work experiences for students through local convalescent centers, nursing facilities, and community hospitals. This program is offered to all students in the Renton School District but operates only at Hazen High School.

Technology Education Programs are offered at all three comprehensive high school facilities. 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; CAD & Computer Graphics 1-2; Computer Graphics and Communications Related Careers 1-2; Electronics and Related Careers 1-2; Engineering Drafting and Related 1-2; Fundamentals of Networking Technology 1-2; Light Duty Mechanics and related Careers 1-2; Materials Science and Technology 1-2; Metalworking, Construction, Maintenance and Related Careers 1-2; Power and Energy 1-2; Principles of Technology 1-2; Video Production 1-2; Woodworking, and Construction, Maintenance and Related Careers.

Integrated instruction has been the focus of the Career and Life Skills instructional team for the past several 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 vocational funding, the district has made the commitment to operate them in collaboratively with a related academic instructor. These **Applied Vocationally Approved Programs** are titled: Applied Communications; Applied Mathematics; Material Science Technology; and Principles of Technology.

Renton School District has made a commitment to provide vocational training and job preparation opportunities for Special Needs students in addition to mainstreaming them, when appropriate. In order to have enough students to allow several offerings, the district has entered into interdistrict cooperative agreements with surrounding districts to accept students on a space available basis. There are four such **special programs**: **Building Maintenance** operates at the Sartori Learning Center and the **Career Ladders/Community Classroom** is offered at Valley Medical Center. The **Horticulture/Landscape Design 1-2 Program** is operated at Black River High School and **Health Careers** section is located at Hazen High School.

The district is also a partner in the Vocational/Special Education consortium of King County School Districts. The primary purpose of this participation is to make Vocational-Technical Education more accessible to persons with disabilities, provide additional inservice opportunities to all instructors and support to vocational instructors as they provide applied learning opportunities to special needs students.

RENTON SCHOOL DISTRICT NO. 403

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.

Jewelry Manufacturing History of Course Development

This course was developed in the fall of 1998 at Renton High School. The jewelry manufacturing course is included in the vocational educational department.

The program attracts many students and a second section was added to the 1999-2000 school year. New equipment for jewelry production was purchased and the studio grew in size and professional output to keep up with the growing number of students.

The safety information on process and materials, design of the courses, and the instruction has been based upon experience and research. Our safety record has been flawless for our first three semesters and is constantly upgraded by improved machinery and tools of quality.

We plan for this program to be expanded at Renton High School and to be initiated at other high schools in the district.

Jewelry Manufacturing Overview

Jewelry Manufacturing is designed to introduce high school students to studio and self safety, materials, tools, and techniques of jewelry creation and production methods. The knowledge and skills acquired in this course will prepare the student to enter the industry at the basic level or continue this pursuit at a university. Hands-on experience is constant in the studio setting. Videos, field trips, and guest speakers provide a range of professional experiences for the students in this course.

The instructor constantly supplies group and individual demonstration and instruction to the class. The students are expected to complete difficult projects requiring new and previously acquired skills on deadline. Advanced students are encouraged to work on extra projects and to help beginning students develop skills and correct studio safety consciousness. All students are encouraged to think in a free and creative mode.

Jewelry Manufacturing Program Goals

Renton School District students in the Jewelry Manufacturing Program will:

- Develop an appreciation for the design and development of the Jewelry Manufacturing field by exploring and participating in a variety of cultural and vocational activities and experiences
- Explore occupations and careers in areas related to Jewelry Manufacturing
- Explore a variety of career and educational pathways that include post high school articulation
- Provide an opportunity for students to develop skills in time management, teamwork, self-direction, and self-evaluation
- Build students' self-confidence and positive attitude through success in a series of increasingly challenging experiences

Jewelry Manufacturing Program Standards

In order for the Jewelry Manufacturing Program to be more effective, teachers will give specific consideration to:

1. Placing an emphasis on lab/field safety
2. Treat the stated objectives as minimal expectations for each project
3. Encourage neatness, legibility, creativity, and professionalism
4. Hold students responsible for continuous improvement and accountable for their own progress and assessment

Jewelry Manufacturing Objectives and Outcomes

Safety — Opening Statement. Great care is taken to educate our students, promote safety and prevent accidents that can be avoided. Our effectiveness will be the result of conscious practices.

Unit 1: Introduction to the studio

Objective: Students will learn the layout of the jewelry studio.

Outcomes: At the end of this unit, the student will be able to:

1. Identify where storage units are located and their individual number on it
2. Know where the various tools are stored
3. Know where the first aid supplies are kept
4. Know where the fire extinguisher is located
5. Know the exits for classroom evacuation
6. Know the location and proper use of all safety equipment
7. Know where the telephone is located and the emergency numbers
8. Be able to communicate all the above to another person

Unit 2: Metallurgy/Vocabulary for metalsmiths

Objective: Students will learn and use the general properties of metals.

Outcomes: At the end of this unit, the student will be able to:

1. Identify correctly the studio metals by color
2. Be able to spell the various metals' common name and letter symbol
3. Know the general history of the studio metals used in class
4. Know the approximate melting temperatures in F* of metals used
5. Know the general characteristics of the studio metals used
6. Know how to anneal a piece of metal
7. Know what an alloy is and give examples
8. Know how to measure sheet metal with a thickness gauge
9. Know the danger, if any, and protection necessary for each metal
10. Be able to educate another student about various metals properties

Unit 3: Tools/Their Safety and Uses

Objective: Students will understand the design and purpose of hand tools (manual and power), their use and safety.

Outcomes: At the end of this unit, the student will be able to:

1. Identify and choose a correct sawblade for the metal to be used
2. Place the blade correctly in the jeweler's saw frame
3. Attach a bench pin correctly to a work table
4. Saw a 90* angle and a circle out of metal correctly
5. Identify different files and their uses
6. File a flat edge and a curved edge
7. Identify different hammers and their correct uses
8. Texture/bend/form sheet metal using appropriate hammers
9. Be able to turn a flexible shaft tool on and off with foot control
 - a. Change the bits for a flex shaft tool
 - b. Drill holes with the flex shaft tool
 - c. Texture metal with the flex shaft tool
 - d. Buff and polish with the flex shaft tool
10. Identify and choose compatible abrasives to metal conditions

11. Be able to turn the buffer/polishing machine on/off safely
 - a. Check area for safety operation of the machine
 - b. Put yourself in safe condition (hair, clothing, stance, protection)
 - c. Choose correct appropriate compounds for each wheel
 - d. Buff and polish a piece correctly and safely

Unit 4: Metal Picture Frame

Objective: Student will understand the steps of a project.

Outcomes: At the end of this unit, the student will have accomplished:

1. Measuring and laying out a rectangle(open) on a piece of brass
2. Drilling an interior hole
3. Attach a sawblade in an interior hole
4. Saw four interior sides at right angles to each other
5. File the interior sides straight and smooth
6. Saw the exterior perimeter of the frame
7. File the exterior of the frame straight and smooth
8. Stamp in a design/hammer in a texture in the frame
9. Use abrasives to accomplish the desired surface.
10. Buff and polish the frame
11. Use 2-part epoxy to attach a pin back to the frame
12. Use a glue stick to attach a photo/graphic to the back of the frame

Unit 5: Riveting/Cold Joinery

Objective: The student will be able to attach two pieces of metal.

Outcomes: At the end of this unit, the student will be able to:

1. Choose and design an animal shape drawing and attach it to metal
2. Layout the holes needed to attach a pin back
3. Drill the first hole, choose a complimentary solid rod, cut to the correct length, use a riveting hammer and anvil to start the first rivet
4. Reset pin back, fill the second hole and rivet with rod
5. Drill a hole for the appropriate tube rivet for the eye and set it.
6. Use a finishing stone mandrel in the flex shaft to make the rivets flush with the metal surface.
7. Use abrasives to choice, buff and polish, patina if desired.
8. Explain and demonstrate riveting to another student.

Unit 6: Ring with a cabachon stone set in a bezel cup

Objective: The student will be able to size, form, solder metal, and set a cabachon stone on a ring.

Outcomes: At the end of this unit, the student will be able to:

1. Design a ring with a stone
2. Size a finger correctly to make a ring using a ring sizer and mandrel
3. Cut ring shank from sheet metal and bend it into shape on mandrel

4. Silver solder
 - a. Clean the ring in the pickle pot
 - b. Set the ring up to solder on the soldering mandrel
 - c. Follow all the safety steps in the soldering process
 - d. Turn the acetelyne gas tank on/off
 - e. Use the torch striker to ignite the torch after turning it on
 - f. Use flux and the hard solder for joining the ring joint
 - g. Silver solder the ring joint completely
 - h. Pickle the ring and the appropriate bezel cup for their stone
 - i. Clean the ring joint with files (inside/outside) and abrasives
 - j. Use easy solder on the back of the bezel cup and pickle
 - k. Solder the bezel cup to the correct spot on the ring and pickle
 - l. Buff and polish the ring
 - m. Choose the same mm cabachon stone and set it with proper tools

Unit 7: Module Bracelet with connections and joining mechanism

Objective: To be able to design and fabricate a multiple -part piece with a workable joining and closing system.

Outcomes: At the end of this unit, the student will be able to:

1. Identify what is considered a module
2. Design and fabricate a working connecting system for modules
3. Consider the comfort factor of a bracelet and it's correct length
4. Design and fabricate a closing system (clasp)
5. Identify and solve particular finishing processes for bracelets
6. When jump rings are used as connectors, solder each one of the jump rings
7. To instruct another student in the design and strategy of a piece

Unit 8: Multi-discipline Pendant and necklace

Objective: To design a piece using a variety of learned studio skills.

Outcomes: At the end of this unit, the student will be able to:

1. Design a pendant and necklace that has given specifications
2. Solder metal to metal, texture metal, form metal, color metal using heat/and or chemicals, and set at least one stone
3. Finish the piece safely and appropriately
4. Demonstrate and articulate a wide variety of studio skills to others

Unit 9: Direct/gravity Casting (cuttlefish bone casting)

Objective: To design and execute negative space into a 3-D metal piece

Outcomes: At the end of this unit, the student will be able to:

1. Design a small 3-D sculpture on paper
2. Choose a cuttlebone and cut in half lengthwise
3. Sand the two halves smoothly and cut one end off

4. Decide the placement of the design
5. File in the pouring gate and sprue
6. Carve or press in the design carefully
7. Vent the design and check depths for casting, then clean design
8. Put mold together and properly tape it together tightly
9. Place mold in correct casting position in the sand container
10. Choose a casting metal and melt it in a crucible with the torch
11. Add flux when needed to the molten metal
12. Pour the molten metal continuously into the cuttlebone mold
13. Cut the mold open after the metal has solidified and cooled down
14. Saw off the excess or undesired metal on design (Gate/sprue)
15. Add any extras by cold/hot techniques, and finish appropriately
16. Teach other students how to successfully cast into cuttlebone

Unit 10: Commission Piece

Objective: To choose a teacher/staff person and design/fabricate the piece of jewelry that they approved of as a commissioned piece.

Outcomes: At the end of this unit, the student will be able to:

1. Present themselves in a professional and appropriate manner
2. Work with a potential customer on the design of a piece of jewelry
3. Choose and suggest various solutions including design/materials
4. Understand and document a budget for a piece of custom jewelry
5. Approximate time and cost to fabricate a piece
6. Using all the knowledge and skills acquired, fabricate the piece
7. Keep in contact with their client on the progress of the piece
8. Finish the piece by the final deadline and present it to the client
9. Show documentation of the piece to client and receive feedback
10. Deliver the original contract with terms signed by instructor, client and artist for class evaluation of the commission to the instructor

Unit 11: Teaching ... The Verbal and Physical Articulation

Objective: Retention and Application.

Outcomes: At the end of this unit, the student will be able to:

1. Instruct others on studio and self safety.
2. Instruct others in the design approach to a particular project
3. Be confident in safety, knowledge, strategy, and skills in the studio
4. Think beyond the studio in problem solving and apply it not only to jewelry, but to other disciplines and life situations

Jewelry Manufacturing Scope and Sequence

I. Safety

- A. Locate first aid supplies, and phone for emergency numbers

- B. Personal safety is discussed/awareness
 - C. Peer safety and responsibility situations
 - D. Safety equipment explained/demonstrated
 - E. Safety check/pass discussed/explained
 - F. Self-evaluation about safety
 - G. Studio safety and accountability
 - H. Instructor's pledge to safety and responsibility for studio and student community
 - I. Summarize how personal safety relates to communal safety
- II. Studio Design
- A. Identify individual work station
 - B. Identify individual storage units
 - C. Discuss responsibility for basic individual tool set up
 - D. Identify communal work stations
 - E. Define danger zones
 - F. Identify first aid stations, emergency phones and numbers, and all exits (into corridors/outside)
 - G. Explain air venting systems, locate electrical on/off switch, and demonstrate window systems
- III. Course Curriculum Guide
- A. Discuss behavior and how it lends itself to success
 - B. Identify the skills needed to accomplish success
 - C. Research the history of jewelry
 - D. Discuss and critique pieces to understand technique
 - E. Evaluate strategy skills; Design research
 - F. Understand the project sheets with description
 - G. Utilize the design format sheets
 - H. Critique for best results before starting physical design
 - I. Know what tools/skills are necessary at the start of project
 - J. Identify and practice personal/studio safety at all levels of projects progress
 - K. Understand that the instructor's advise and expertise is always available when needed
 - L. Know that the project specifications are defined as a foundation for the student to build upon with their own creativity
 - M. Understand deadlines and pace your work accordingly to accomplish success on time
 - N. Train your eye and ego to be objective in self-evaluation
 - O. Understand that the reason for instructor/class critique is to build and help-not destroy
 - P. Satisfaction and pride in your projects/work should remain your constant goal
 - Q. Develop a jewelry/critique vocabulary
- IV. Equipment and Use
- A. Identify the safe use of tools/equipment
 - B. Identify the misuse or unsafe use of tools/equipment and the damage and ramifications
 - C. Understand how tools/equipment work best
 - D. Be evaluated by instructor on your safe and proper use of tools/equipment checklist
 - E. Understand the importance of conscious safety
 - F. Act responsibly, personally/communally
 - G. Work efficiently and accurately
- V. Goal Setting/Success
- A. Evaluate what is expected of you personally/communally
 - B. Understand and discuss each project
 - C. Clarify anything that is not understood completely
 - D. Identify materials and skills needed
 - E. Compare and contrast design approaches

- F. Create the best and most achievable design
- G. Utilize the assignment sheet and the project design sheet
- H. Design your strategy for success
 - I. Determine the best use of time toward deadline
 - J. Evaluate project at each step of completion
- K. Redesign or change plan when/if necessary
- L. Maintain communication with instructor about progress and suggestions
- M. Present the most original and well designed and executed work as you are capable of doing
- N. Exhibit/present your work to the public
- O. Document your work with slides/drawings and maintain a portfolio of all work
- P. Evaluate the end product and performance
- Q. Continue to educate yourself and others to attain higher levels of design and skill

VI. Career Opportunities

- A. Jewels
 - A. Identify/research career
 - B. Research availability and need
 - C. Visit professional jewelers
 - D. Investigate educational possibilities
 - E. Trade school vs. college vs. apprenticeship
 - F. Store vs. free lance artist/jeweler
 - G. Is it possible to earn enough to support a life-style that you believe you want
- B. Jewelry technician
 - A. Identify/research career
 - B. Education or apprenticeship
 - C. Private store or manufacturing factory
 - D. Possibilities with skills acquired
 - E. Earnings/medical coverage/working conditions
- C. Sales
 - A. Education-school/on job
 - B. Salary vs. commission
 - C. Small shop/mall shop/large store/traveling
 - D. Benefits
 - E. Possibility for advancement
- D. Custom Jewelry Designer
 - A. Education levels
 - B. Studio-rent/own/out of home
 - C. Owning and using own equipment
 - D. Jobbing out parts/whole after design
 - E. Researching customer base/demographics
 - F. Mail-order business format
 - G. Self-employment benefits/expenditures
 - H. Insurance on self, studio, and materials
- E. Part-time Art/Craft Jeweler
 - A. Education level desired
 - B. Market area: galleries, boutiques, specialty shops, craft shows, craft fairs
 - C. Determine what percentage of income is necessary from craft to be supplemented by "real job"
 - D. Think about the possibilities of expansion or not ever quitting your "day job"
- F. Costume Jewelry
 - A. Education-formal or not

- B. Research fashion industry and publication
- C. Identify trends, fads and original standards
- D. Research manufacturer and cost production
- E. Develop a portfolio of pieces for mass production
- F. Research materials well
- G. Research the market for your type of design
- H. Identify the rewards of mass production
- I. Understand business and responsibility for deadlines in a fluctuating marketplace
- J. Understand that it is a changing industry technically and design wise. Be able to change.
- K. The money that can be made will vary; Will you need supplemental income?

VII. Teaching

- A. Research education/skill level needed to teach at chosen teaching situation
- B. Research position availability at each level
- C. Identify school or master apprentice education
- D. How long will it take to accomplish?
- E. Identify salaries for teaching at various levels and situations
- F. What are the medical benefits/studio benefits
- G. If you are a jeweler, artist/jeweler, will teaching deprive you of time and energy for creating your own work?
- H. Identify if there is room for advancement
- I. Will you ever retire from this occupation?

Jewelry Manufacturing Instructional Materials

The Complete Metalsmith: an Illustrated Handbook...Tim McCreight

Practical Casting: a Studio Reference...Tim McCreight

Jewelry Manufacturing Evaluation

The evaluation of the students' progress in this course has many objectives and outcomes. The student is tested verbally, on paper, and hands-on-concerning studio and self safety. The work is evaluated by creativity, difficulty, strategy in approach and completion, use of materials and equipment, deadline, and presentation of the final piece. The student must articulate and demonstrate the process safely to another student, monitor their progress and evaluate the work. Ideally, the student will be able to apply what they learned to other disciplines.

JEWELRY MANUFACTURING- RENTON HIGH SCHOOL

LEADERSHIP AND VOCATIONAL PLAN

LEADERSHIP AREAS	STUDENTS WILL:	VOCATIONAL ASPECTS	INTEGRATED INTO CURRICULUM

<p><u>Area 1:</u> <u>Introduction to Leadership</u></p> <p>Students will develop an understanding and demonstrate the knowledge for the purpose of Student Leadership in Vocational Education.</p>	<p>*Discuss the purpose of developing personal and group leadership skills.</p> <p>*Determine the skills that will help me function in family, community and work settings.</p>		
<p><u>Area 2: Personal Qualities</u></p> <p>Students will demonstrate personal qualities necessary to function in a family, community and work setting.</p>	<p>*Determine the importance of values and goals.</p> <p>*Identify short and long term goals.</p> <p>*Write down necessary steps to carry out goal.</p> <p>*Describe how personal values are reflected in work ethics.</p>	<p>Introduction to Jewelry Manufacturing</p>	
<p><u>Area 3:</u> <u>Interpersonal Skills</u></p> <p>Students will become aware of and demonstrate interpersonal skills needed to function in a global society.</p>	<p>*Demonstrate how to work cooperatively with others.</p> <p>*Provide for positive role models in actions, behaviors & attitudes in a stressful situation.</p> <p>*Identify and write down goals for self.</p> <p>*Determine whether goals are conceivable, achievable, and can be measured.</p>	<p>Guest Speaker from the Jewelry Manufacturing field.</p>	

	<p>*Write down necessary steps to carry out each goal. Evaluate each step.</p>		
<p><u>Area 4: Communication Skills</u></p> <p>Students will be able to communicate effectively in the community, and work situations.</p>	<p>*Students will carry out oral instructions.</p> <p>*Will prepare formal and informal written materials.</p>	<p>Introduction to related fields:</p> <p>Manufacturing</p> <p>Design</p>	<p>Assigned Research Project on Related Fields presented in class.</p>
<p><u>Area 5: Community</u></p> <p>Students will develop an understanding and demonstrate a knowledge of how to work effectively in the community and in a work situation.</p>	<p>*Recognize the values of the manufacturing and design of jewelry.</p>	<p>Participation in appropriate events offered by the Arts and Design community in the Seattle area.</p>	<p>Ongoing readings and Videotapes on Careers in Jewelry Manufacturing</p>
<p><u>Area 6: Personal and Tech Resources.</u></p> <p>Students will be able to utilize personal and technological resources.</p>	<p>*Research and identify the use of technological tools.</p>		<p>Videotape</p>
<p><u>Area 7: Group Dynamics</u></p> <p>Students will demonstrate organizational skills in large and small group</p>	<p>*Understand team skills</p> <p>*Develop group facilitation skills</p> <p>*Conduct an effective small group meeting.</p>		<p>Class project assignment of expressive skit (students brainstorm, write and perform skit).</p>

situations.			
<p>Area 8: <u>Employability Skills</u></p> <p>Students will understand and demonstrate effective employability skills.</p>	<p>* Identify behaviors to establish successful working relationships.</p> <p>* Identify means of dealing with conflict resolution.</p> <p>* Identify and demonstrate proper work ethics.</p>	Guest Speaker	

Essential Academic Learning Requirements

Jewelry Manufacturing

- Arts
- Communication
- Mathematics
- Science
- Writing

Washington State Essential Academic Learning Requirements in Arts

Exposure (No practice time.)

Limited Practice (Has practiced. Additional practice needed to develop skill.)

Moderately Skilled (skill developed. Additional practice needed.)

Skilled (Can perform skill independently.)

Benchmark	Unit/Activity	Performance Level	Reference**
1.1 Understand and apply arts concepts and vocabulary	Jewelry vocabulary	Moderately skilled	Unit 2 (References identified are not totally inclusive)

to communicate ideas. Understand and apply common concepts in all the arts: craftsmanship, function.	hand- Outs, daily use Dissection of samples, what makes a good piece	Skilled	Units 4 - 11
1.2 Organize arts elements into artistic compositions. Purposefully organize arts elements for a specific application.	Every piece uses elements in composition Various body piece projects	Skilled Skilled	Units 4; 11 Units 4 - 11
1.3 Use and develop arts skills and techniques to solve problems and express ideas. Assess and refine technique to improve personal performance/products.	Strategy of design approach to accomplish success Critiques through out production	Moderately Skilled Moderately Skilled	Units 1; 11 Units 10 and 11

Washington State Essential Academic Learning Requirements in Art

Exposure (No practice time.)

Limited Practice (Has practiced. Additional practice needed to develop skill.)

Moderately Skilled (skill developed. Additional practice needed.)

Skilled (Can perform skill independently.)

Benchmark	Unit/Activity	Performance Level	Reference**
1.4 Use skills of	Always	Moderately skilled	Units 4; 10

craftsmanship to produce quality work. Develop habits of craftsmanship to produce quality work: persistence, self-discipline, technical skills.	stressed re-working Each piece project is challenge development	Moderately skilled	Units 4 - 11
2.2 Generate and analyze solutions to problems using creativity and imagination. Identify, analyze, and solve a problem in an expressive and imaginative way.	Cumulative process that has relativity to next piece Creativity research stressed	Moderately Skilled Moderately skilled	Units 4; 11 Units 4; 11
3.1 Use image, sound, action, and movement through the arts to express individual ideas for a specific purpose. Communicate for a variety of functions and audiences, for example, design a video job interview; make a senior project.	Images are produced in story pieces The teacher/staff jewelry collaboration final project	Limited Practice Moderately Skilled	Units 5; 10 Units 4; 10

Washington State Essential Academic Learning Requirements in Art

Exposure (No practice time.)

Limited Practice (Has practiced. Additional practice needed to develop skill.)

Moderately Skilled (skill developed. Additional practice needed.)

Skilled (Can perform skill independently.)

Benchmark	Unit/Activity	Performance Level	Reference**

<p>4.1 Use arts skills and knowledge in other subject areas.</p> <p>Apply artistic processes to both enhance and demonstrate learning in other subjects.</p>	<p>Encouraged math/science</p> <p>Math, chemistry, physics are daily routines</p>	<p>Limited Practice</p> <p>Limited Practice</p>	<p>Units 4; 11</p> <p>Units 4 - 11</p>
<p>4.4 Recognize the influence of the arts in shaping and reflecting cultures and history.</p> <p>Understand how technological advances change the way cultures express and interpret meaning.</p>	<p>History of Cultural Jewelry</p> <p>The past master-</p> <p>Pieces, few tools, contemporary pieces and technology</p>	<p>Exposure</p> <p>Exposure</p>	<p>All Units</p> <p>All Units</p>

Washington State Essential Academic Learning Requirements in Art

Exposure (No practice time.)

Limited Practice (Has practiced. Additional practice needed to develop skill.)

Moderately Skilled (skill developed. Additional practice needed.)

Skilled (Can perform skill independently.)

Benchmark	Unit/Activity	Performance Level	Reference**
<p>4.5 Incorporate arts knowledge and skills into the workplace.</p> <p>Use art skill and knowledge to present ideas, inform, persuade or</p>	<p>Aesthetics, tool skills, material knowledge, safety practices and impressive designs/craftsmanship</p>	<p>Exposure</p> <p>Exposure</p>	<p>All Units</p> <p>All Units</p>

design products.			
4.5 Collaborate to design a project developing his or her own criteria.	The final project with staff/teacher	Skilled	Unit 10

Washington State Essential Academic Learning Requirements in Communication

Exposure (No practice time.)

Limited Practice (Has practiced. Additional practice needed to develop skill.)

Moderately Skilled (skill developed. Additional practice needed.)

Skilled (Can perform skill independently.)

Benchmark	Unit/Activity	Performance Level	Reference** (References identified are not totally inclusive)
1.1 Focus attention. a. Use attention level appropriate for particular circumstances and contexts. b. Analyze and reflect on ideas while paying attention and listening in a variety of situations.	Project Introduction and demonstration	Skilled	All Units
1.2 Listen and observe to gain and interpret information.	Project Introduction and Demonstration	Skilled	All Units

<ul style="list-style-type: none"> a. Interpret and draw inferences from verbal and non-verbal communication. b. Draw inferences based on visual information and/or people's behavior. c. Explore different perspectives on viewing a range of visual texts. d. Listen for, identify and explain: 			
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Washington State Essential Academic Learning Requirements in Communication

Exposure (No practice time.)

Limited Practice (Has practiced. Additional practice needed to develop skill.)

Moderately Skilled (skill developed. Additional practice needed.)

Skilled (Can perform skill independently.)

Benchmark	Unit/Activity	Performance Level	Reference**
Information vs. persuasion; inferences; emotive rhetoric vs. reasoned arguments. e. Use a variety of effective listening strategies.			
1.3 Check for Understanding by asking questions and paraphrasing. a. Ask questions to interpret and evaluate oral and visual contexts based on information from a variety of sources. b. Paraphrase to expand	Testing Written Practical	Skilled	Units 1; 3

<p>and refine understanding.</p> <p>c. Make judgments and inferences.</p> <p>d. Ask questions to refine and verify hypotheses.</p> <p>e. Use a variety of listening skills.</p>			
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Washington State Essential Academic Learning Requirements in Communication

Exposure (No practice time.)

Limited Practice (Has practiced. Additional practice needed to develop skill.)

Moderately Skilled (skill developed. Additional practice needed.)

Skilled (Can perform skill independently.)

Benchmark	Unit/Activity	Performance Level	Reference**
<p>2.1 Communicate clearly to a range of audiences for different purposes.</p> <p>a. Communicate effectively with different audiences.</p> <p>b. Identify and use different forms of oral presentation.</p>	<p>Commission Piece</p> <p>Teaching</p>	Skilled	Units 10 and 11
<p>2.2 Develop content and ideas.</p> <p>a. Use a variety of content to convey messages to a chosen audience.</p> <p>b. Access and use a variety of primary and secondary sources.</p>	Teaching	Skilled	Unit 11

<p>c. Create a comprehensive and organized presentation with a clear sequencing of ideas and transitions.</p> <p>d. Make a well reasoned, insightful presentation supported by related details.</p>			
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Washington State Essential Academic Learning Requirements in Communication

Exposure (No practice time.)

Limited Practice (Has practiced. Additional practice needed to develop skill.)

Moderately Skilled (skill developed. Additional practice needed.)

Skilled (Can perform skill independently.)

Benchmark	Unit/Activity	Performance Level	Reference**
<p>2.3 Use effective Delivery.</p> <p>a. Vary tone, pitch, and pace of speech to create effect and aid communication.</p> <p>b. Project voice well.</p> <p>c. Use good posture and eye contact.</p> <p>d. Skillfully use facial expression, body movement, and gestures to convey tone and mood appropriate to the audience and message.</p>	Teaching	Exposure	Unit 11
<p>2.4 Use effective language and style.</p>	Teaching	Exposure	Unit 11

<ul style="list-style-type: none"> a. Speak using standard grammar. b. Use a variety of sentence structures. c. Use language that is interesting and well suited to the topic and audience. 			
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Washington State Essential Academic Learning Requirements in Communication

Exposure (No practice time.)

Limited Practice (Has practiced. Additional practice needed to develop skill.)

Moderately Skilled (skill developed. Additional practice needed.)

Skilled (Can perform skill independently.)

Benchmark	Unit/Activity	Performance Level	Reference**
2.5 Effectively use action, sound, and/or images to support presentations. <ul style="list-style-type: none"> a. Communicate messages through oral, artistic, graphic, and/or multimedia presentations. b. Demonstrate sophisticated use of available technology to present ideas and concepts. 	Teaching	Skilled	Unit 11

Washington State Essential Academic Learning Requirements in Mathematics

Exposure (No practice time.)

Limited Practice (Has practiced. Additional practice needed to develop skill.)

Moderately Skilled (skill developed. Additional practice needed.)

Skilled (Can perform skill independently.)

Benchmark	Unit/Activity	Performance Level	Reference** References identified are not totally inclusive
1.1 Understand and apply concepts and procedures from number sense. <u>Number and Numeration</u> a. Explain the magnitude of numbers by comparing and ordering real numbers. b. Understand and apply the concepts of ratio and both direct and indirect proportion.	Measuring Picture Frame dimensions	Skilled	Unit 4
1.1 <u>Computation</u> a. Understand operations on rational numbers. b. Use mental arithmetic, pencil and paper, calculator or computer as appropriate to the task involving rational numbers.	Placement of drilled holes for rivets	Skilled	Unit 5

Washington State Essential Academic Learning Requirements in Mathematics

Exposure (No practice time.)

Limited Practice (Has practiced. Additional practice needed to develop skill.)

Moderately Skilled (skill developed. Additional practice needed.)

Skilled (Can perform skill independently.)

Benchmark	Unit/Activity	Performance Level	Reference**
<p>1.1 <u>Estimation</u></p> <p>1. Identify situations involving real numbers in which estimation is sufficient and computation is not required.</p>			
<p>1.2 Understand and apply concepts and procedures from measurement.</p> <p><u>Attributes and Dimensions</u></p> <p>a. Understand how changes in dimension affect perimeter, area, and volume.</p> <p>b. Measure objects and events directly or use indirect methods such as finding the volume of a cone given its height and diameter.</p>	<p>Negative Volumes</p>	<p>Exposure</p>	<p>Unit 9</p>

Washington State Essential Academic Learning Requirements in Mathematics

Exposure (No practice time.)

Limited Practice (Has practiced. Additional practice needed to develop skill.)

Moderately Skilled (skill developed. Additional practice needed.)

Skilled (Can perform skill independently.)

Benchmark	Unit/Activity	Performance	Reference**
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		Level	
1.2 <u>Approximation and Precision</u> a. Understand that the precision and accuracy of measurement is affected by the measurement tools and calculating procedures. b. Use estimation to obtain reasonable approximations.	Ring and bracelet, necklace sizing	Moderately Skilled	Units 6, 7, and 8
1.2 <u>Systems and Tools</u> a. Understand the benefits of standard units of measurement and the advantages of the metric system. b. Compare, contrast, and use both the US and SI systems. c. Select and use tools that will provide an appropriate degree of precision.	Cabachon stone Measuring in mm Triple beam scale/grams	Moderately Skilled Limited Practice	Units 6 and 8 Weighing sterling silver to calculate cost of piece

Washington State Essential Academic Learning Requirements in Mathematics

Exposure (No practice time.)

Limited Practice (Has practiced. Additional practice needed to develop skill.)

Moderately Skilled (skill developed. Additional practice needed.)

Skilled (Can perform skill independently.)

Benchmark	Unit/Activity	Performance Level	Reference**
1.3 Understand and apply concepts and procedures			

from geometric sense. Understand and use coordinate grids.			
1.4 Understand and apply concepts and procedures from probability and statistics. <u>Statistics</u> a. Collect data using appropriate methods and technology. b. Organize and display data in appropriate forms such as tables, graphs, scatter plots, and box plots.			

Washington State Essential Academic Learning Requirements in Mathematics

Exposure (No practice time.)

Limited Practice (Has practiced. Additional practice needed to develop skill.)

Moderately Skilled (skill developed. Additional practice needed.)

Skilled (Can perform skill independently.)

Benchmark	Unit/Activity	Performance Level	Reference**
1.4 <u>Prediction and Inference</u> a. Design and conduct experiments to verify or disprove predictions. b. Understand and make inferences based on the analysis of experimental results.	Casting metal	Exposure	Unit 9

<p>1.5 Understand and apply concepts and procedures form algebraic sense.</p> <p>a. Understand, develop, and express rules describing patterns.</p> <p>b. Translate among tabular, symbolic, and graphical representations of relations.</p>	<p>Reactive metal coloring with electricity</p>	<p>Exposure</p>	<p>Extra Demonstration</p>
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Washington State Essential Academic Learning Requirements in Mathematics

Exposure (No practice time.)

Limited Practice (Has practiced. Additional practice needed to develop skill.)

Moderately Skilled (skill developed. Additional practice needed.)

Skilled (Can perform skill independently.)

<p>Benchmark</p>	<p>Unit/Activity</p>	<p>Performance Level</p>	<p>Reference**</p>
<p>2.1 Investigate situations</p> <p>a. Analyze and use multiple strategies.</p> <p>b. Identify what information is missing or extraneous and compensate for it.</p> <p>c. Analyze an unproductive approach and attempt to modify it or try a new approach.</p>			
<p>2.2 Formulate questions and define problems.</p> <p>a. Identify questions to be answered in complex situations.</p> <p>b. Define problems in complex situations.</p>			

c. Identify the unknowns in complex situations.			
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Washington State Essential Academic Learning Requirements in Mathematics

Exposure (No practice time.)

Limited Practice (Has practiced. Additional practice needed to develop skill.)

Moderately Skilled (skill developed. Additional practice needed.)

Skilled (Can perform skill independently.)

Benchmark	Unit/Activity	Performance Level	Reference**
2.3 Construct solutions. a. Organize and synthesize information from multiple sources. b. Apply appropriate methods, operations, and processes to construct a solution.			
3.1 Analyze information. Interpret and integrate information from multiple sources.			
3.2 Predict results and make inferences. Make and explain conjectures and inferences based on analysis of problem situations.			

Washington State Essential Academic Learning Requirements in Mathematics

Exposure (No practice time.)

Limited Practice (Has practiced. Additional practice needed to develop skill.)

Moderately Skilled (skill developed. Additional practice needed.)

Skilled (Can perform skill independently.)

Benchmark	Unit/Activity	Performance Level	Reference**
3.3 Draw conclusions and verify results. a. Support arguments and justify results using inductive and deductive reasoning. b. Check for reasonableness of results. c. Reflect on and evaluate procedures and results and make necessary revisions.	Casting	Exposure	Unit 9
4.1 Gather information. Develop or select an efficient system for collecting information.			

Washington State Essential Academic Learning Requirements in Mathematics

Exposure (No practice time.)

Limited Practice (Has practiced. Additional practice needed to develop skill.)

Moderately Skilled (skill developed. Additional practice needed.)

Skilled (Can perform skill independently.)

Benchmark	Unit/Activity	Performance Level	Reference**

<p>4.2 Organize and interpret information.</p> <p>Organize, clarify, and refine mathematical information in multiple ways: reflecting, verbalizing, discussing, or writing.</p>			
<p>5.2 Relate mathematical concepts and procedures to other disciplines.</p> <p>a. Extend mathematical thinking and modeling in other disciplines.</p> <p>b. Apply mathematical thinking and modeling in other disciplines.</p>			

Washington State Essential Academic Learning Requirements in Science

Exposure (No practice time.)

Limited Practice (Has practiced. Additional practice needed to develop skill.)

Moderately Skilled (skill developed. Additional practice needed.)

Skilled (Can perform skill independently.)

<p>Benchmark</p>	<p>Unit/Activity</p>	<p>Performance Level</p>	<p>Reference* *</p> <p>References identified are not totally inclusive</p>
<p>1.1 Use properties to identify, describe, and categorize substances, materials, and objects.</p> <p>a. Relate the physical and chemical properties of materials to their underlying structure.</p>	<p>Metallurgy vocabulary</p> <p>Metallurgy</p>	<p>Limited Practice</p> <p>Limited Practice</p>	<p>Unit 2</p> <p>Unit 2</p>

<ul style="list-style-type: none"> b. Describe the properties and organizational pattern used to classify chemical elements. c. Use physical and chemical properties to identify unknown substances. 			
<p>1.3 Measure properties and characteristics.</p> <p>Use appropriate tools, units, and procedures to obtain accurate quantitative information related to physical and chemical properties.</p>			

Washington State Essential Academic Learning Requirements in Science

Exposure (No practice time.)

Limited Practice (Has practiced. Additional practice needed to develop skill.)

Moderately Skilled (skill developed. Additional practice needed.)

Skilled (Can perform skill independently.)

Benchmark	Unit/Activity	Performance Level	Reference**
<p>1.4 Recognize the components, structure, and organization of systems and the interconnections within and among them.</p> <ul style="list-style-type: none"> a. Describe the subatomic structure of atoms as interacting electrons, protons, and neutrons, that are held together by electric forces. b. Understand how an element's atomic structure determines its properties and the molecules it can form. 			

<p>1.5 Understand that interactions within and among systems cause changes in matter and energy.</p> <ul style="list-style-type: none"> a. Explain how the rate of phase change such as evaporation or condensation is influenced by temperature and pressure. b. Compare and contrast chemical, physical, and nuclear changes, including factors such as temperature of reactants. c. Describe transformations of energy among various forms in the universe and on earth. d. Understand that temperature is the measure of the average motion of particles in a substance. e. Understand the Law of Conservation of Matter and Energy. f. Compare and contrast the properties of rocks and minerals. g. Describe how rocks are trans-formed through processes at and below the earth's surface, and the rate at which these changes occur. 	<p>Silver Soldering and Torch work</p>	<p>Moderately Skilled</p>	<p>Units 6 - 11</p>
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Washington State Essential Academic Learning Requirements in Science

Exposure (No practice time.)

Limited Practice (Has practiced. Additional practice needed to develop skill.)

Moderately Skilled (skill developed. Additional practice needed.)

Skilled (Can perform skill independently.)

Benchmark	Unit/Activity	Performance Level	Reference**
<p>2.1 Plan and implement scientific investigations.</p> <ul style="list-style-type: none"> a. Draw inferences based on observations. b. Identify questions and concepts which could guide scientific investigations: define problem; formulate testable hypotheses and use them to guide the inquiry and essential resource requirements: and identify the known facts and acceptable parameters. c. Select appropriate tools, methods, resource requirements, and safety issues and identify the sequential steps to be followed in an investigation. d. Analyze and refine the experimental design, and conduct an experiment controlling appropriate variables individually and or with others. e. Formulate and revise scientific explanations and models using logic and evidence. f. Communicate accurately the approach, methods, results, conclusions, and known limitations of the investigation in a manner that allows the results to be understood. g. Know and use safe approaches in 			

investigations.			
<p>2.2 Think logically, analytically, and creatively.</p> <ul style="list-style-type: none"> a. Use analytical thinking to examine the question/problem from different points of view. b. Evaluate evidence to determine scientific validity of claims and explanations. c. Use scientific knowledge to compare, order, and categorize in complex situations. d. Identify and explain the thought processes used in conducting a scientific investigation. 	Torch work	Moderately Skilled	Units 4, 6 - 11

Washington State Essential Academic Learning Requirements in Science

Exposure (No practice time.)

Limited Practice (Has practiced. Additional practice needed to develop skill.)

Moderately Skilled (skill developed. Additional practice needed.)

Skilled (Can perform skill independently.)

Benchmark	Unit/Activity	Performance Level	Reference**
<p>2.3 Practice the principles of scientific inquiry.</p> <ul style="list-style-type: none"> a. Record, display, and report data accurately. b. Understand the proprietary nature of scientific discoveries. c. Evaluate the alternative scientific explanations in an 			

<p>open, intellectually honest way.</p> <p>d. Analyze the existing knowledge about a question/problem to determine what is as yet unknown and unanswered; propose strategies to learn more.</p> <p>e. Recognize in what ways faulty procedures can affect the results of scientific inquiry.</p> <p>f. Recognize useful information can result from both successful and unsuccessful scientific investigations.</p> <p>g. Pursue scientific inquiry by continually evaluating investigative strategies and modifying them appropriately.</p>			
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Washington State Essential Academic Learning Requirements in Science

Exposure (No practice time.)

Limited Practice (Has practiced. Additional practice needed to develop skill.)

Moderately Skilled (skill developed. Additional practice needed.)

Skilled (Can perform skill independently.)

Benchmark	Unit/Activity	Performance Level	Reference**
<p>2.4 Understand the relationship between evidence and scientific explanation.</p> <p>a. Understand factors that limit the extent of scientific investigation.</p>			

<p>b. Understand that scientific principles, theories, and laws are logically consistent, abide by rules of evidence, are open to question and modifications, are based on historical and current scientific knowledge, and are invented by acts of imagination, intelligence, and logic through scientific investigation.</p>			
<p>3.1 Identify problems and challenges in which science knowledge and skill can be applied.</p> <p>a. Identify a challenge or problem of interest to students which lends itself to being resolved through the application of science/technology.</p> <p>b. Define the components of a problem and criteria of a suitable solution.</p>	<p>All Projects</p>	<p>Moderately Skilled</p>	<p>Units 4 - 11</p>

Washington State Essential Academic Learning Requirements in Science

Exposure (No practice time.)

Limited Practice (Has practiced. Additional practice needed to develop skill.)

Moderately Skilled (skill developed. Additional practice needed.)

Skilled (Can perform skill independently.)

<p>Benchmark</p>	<p>Unit/Activity</p>	<p>Performance Level</p>	<p>Reference**</p>

<p>3.2 Research, design, and test a variety of ways to address problems and/or challenges.</p> <p>a. Research, design, test alternative solutions to a science/technology challenge.</p> <p>b. Identify and describe the risks/benefits, trade-offs, and constraints when developing alternative solutions.</p>	All projects	Moderately Skilled	Units 4 - 11
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Washington State Essential Academic Learning Requirements in Science

Exposure (No practice time.)

Limited Practice (Has practiced. Additional practice needed to develop skill.)

Moderately Skilled (skill developed. Additional practice needed.)

Skilled (Can perform skill independently.)

Benchmark	Unit/Activity	Performance Level	Reference**
<p>3.3 Evaluate solutions and consequences.</p> <p>a. Using criteria for a suitable solution, compare and evaluate solutions and consequences.</p> <p>b. Using the evaluation results, determine which solution is best and predict the consequences of its implementation.</p>	All projects	Moderately Skilled	Units 4; 11
<p>4.1 Use listening, observing, and reading skills to obtain</p>	Research Books and	Moderately Skilled	Reference Library

<p>science information.</p> <p>a. Demonstrate comprehension by asking clarifying questions, contributing to the conversation, and paraphrasing the information presented.</p> <p>b. Read, comprehend, and critique scientific information from popular, academic, technical, and telecommunication sources.</p>	Periodicals		
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Washington State Essential Academic Learning Requirements in Science

Exposure (No practice time.)

Limited Practice (Has practiced. Additional practice needed to develop skill.)

Moderately Skilled (skill developed. Additional practice needed.)

Skilled (Can perform skill independently.)

Benchmark	Unit/Activity	Performance Level	Reference**
<p>4.2 Use writing and speaking skills to organize and express science ideas.</p> <p>a. Produce science and technical reports and explanations that are coherent, logical, and scientifically accurate.</p> <p>b. Use science vocabulary appropriately in written explanations, conversations, and verbal presentations.</p>			

Washington State Essential Academic Learning Requirements in Science

Exposure (No practice time.)

Limited Practice (Has practiced. Additional practice needed to develop skill.)

Moderately Skilled (skill developed. Additional practice needed.)

Skilled (Can perform skill independently.)

Benchmark	Unit/Activity	Performance Level	Reference**
<p>4.3 Use effective communication strategies and tools to prepare and present science information.</p> <ul style="list-style-type: none">a. Produce science products using standard and advanced software features as available.b. Use available science software programs, computer equipment, telecommunication systems, and peripherals to access information and conduct scientific investigations as available.c. Select and use appropriate science data and strategies to effectively present a clear and persuasive position to an audience.d.	Teaching	Moderately Skilled	Unit 11
<p>5.1 Use Mathematics to enhance scientific understanding.</p> <ul style="list-style-type: none">a. Use mathematical relationships to understand results from scientific	All projects	Limited Practice	Units 4 - 10

investigations. b. Use mathematics to represent and describe a situation resulting from scientific investigations.			
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Washington State Essential Academic Learning Requirements in Art

- Exposure (No practice time.)
- Limited Practice (Has practiced. Additional practice needed to develop skill.)
- Moderately Skilled (skill developed. Additional practice needed.)
- Skilled (Can perform skill independently.)

Benchmark	Unit/Activity	Performance Level	Reference**
5.2 Understand the relationship between science and technology. a. Investigate how scientific inquiry and technological design are used in various careers. b. Explain how scientific inquiry results in knowledge which can improve technological designs and vice versa.	All projects in every class	Moderately skilled	All units

Washington State Essential Academic Learning Requirements in Writing

- Exposure (No practice time.)
- Limited Practice (Has practiced. Additional practice needed to develop skill.)
- Moderately Skilled (skill developed. Additional practice needed.)
- Skilled (Can perform skill independently.)

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Benchmark	Unit/Activity	Performance Level	Reference** References identified are not totally inclusive
<p>1.1 Develop concept and design.</p> <ul style="list-style-type: none"> a. Maintain a sharp focus throughout the work; focus text clearly to hold reader's attention, to make a point, to tell a story, and/or describe a process or phenomenon. b. Approach a topic in an individualized and purposeful way. c. Discriminate between essential, intriguing, or useful information and trivia. d. Write coherent paragraphs. e. Develop analysis, synthesis, persuasion, and exposition logically; demonstrate advanced logic. 	<p>All projects documentation of design with notations</p>	<p>Limited Practice</p>	<p>All Units</p>

Washington State Essential Academic Learning Requirements in Writing

Exposure (No practice time.)

Limited Practice (Has practiced. Additional practice needed to develop skill.)

Moderately Skilled (skill developed. Additional practice needed.)

Skilled (Can perform skill independently.)

Benchmark	Unit/Activity	Performance Level	Reference**
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<p>1.2 Use style appropriate to the audience and purpose.</p> <ol style="list-style-type: none"> a. Recognize voice; strengthen and modify own voice as appropriate. b. Choose works to convey intended message in a precise, interesting, and natural way. c. Use specialized vocabulary relevant to a specific content area. 			
<p>1.3 Apply writing Conventions.</p> <ol style="list-style-type: none"> a. Use standard writing conventions in final draft to enhance meaning and clarity: <ul style="list-style-type: none"> • Grammar/usage • Capitalization • Punctuation • Spelling <p>Use paragraphing and stanza division to reinforce text's organizational structure.</p>			

Washington State Essential Academic Learning Requirements in Writing

Exposure (No practice time.)

Limited Practice (Has practiced. Additional practice needed to develop skill.)

Moderately Skilled (skill developed. Additional practice needed.)

Skilled (Can perform skill independently.)

Benchmark	Unit/Activity	Performance Level	Reference**
2.1 Write for different audiences.			

<p>a. Identify, analyze, describe, and meet the needs of chosen audience.</p> <p>b. Show a sense of how particular audience may interpret a text.</p>			
<p>2.2 Write for different purposes.</p> <p>Write for a broad range of purposes:</p> <ul style="list-style-type: none"> • To reflect upon own experiences. • To experiment with language. • To make inferences or draw conclusions. • To present an analytical response to literature. • To apply for jobs. • To communicate research findings. • To convey technical information. 			

Washington State Essential Academic Learning Requirements in Writing

Exposure (No practice time.)

Limited Practice (Has practiced. Additional practice needed to develop skill.)

Moderately Skilled (skill developed. Additional practice needed.)

Skilled (Can perform skill independently.)

Benchmark	Unit/Activity	Performance Level	Reference**
<p>2.4 Write for career applications.</p> <p>a. Identify particular writing skills required</p>			

<p>for occupational/career areas of interest.</p> <p>b. Produce technical and non-technical documents for career audiences such as a homepage, research report, or blueprint.</p> <p>c. Understand the importance of using reference style consistently when writing reports or technical documents.</p>			
<p>3.1 Prewrite</p> <p>a. Generate ideas and plan writing independently such as extensive planning and defining and choosing an appropriate mode of expression.</p>			

Washington State Essential Academic Learning Requirements in Writing

Exposure (No practice time.)

Limited Practice (Has practiced. Additional practice needed to develop skill.)

Moderately Skilled (skill developed. Additional practice needed.)

Skilled (Can perform skill independently.)

Benchmark	Unit/Activity	Performance Level	Reference**
<p>Use available tools and technology consistently through the writing process.</p> <p>Analyze and synthesize information from a variety of sources.</p>			
<p>3.2 Draft</p> <p>a. Formulate and</p>			

<p>construct ideas independently.</p> <p>b. Coordinate a number of ideas and point of view.</p> <p>c. Present argumentation effectively by using clarity, coherency, and precision; draft text that uses logical flow of ideas and relationships.</p>			
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Washington State Essential Academic Learning Requirements in Writing

Exposure (No practice time.)

Limited Practice (Has practiced. Additional practice needed to develop skill.)

Moderately Skilled (skill developed. Additional practice needed.)

Skilled (Can perform skill independently.)

Benchmark	Unit/Activity	Performance Level	Reference**
<p>3.3 Revise</p> <p>a. Confer with others to improve text; incorporate suggestions from others.</p> <p>b. Investigate additional information sources to improve text; use language to enrich text and enhance style.</p>			
<p>3.4 Edit</p> <p>a. Adapt a new reference technology to further the purpose of writing.</p> <p>b. Demonstrate self-correction</p> <p>c. Change text order to</p>			

improve argument, flow of information, and logic. d. Correct mechanics and grammar.			
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Washington State Essential Academic Learning Requirements in Writing

Exposure (No practice time.)

Limited Practice (Has practiced. Additional practice needed to develop skill.)

Moderately Skilled (skill developed. Additional practice needed.)

Skilled (Can perform skill independently.)

Benchmark	Unit/Activity	Performance Level	Reference**
3.5 Publish a. Produce a legible, professional-looking final product. b. Use a variety of technological resources to produce a final product.			
4.1 Assess own strengths and needs for improvement. a. Articulate own and established criteria to improve writing; defend choices to deviate from established criteria. b. Assess own strengths and developmental needs as a writer. c. Demonstrate knowledge of the qualities that make a piece of writing effective.			

Washington State Essential Academic Learning Requirements in Writing

Exposure (No practice time.)

Limited Practice (Has practiced. Additional practice needed to develop skill.)

Moderately Skilled (skill developed. Additional practice needed.)

Skilled (Can perform skill independently.)

Benchmark	Unit/Activity	Performance Level	Reference**
4.2 Seek and offer feedback. a. seek, evaluate, accept, and apply feedback, hold on to one's own vision. b. Independently offer specific feedback on others' writing with regard to: <ul style="list-style-type: none">● Concept and design● Style● Conventions			

**References identified are not totally inclusive.