Unit 2

Na ʻOihana - Careers
Ka Hana ‘Imi Na‘auao –
A Science Careers Curriculum Resource

was written and published by
the Center on Disability Studies,
College of Education, Univ. of Hawai‘i, USA.

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Note: This curriculum may be printed here in grayscale.
Color versions of all documents are available on the disk
found in the curriculum package, and can also be
accessed online (see above).
### UNIT 2: Nā ‘Oihana - Careers

**CONTENT:**
- Hawaiian Science Careers & College

**MATERIALS:**
- Student Handout /Reading
- Teacher’s Notes
- Lesson

**ACTIVITIES:**
- Hands On
- Discussion
- Huaka’i (Explore)
- Web
- Video/Powerpt.

**ASSESSMENT:**
- Formative, Summative

**TYPE:**
- Individual, Group

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Standards/HCPS III addressed or related to this item:
(All Sciences) **SC.1 Standard 1**: SCIENTIFIC INVESTIGATION—Discover, invent, and investigate using the skills necessary to engage in the scientific process; SC.1.1 Describe how a testable hypothesis may need to be revised to guide a scientific investigation; SC.1.2 Design and safely implement an experiment, including the appropriate use of tools and techniques to organize, analyze, and validate data; SC.1.3 Defend and support conclusions, explanations, and arguments based on logic, scientific knowledge, and evidence from data; SC.1.4 Determine the connection(s) among hypotheses, scientific evidence, and conclusions; SC.1.5 Communicate the components of a scientific investigation, using appropriate techniques; SC.1.6 Engage in and explain the importance of peer review in science; SC.1.7 Revise, as needed, conclusions and explanations based on new evidence; SC.1.9 Explain how scientific explanations must meet a set of established criteria to be considered valid;

(All Sciences) **SC.2 Standard 2**: The Scientific Process: NATURE OF SCIENCE: Understand that science, technology, and society are interrelated; SC.2.1 Explain how scientific advancements and emerging technology have influenced society

Source in Introduction section of binder or go to: [http://standardstoolkit.k12.hi.us/index.html](http://standardstoolkit.k12.hi.us/index.html)

Career/Technical Education, Language Arts & Health Standards/HCPS III related to this item:
CTE.9-12.1 Standard 1: TECHNOLOGICAL DESIGN: Design, modify, and apply technology to effectively and efficiently solve problems; CTE.9-12.2 Standard 2: CAREER PLANNING: Explore and understand educational and career options in order to develop and implement personal, educational, and career goals; CTE.9-12.2.1 Analyze annual individual education and career goals. CTE.9-12.2.2 Evaluate potential career choices in relation to personal interests, strengths, and values; CTE.9-12.2.3 Apply appropriate and safe behaviors and practices in the school, community, and workplace; CTE.9-12.2.4 Assess career portfolio that documents evidence of progress toward the attainment of personal,
educational, and career goals; CTE.9-12.2.5 Analyze the demographic, geographic, and technological trends that affect work opportunities; CTE.9-12.2.6 Gather and prepare documents related to job-seeking; CTE.9-12.2.7 Prepare for the job interview process; CTE.9-12.2.8 Assess the compensation, lifestyle, and other benefits associated with careers of interest;

LANGUAGE ARTS: LA.10.6.5 Standard 6: Oral Communication: CONVENTIONS AND SKILLS: Apply knowledge of verbal and nonverbal language to communicate effectively in various situations: interpersonal, group, and public: for a variety of purposes;

LA.EWI.1. Standard 1: Conventions and Skills- Use the writing process and conventions of language and research to construct meaning and communicate effectively for a variety of purposes and audiences using a range of forms; LA.EXPOSITORY WRITING (EW).I.1.2 Use a variety of pre-writing strategies (e.g., determining purpose, taking notes, developing a focus and sequence of ideas, creating outlines) to generate ideas, topics, and points of view for the intended audience and purpose; LA.EWI.1.3 Include relevant information and exclude extraneous information; LA.EWI.1.4 Revise own and other's writing for organization, style, and tone appropriate to audience, purpose, and context (e.g., use feedback from others; add details to develop or support ideas more clearly; ensure effective transitions between paragraphs; correct errors in logic; reassess appropriateness of writing for genre, purpose, and audience; sharpen language and meaning); LA.EWI.1.6 Use print or electronic dictionaries, thesauruses, and glossaries to select a definition, pronunciation, spelling, or usage of words appropriate to the intended audience and purpose; LA.EWI.1.7 Use the spell-checker and grammar check function in word processing software while understanding the limitations of relying upon these tools; LA.EWI.1.8 Solve grammatical problems (e.g., whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, which preposition to use in simple contexts, the appropriate homonym) to make writing clearer and communicate more effectively to the intended audience; LA.EWI.1.12 Use a research plan (e.g., organize what is known about a topic, define and narrow a problem or research topic, formulate research questions, identify authoritative sources); LA.EWI.1.14 Gather relevant information from a variety of print or electronic primary and secondary sources (e.g., books, magazines, newspapers, journals, periodicals, the internet);

LA.EWII.1.3 Gather relevant information from a variety of print or electronic primary and secondary sources (e.g., books, magazines, newspapers, journals, periodicals, the internet);

Unit 2 Pre-/Post-Test

Nā ‘Oihana (Careers) Knowledge Survey Questions

1. Getting a science-related career in Hawai‘i ...
   a) Requires an advanced university degree in science
   b) Almost guarantees a good salary for doing important work
   c) Is too difficult for most local people to do
   d) All of the above

2. It is important for citizens of Hawai‘i to work in science-related fields because they ...
   a) Understand how humans interact with Hawaii’s environment
   b) Can help conserve and protect Hawaii’s people and resources
   c) They can add unique knowledge to different science fields
   d) All of the above

3. The people most likely to successfully achieve their career goals...
   a) Explore every option before choosing their favorite
   b) Write a resumé and cover letter
   c) Make long range plans and have a mentor
   d) Pursue studies or jobs that challenge them the most

4. A scientific experiment proposal requires ...
   a) A research question, hypothesis and methods
   b) Analysis of findings, conclusion and next steps for research
   c) Hawaiian and scientific protocols
   d) All of the above

5. It is important to revise a scientific investigation when …
   a) Testing the hypothesis yields different results each time
   b) The experiment is not done safely
   c) Experiments on the same topic provide conflicting results
   d) The experiment has not been reviewed by peers
Unit 2 Post-Test

Nā ‘Oihana (Careers) Conceptual Learning & Alternate Assessment

Page 2

DIRECTIONS: Write, speak &/or perform your answers as directed below.

6. You and two peers have been asked to conduct a new inquiry related to water. Design a proposal together. Write your answer here, then critique your proposal in an interview with your teacher: (6+ points)

__________________________________________________________________________

__________________________________________________________________________

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7. Think of examples of science-related careers that students in Hawai‘i could pursue. Make a 3 minute drawing on a blank sheet of paper to show one of these careers and what you know about it, including:
- A typical task someone with this career might do
- The benefits of this career to someone who chooses it
- The benefits to others if people contribute their efforts to this career choice

When done, share your drawing with your teacher and explain what it shows. (4+ points)
A Science Career?

Just like you weave an 'aha (rope)… it’s easy!

1. Find out what you like!
2. Explore a few things!
3. Try a cool experiment!
4. Line up the steps to a cool career!
5. Find a mentor to help!

Ta-da! You’ll be a scientist along the way!

How do you find your mentor?

1. Look at someone in your neighborhood who will take your reach them no matter how long it takes to reach them seriously & be there to help you. It’s not easy, and you have to ask. Someone in your neighborhood who will take your
2. Find out what you’ll need to work in a science field:
3. A teacher, professor or a pro-
4. A friend who is following the same career path as you, but is a few years ahead & can guide you. You’ll check on how you’re doing every week for several years!
5. A member of your ‘ohana (family) who will check on how you’re doing!

A mentor! How can you succeed for sure?

Find a mentor! It’s easy!

Your TIMELINE should show how much help you’ll need.

Your TIMELINE should show how much help you’ll need. How can I put that together?! I’m no brain sturgeon!

ME?! A Science Career?

Set Realistic Goals!

1. Create a Resume & Cover Letter
c) Show how you’ve considered the long range options (i.e. entry level jobs, ideal jobs, back-up plans)
2. Grad (work, college, activism)
3. Set up experiences to try after
   opportunity
4. Take pre-goal career levels in high school
5. Strengthen your current grades & skills

Include steps to:
   You yourself! How much help you’ll need which shows how much you plan to do
   to a job now, or practice.

Your Science-Related Career!

How can you succeed on track!

Step 4 - List your steps.

Step 5 - Get help to stay on track! 
YOUR SELF-EVALUATION

Your Self-Evaluation

Your self-assessment should include your...

- INTERESTS (what you enjoy doing)
- SKILLS (what you know now & can learn while still in high school)
- APTITUDE (what you would probably be good at)
- MOTIVATION (how hard you're willing to work to learn more)

Find out about careers for you!

- Go to www.career.kokua & take the Holland, the O*NETs &/or a skills inventory.
- Take the ASVAB at school.
- Ask your school counselor or IEP teacher to help.
- Talk to friends, family, teachers.
- Go to www.career.kokua.

Now make a list of cool sciences!

Your Research Project

Your research project is to...

- a) Choose 1 or 2 Science Fields
- b) Find basic info in the Hawai'i Science Career Box about occupations in both science fields
- c) List all jobs for the field(s) you're researching, then choose only 1 job to study in depth.

You must get info from:

- the Internet (not chat boards)
- published sources (books, magazines, brochures, etc.)
- an interview (in person or via telephone or email)
- a skills inventory

STEP 1 – Figure Out What You’d Like To Do!

STAR project

Cool that scientists do!

Your Practice Project

Your practice project is to...

- a) Choose 1 or 2 experiments a scientist in your research field would do – look for “projects” in the Hawai'i Science Career Box
- b) Design your own experiment to conduct over ___ classes this term.
- c) Write your Experiment Proposal on kumu’s handout & wait for approval before beginning.
- d) Write your Final Lab Report as asked by your kumu & hand in on DUE DATE: ______________

STEP 2 – Explore 1 or 2 Science Fields!

Science Fields

Your research project is to...

- a) Choose 1 or 2 Science Fields
- b) Explore 1 or 2 Science Fields

STEP 3 – Try out Something Cool that Scientists Do!

Your Practice Project

Your practice project is to...

- a) Choose 1 or 2 experiments a scientist in your research field would do – look for “projects” in the Hawai'i Science Career Box
- b) Design your own experiment to conduct over ___ classes this term.
- c) Write your Experiment Proposal on kumu’s handout & wait for approval before beginning.
- d) Write your Final Lab Report as asked by your kumu & hand in on DUE DATE: ______________

END OF PAGE
Science Careers Research Project: Teacher's Notes

Refer to the student project brochure: A Science Career? Me?

Why do this project?

- Meeting standards and graduating is great, but most students need more than that to prepare for employment.
- There are lots of opportunities in Hawai‘i for students to work in science-related careers, with or without college degrees.
- There are science-related career choices for all DOE Career Pathways which many students may find interesting, even those less interested in science - there’s also more jobs with better pay in science-related careers.
- Native Hawaiian and non-Hawaiian students need to become Hawaii’s next generation of scientists (and responsible citizens) in order for science to be done pono (appropriately) in Hawai‘i.

How do I teach this? The notes below can be used in 3 ways to help students prepare for science-related careers in your class:

✓ the “Easy Way” in 2-3 lessons give students a quick idea of what careers are out there for them ... OR...
✓ the “Better Way” in 2-3 weeks give them a good look at career options in science ...OR...
✓ the “Best Way” over 1 or 2 terms take an in-depth approach to enable students to take ownership for their career decisions and begin taking steps to reach a science career while in high school

What do I do first?

1. Book computer &/or library time for the class to do research, if possible ... if not, just use the resources in this curriculum (see the the Hawai‘i Science Career Cards and Section III in the binder).
2. Introduce the Science Career Projects (Research & Practical) using the brochure *A Science Career? Me?!* and encourage them to seriously consider science-related careers for their future (you may want to bring in *guest speakers* from science fields or college to help you do this (see Unit 2 Menu for good speakers to look for &/or refer to Unit 1 ‘ohana surveys for ideas).

3. Discuss **STEP 1** of the project brochure with students to help them access career assessments they can do - or have already done - in a career course or Special Education (possibly with their transition teacher/counselor), &/or online at [www.careerkokua.com](http://www.careerkokua.com) (sign up is very easy and free to all Hawai‘i residents). Individually or as a class, students can list all the science-related careers there are. To save time you can use the *Quick Career Assessment Survey*, and the *Science Disciplines List* in this unit. To extend discussion, go over the *Career Assessment “Talk Story”* handout with students. Be sure to also view the DVD included in this curriculum: *Mea ‘Imi Na‘auao O Hawai‘i (Scientists in Hawai‘i)*.

4. Do **STEP 2** as a class in jigsaw groups so students learn about all the science fields in the *Hawai‘i Science Career Cards*, or schedule students time to individually search this resource for the disciplines they will research in depth. Discuss the criteria of “in depth” research listed on the *Science Career Research Rubric* handout &/or show the *Example Science Career Research Project* (this is an essay - alternate research formats include video, Powerpoint™, audio or poster). Consider letting students plan a ho‘ike to present their research projects to the class, other classes, younger teens, invited family members &/or other adults in the community.

5. Discuss **STEP 3** before students do the research for this project, to give them more time to consider interesting Practice
Project ideas. Once the Research Project is complete, give students the *Science Career Practice Project* handouts (there are 3: Practice Project Proposal Example; Experiment Proposals; final Lab Report). Also, show and discuss the *Example Science Career Practice Project & Rubric*.

6. Discuss **STEP 4** with the class by referring to the *Lining Up a Science Career* and *Example Timeline of Science Career Steps* handouts. Also, you, your students and their 'ohana (family) can scan the opportunities listed in Section III of the curriculum that will make a difference for them. These include:

- after school & weekend programs in your area
- tutoring and mentoring options in your community
- summer programs on your island
- advance credit courses to take while in high school
- college tours, peer support groups and transition programs for 1st year
- job shadowing & career-related volunteer activities
- internships & scholarships to apply for

Note: many of these resources can send **guest speakers** (role models, college staff or students, program staff, etc.) to your classes.

Finally, students can look over the *Create a Resumé & Cover Letter* handouts to prepare a real application (or practice) for a science-related job now.

7. Include **STEP 5** in the timeline assignment above & follow-up with students after projects are done by helping them connect with a mentor and asking how their progress is going. Let students know that having a mentor greatly increases their chances for success. Also, try to connect with their 'ohana by having students plan, advertise, and host a Science Careers event to attract mentors & to showcase their projects.
Response to Video: Mea ‘Imi Na’auao O Hawaii (Scientists in Hawai’i)

BEFORE VIEWING:
- Get comfortable in your desk & make sure you can see easily
- Clear your mind of other thoughts – you will have time for that later
- Trust yourself to remember things you want to think about or share

Kūpuna remind us to learn this way:
Watch, Listen, Don’t Speak, Reflect … ask questions at the end.

DURING VIEWING:
New Words to Know – jot down new words & look up definitions later
1. _______________ – _____________________________________________
2. _______________ – _____________________________________________
3. _______________ – _____________________________________________
4. _______________ – _____________________________________________

WHEN TEACHER PAUSES THE FILM … reflect on scientists’ answers, then write your own responses.

QUESTION 1: First, Hawaii’s scientists are asked “How did you get into science?” Did a scientist mention something similar to your interests now or as a child? Write about that or describe how your interests are different.
_______________________________________________________________
_______________________________________________________________
_______________________________________________________________
_______________________________________________________________

QUESTION 2: Next, scientists respond to the question “How did you get to where you are?” Did their answers make getting a science career sound difficult or easy? Could you do this kind of work, too? Why or why not?
_______________________________________________________________
_______________________________________________________________
_______________________________________________________________
_______________________________________________________________

Ka Hana ‘Imi Na’auao – A Science Careers Curriculum Resource  Go to: www.cds.hawaii.edu/kahana
**QUESTION 3:** Next, the scientists answer “What kind of science do you do?” Do their answers sound like a science area you would like to try? If you had to choose, which science area would you work in and why?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

**QUESTION 4:** Finally, the scientists answer the question “Why is your work important to Hawai’i?” Which answer was most interesting and why?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

**AFTER VIEWING:**
Now it is time to speak! Share your thoughts about this film with a partner, then with the class:
- choose your most important thought or question & say it when asked
- listen & observe how others respond to what you said
- think about your ideas and others’ ideas – what has meaning to you and teaches you something you didn’t already know?

**Question 5:** Final Reflection – after hearing your classmates responses to the film, what new learning or new thoughts do you have about getting a science career in Hawai’i? Write these or any questions you have for the teacher here.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

*Mahalo for your attention in this class & your effort to learn!* 😊
Teacher’s Notes for: Mea ‘Imi Na’auao O Hawai‘i
(Scientists in Hawai‘i)

Be prepared to pause the film after each of these questions is answered by the scientists in the lists below. Direct students to write their responses on the handout above, then resume the film, pausing after each section.

How did you get into science? 1 min. 38 sec.
- Julie Leialoha, Biologist
- Sam Gon, Zoologist & Conservation Biologist
- Kawehi Kauhola, Neuroscience Intensive Care Nurse Manager
- Jim Kauahikaua, Geophysicist
- Emily Gomes, Marine Science Intern
- Kai Fox, Marine Scientist

How did you get to where you are? 4 min. 7 sec.
- MacKenzie Manning, Marine Scientist
- Julie Leialoha, Biologist
- Ka‘eo Duarte, Hydrologist
- Sam Gon, Zoologist & Conservation Biologist
- MacKenzie Manning, Marine Scientist
- Jim Kauahikaua, Geophysicist
- Kai Fox, Marine Scientist (College of Tropical Agriculture Human Resources)
- Emily Gomes, Marine Science Intern & High School Student
- Ahia Dye, Astronomer & Hawaiian Studies Student
- Kanoe Williams, Ultrasound Technician & Business Owner

What kind of science do you do? 7 min. 58 sec.
- Malia Rivera, Marine Scientist
- Kai Fox, Marine Scientist
- Ka‘eo Duarte, Hydrologist
- Kanoe Williams, Ultrasound Technician
- Jim Kauahikaua, Geophysicist
- Ku‘ulei Rodgers, Marine Science Researcher
- Paul Coleman, Astrophysicist
- Jennifer Waipa, Archeologist
- Emily Gomes, Marine Science Intern & High School Student
- Sam Gon, Zoologist & Conservation Biologist

Why is your work important to Hawaii? 6 min. 42 sec.
- Julie Leialoha, Biologist
- Sam Gon, Zoologist & Conservation Biologist
- Ku‘ulei Rodgers, Marine Science Researcher
- Kai Fox, Marine Scientist
- Ka‘eo Duarte, Hydrologist
- Kawehi Kauhola, Neuroscience Intensive Care Nurse Manager
- Paul Coleman, Astrophysicist
STEP 1: Quick Career Assessment Survey

A. Directions: write “High” “Average” “Low” or “None” in each blank below (you can use H, A, L & N and/or use highlighters when done to group your answers)

MY INTERESTS (what you enjoy doing)
I like to work:
_____ in an office  _____ in the field  _____ at home
_____ mainly indoors  _____ mainly outdoors  _____ indoors & outdoors
_____ with my mind  _____ with my body  _____ with both mind & body
_____ with others  _____ mostly alone  _____ alone & with others
_____ with direction from others  _____ mostly self-directed
_____ with a flexible, changing schedule  _____ with a routine schedule

MY SKILLS (what you already know & will learn during your high school years)
At school now my current grades, behavior & attendance show my:
Reading skills are _____  Writing skills are ______
Speaking skills are ______  Listening skills are ______
Problem solving skills are ______  Math skills are ______
Memorization skills are ______  Learning speed is ______
Visualizing skills are ______  Social skills are ______
Pono (appropriateness) is ______  Malama (caring) is ______
Ahonui (patience) is ______  Ha'aaha'a (humility) is ______
Creative thinking is ______  Decision making is ______
Time-management is ______  Money management is ______
Teamwork skills are ______  Alaka'i (leadership) skills are ______

MY APTITUDE (what you would probably be good at)
I believe - or have taken tests that show - I almost always do well at:
_____ Languages & Cultures  _____ Language Arts, Communication
_____ Computers & Technology  _____ Sciences (Natural Resources, etc.)
_____ Fitness, physical labor  _____ Social Studies, History or Politics
_____ Art, Music or Drama  _____ Business & Economics
_____ Engineering & Mathematics  _____ Public Service (Health, Police, etc.)
_____ Psychology & Sociology  _____ Construction (building or fixing, etc.)

continue on next page >>
**MY MOTIVATION** (how hard you are willing to work to learn more)

I believe now and in the future my:

<table>
<thead>
<tr>
<th>Ability</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Desire to learn is ____</td>
<td></td>
</tr>
<tr>
<td>Ability to set goals is ____</td>
<td></td>
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<tr>
<td>Ability to plan well is ____</td>
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<tr>
<td>Desire to work very hard is ____</td>
<td></td>
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<tr>
<td>Ability to be responsible is ____</td>
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<tr>
<td>My self-esteem is ____</td>
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<tr>
<td>My self-reliance is ____</td>
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<tr>
<td>Ask for help when I need it is ____</td>
<td></td>
</tr>
<tr>
<td>Ability to learn from mistakes is ____</td>
<td></td>
</tr>
<tr>
<td>Ability to always persevere is ____</td>
<td></td>
</tr>
</tbody>
</table>

**B. What To Do Next**  
Group your answers to the questions above using the 1st or all 3 columns - use another sheet if needed.

<table>
<thead>
<tr>
<th></th>
<th>High</th>
<th>Average</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Interests</strong></td>
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<tr>
<td><strong>Skills</strong></td>
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<tr>
<td><strong>Aptitude</strong></td>
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</tr>
<tr>
<td><strong>Motivation</strong></td>
<td></td>
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</tr>
</tbody>
</table>

Now use your “highs” to find careers just for you - use the **Hawai‘i Science Careers Box** plus library, Internet & interview sources!
If you think you don’t want a science-related career, then you might not be aware that:  

More & more science jobs are opening up!  

Science jobs pay bigger $$$  
Hawai‘i needs Hawaiian scientists like you!  

There are science-related jobs in all Career Pathways, from artists to business execs!  

You don’t have to be a genius, you just have to know the steps to your goal and take them.

The best way to choose which jobs to explore is to think about your:

* INTERESTS (what you enjoy doing)
* SKILLS (what you already know & will learn in high school)
* APTITUDE (what you would probably be good at)
* MOTIVATION (how hard you are willing to work to learn more)

1. Maybe you have already figured some of this out! If you know the career you want to pursue, write it here: ____________________________________________

2. Next, put a check beside any of the following you have done:

_____ taken the ASVAB (Armed Services Vocational Aptitude Battery)*
_____ taken the Holland (matches personality types to occupations)*
_____ taken a skills analysis inventory (shows what skills you have & need)*
_____ taken O*Net Interest Profiler (helps identify work-related interests)*
_____ taken the O*Net Work Importance Locator (assesses your work values to help you learn about jobs you might like)*

* all above are available free to Hawai‘i residents at: www.careerkokua.org/ca/

_____ talked seriously with your teachers, counselor, family, friends &/or a mentor about your career goals
_____ done volunteer work or other unpaid activities related to your career goals
_____ applied to college or other programs you want to take part in after grad
_____ begun work at the entry level, or at a job that is related to your long term career goals
_____ visited a college campus, other training center or place of employment to see if you might like studying or working there
_____ chosen classes to take in high school that are related to your career goals
_____ studied hard &/or gotten tutoring in skill areas you need to strengthen to pursue your career goals
3. Group Discussion:
   a) Do you know what career you plan to pursue after high school?
      ✗ No? Why is it important to think about this now?
      ✗ Yes? Is there a way to “tweak” it so it is science-related?
   b) Is your current career plan realistic?
      ✗ Do you have a detailed plan to help you achieve your career goals?
      ✗ Do you have a back-up plan in case you don’t achieve these goals?

BONUS: the DOE Science Career Pathways include these careers:

<table>
<thead>
<tr>
<th>Natural Resources careers are:</th>
<th>Health Services careers are:</th>
<th>Industrial Engineering Technology careers are:</th>
</tr>
</thead>
<tbody>
<tr>
<td>*agriculture sciences * earth sciences * environmental sciences * fisheries * forestry * horticulture * and wildlife (*farmer * geologist * veterinarian * landscaper * diver * warden * aide, etc.)</td>
<td>*medical research *treatment *prevention and related technologies (doctor * nurse * aide * dentist * lab technician * hospital worker * physical therapist * dietician * optician, etc.)</td>
<td>*engineering * construction *manufacturing and related technologies (*mechanic * drafter * deckhand * pilot * machinist * journeyman * inspector * electrician * operator * foreman, etc.)</td>
</tr>
</tbody>
</table>

Other Pathways also offer science-related careers. “Tweak” the Career Pathways below to make a list of more Science jobs – do at least 3 for each box!

<table>
<thead>
<tr>
<th>Arts and Communication careers are:</th>
<th>Science-related careers could be:</th>
</tr>
</thead>
<tbody>
<tr>
<td>*architecture * interior design * creative writing *fashion design * jeweler * film * music * visual art * graphic design * journalism * radio * TV * languages * advertising and * public relations</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Business careers are:</th>
<th>Science-related careers could be:</th>
</tr>
</thead>
<tbody>
<tr>
<td>*entrepreneurship * sales * marketing *computer and information systems * finance * accounting * mathematics * personnel * economics and * management</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Public and Human Services careers are:</th>
<th>Science-related careers could be:</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Human Services (</em> child protection * geriatrics * clergy * counseling * social work): Legal &amp; Protective Services (*adjudication * advocacy * mediation *corrections * criminal investigation * law enforcement): *Education: *Social Studies (*anthropology * economics * geography * politics * sociology * regional planning): *Services &amp; Hospitality (*food service * tourism)</td>
<td></td>
</tr>
</tbody>
</table>
3. Group Discussion: TEACHER’S NOTES for “TALK STORY” pg.2

a) Do you know what career you plan to pursue after high school? Encourage students to see all the opportunities available in high school, esp. those which either are not free or not available after they graduate!

b) Is your current career plan realistic? Encourage students to see the value in carefully planning out their next few years of education and work, and taking opportunities (courses, jobs, other experiences) which leave doors open for lots of choices in careers later on (ie future sports stars might consider studying physical fitness, rehabilitative medicine, etc.)

**BONUS:** Discuss this in class, 1-on-1, or students can research these:

<table>
<thead>
<tr>
<th>Natural Resources careers are:</th>
<th>Health Services careers are:</th>
<th>Industrial Engineering Technology careers are:</th>
</tr>
</thead>
<tbody>
<tr>
<td>* agriculture sciences * earth sciences * environmental sciences * fisheries * forestry * horticulture * and wildlife (farmer * geologist * veterinarian * landscaper * diver * warden * aide, etc.)</td>
<td>*medical research *treatment * prevention and related technologies (doctor * nurse * aide * dentist * lab technician * hospital worker * physical therapist * dietician * optician, etc.)</td>
<td>*engineering * construction * manufacturing and related technologies (*mechanic * drafter * deckhand * pilot * machinist * journeyman * inspector * electrician * operator * foreman, etc.)</td>
</tr>
</tbody>
</table>

Here is a partial list of science-related careers in non-science fields to discuss:

<table>
<thead>
<tr>
<th>Arts and Communication careers are:</th>
<th>Science-related careers could be:</th>
</tr>
</thead>
<tbody>
<tr>
<td>*architecture * interior design * creative writing *fashion design * jeweler * film * music * visual art *graphic design * journalism * radio * TV * languages *advertising and * public relations</td>
<td>Designers of medical facilities or equipment; creators of art, films &amp;/or articles for publication of scientific info; promoter for environmental groups; sci. museum docent</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Business careers are:</th>
<th>Science-related careers could be:</th>
</tr>
</thead>
<tbody>
<tr>
<td>* entrepreneurship * sales * marketing * computer and information systems * finance * accounting * mathematics * personnel * economics and * management</td>
<td>Inventors; wholesalers/retailers of medical supplies; accountants or support staff at science facilities; fund-raiser for non-profit groups doing scientific work</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Public and Human Services careers are:</th>
<th>Science-related careers could be:</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Human Services (</em> child protection * geriatrics * clergy * counseling * social work): Legal &amp; Protective Services (*adjudication * advocacy * mediation *corrections * criminal investigation * law enforcement): *Education; *Social Studies (*anthropology * economics * geography * politics *sociology * regional planning): *Services &amp; Hospitality (*food service * tourism)</td>
<td>Advocate, lawyer or lobbyists for environmental or animal rights causes or groups; forensic detective; science teacher or outreach coordinator for scientific institute; political candidate; city planner; eco-tourism guide</td>
</tr>
</tbody>
</table>
### List of Science Fields to Research

This list was generated from [http://www.careerkokua.org/ce/hcp/](http://www.careerkokua.org/ce/hcp/) where complete information on these and other careers is listed and free to all Hawai’i residents with an immediate and simple log on feature.

<table>
<thead>
<tr>
<th>Natural Resources Careers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Entry Level</strong></td>
</tr>
<tr>
<td>Animal Caretakers</td>
</tr>
<tr>
<td>Animal Control Workers</td>
</tr>
<tr>
<td>Commercial Fishers</td>
</tr>
<tr>
<td>Farm and Ranch Workers</td>
</tr>
<tr>
<td>Landscapers</td>
</tr>
<tr>
<td>Groundskeepers</td>
</tr>
<tr>
<td>Nursery Workers</td>
</tr>
<tr>
<td>Veterinary Assistants</td>
</tr>
<tr>
<td>Pest Control Workers</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Professional Level</th>
<th>Doctoral Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural Scientists</td>
<td>Agricultural Scientists</td>
</tr>
<tr>
<td>Animal Scientists</td>
<td>Animal Scientists</td>
</tr>
<tr>
<td>Biologists</td>
<td>Astronomers</td>
</tr>
<tr>
<td>Chemists</td>
<td>Biologists</td>
</tr>
<tr>
<td>Fish and Game Wardens</td>
<td>Chemists</td>
</tr>
<tr>
<td>Foresters</td>
<td>Ecologists</td>
</tr>
<tr>
<td>Geologists and Geophysicists</td>
<td>Geologists and Geophysicists</td>
</tr>
<tr>
<td>Landscape Architects</td>
<td>Marine Biologists</td>
</tr>
<tr>
<td>Marine Biologists</td>
<td>Natural Sciences Managers</td>
</tr>
<tr>
<td>Meteorologists</td>
<td>Physicists</td>
</tr>
<tr>
<td>Natural Sciences Managers</td>
<td>Veterinarians</td>
</tr>
<tr>
<td>Park Rangers</td>
<td>Zoologists</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Health Service Careers</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Entry Level</strong></td>
<td><strong>Mid-Level</strong></td>
</tr>
<tr>
<td>Home Health Aides</td>
<td>Dental Laboratory Technicians</td>
</tr>
<tr>
<td>Nursing &amp; Medical Assistants</td>
<td>Opticians</td>
</tr>
<tr>
<td>Pharmacy Aides &amp; Technicians</td>
<td>Emergency Medical Technicians</td>
</tr>
<tr>
<td>Psychiatric Aides</td>
<td>Home Health Aides</td>
</tr>
<tr>
<td>Cardiovascular Technologists</td>
<td>Licensed Practical Nurses</td>
</tr>
<tr>
<td>Dental Assistants</td>
<td>Nuclear Medicine Technologists</td>
</tr>
<tr>
<td>Dietetic Technicians</td>
<td>Radiologic Technologists</td>
</tr>
<tr>
<td>Lens Grinders and Polishers</td>
<td>Surgical Technologists</td>
</tr>
<tr>
<td>Physical Therapist Aides</td>
<td></td>
</tr>
</tbody>
</table>

*continued on next page*
### Health Service Careers in Science...

#### Professional Level
- Athletic Trainers
- Chemists
- Dental Hygienists
- Dietitians
- Medical Laboratory Technologists
- Nuclear Medicine Technologists
- Occupational Therapists
- Physician Assistants
- Radiologic Technologists
- Recreational Therapists
- Registered Nurses
- Acupuncturists
- Physical Therapists
- Speech Pathologists, Audiologists

#### Doctoral Level
- Anesthesiologists
- Chiropractors
- Dentists
- Family and General Practitioners
- Internists
- Obstetricians and Gynecologists
- Optometrists
- Pediatricians
- Pharmacists
- Psychiatrists
- Surgeons
- Veterinarians

### Industrial & Engineering Careers in Science

#### Entry Level
- Communications Equipment
- Electrician Helpers
- Mechanics
- Photograph Processing Workers
- Power Plant Operators
- Ship Engineers and Pilots
- Surveyors
- Water Treatment Plant Operators

#### Mid-Level
- Air Traffic Controllers
- Appliance Installers and Repairers
- Boilermakers
- Bookbinders and Bindery Workers
- Bricklayers and Stonemasons

#### Professional Level
- Airplane Pilots
- Chemical Engineers
- Civil Engineers
- Electrical and Electronics Engineers
- Engineering Technicians
- Environmental Engineers
- Industrial Engineers
- Mechanical Engineers
- Nuclear Engineers

#### Master's or Doctoral Level
- Architects
- Chemical Engineers
- Civil Engineers
- Electrical and Electronics Engineers
- Environmental Engineers
- Industrial Engineers
- Mechanical Engineers
- Nuclear Engineers
- Occupational Safety Specialists
- Ship Captains and Mates
- Urban and Regional Planners
- Transportation Inspectors
### Science-Related Careers - Arts & Communications

**Entry or Mid-Levels**
- Announcers
- Photographers
- Producers and Directors
- Animators and Multi-Media Artists
- Sketch Artists

**Professional or Doctoral Levels**
- Architects
- Art Directors
- Editors
- Interior Designers
- Landscape Architects
- News Reporters
- Writers

### Science-Related Careers - Business Management & Technology

**Entry Level**
- Buyers and Purchasing Agents
- Insurance Underwriters
- Sales Representatives
- Secretaries & Receptionists
- Tax Preparers
- Typists and Word Processors
- Clerks

**Mid-Level**
- Bookkeeping and Accounting Clerks
- Computer Operators & Administrators

**Professional Level**
- Accountants and Auditors
- Computer Programmers
- Financial Counselors
- Human Resources Managers
- Legal Secretaries
- Medical Secretaries
- Public Relations & Outreach Specialists
- Technical Writers

**Master’s or Doctoral Level**
- Mathematicians
- Natural Sciences Managers
- Statisticians

### Science-Related Careers - Public and Human Service

**Entry Level**
- Fitness Trainers and Aerobics Instructors
- Tour Guides

**Mid-Level**
- Embalmers
- Massage Therapists
- Science Teacher Aides

**Professional Level**
- Community Service Managers
- Detectives and Investigators
- Science Teachers

**Master’s or Doctoral Level**
- Lawyers
- University & College Instruction
## Grading Rubric

<table>
<thead>
<tr>
<th>Component</th>
<th>Score 1 (50% to 0%)</th>
<th>Score 2 (79% to 60%)</th>
<th>Score 3 (89% to 80%)</th>
<th>Score 4 (100% to 90%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prep Notes (include 2 science fields matching student's own interests, skills)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Essay explores 1 occupation in a science field in depth</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sources of info include Internet, printed material &amp; personal interview</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All sources of info are cited &amp; essay is written clearly without errors</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Comments (positive & negative)

**Comments (positive):**
- Preparatory teamwork.
- Thorough research.
- Clear and concise writing.
- Engaging presentation.

**Comments (negative):**
- Lack of focus.
- Irrelevant data.
- Unclear content.

**Total:** 16 points possible

**Student's Total:**

**Comments:** Suggest any changes your kumu (teacher) should make to project criteria or points here:

---

**Science Career Research Project - Grading Rubric Activity**

**NAME:**

**CLASS:**
Science Career Research Project – Example Essay

Preparatory Notes

Essay Page 1

My interests are work indoors doing something creative, mostly alone and but with others helping and on a flexible schedule. I want to earn lots of money. My skills are listening, problem solving, math (sort of), visualizing, being creative and being patient. I like to work with my hands. My aptitude is I'm best at Art and Math. My motivation is I like to get help from others but then be left alone to do it, and I will work hard but only for a while. I am pretty responsible if I know what to do.

Science Career fields that match me are medicine, engineering, math, computers, jewelers, graphic designer, metal worker, accounting.

Experiment ideas I found to do next are…
- Nano measurement activity like this one… http://bydesign.mccormick.northwestern.edu/FA2006/EDC.html
- Soap film and light experiment like this… http://flux.aps.org/meetings/YR03/OSF03/abs/S40.html
- Nanoart exhibit like this… http://www.pbs.org/newshour/science/nanotech/index.html

Sources Cited
- Veedu, Vinod, Jan 9, 2007. Phone interview.

A Career in Nanoscience

If you never heard of the discipline of nanoscience, you will. Nanoscientists say they are finding out how to push atoms and molecules around to make computers better, to make tissue for human organs and even to make designer fabrics (NSF, 2001). So far, they have only made better suntan lotion, but lots of research is being done, there is lots of money to be made, and maybe even big improvements for the world.

One nanoscientist here in Hawai‘i is Vinod Veedu. He is a student at UH in Honolulu and he is studying mechanical engineering. His work got him into the Guinness World Records because he invented a nano-brush to clean up nano-dust (www.nanotechwire.com). He also made a stronger surfboard with nanoparticles (Star Bulletin, 2006). He never knew he would become a nanoscientist, but he says it's a guaranteed big money maker when he's done his PhD. He expects to earn at least $80,000 a year, plus full benefits, like his medical and dental bills will be paid by his company, not him (Veedu, 2007).

To become a nanoscientist is very hard. I noticed that lots of articles I saw have pictures of nano-stuffs that are either photos or computer images or even paintings. I think this would be an easier job to start, or a good back-up job for me.
# Science Career Research Project – Grading Rubric

Your finished essay must be no less than 2 pages (typed) and your preparatory notes should be attached. You will be graded on:

<table>
<thead>
<tr>
<th>Grading Rubric</th>
<th>Exceeds expectations 100% to 90%</th>
<th>Meets expectations 89% to 80%</th>
<th>Approaching expectations 79% to 60%</th>
<th>Doesn’t meet expectations 59% to 0%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prep notes include 2 science fields matching student’s own interests, skills aptitude &amp; motivation</td>
<td>Detailed assessments match student interests, skills, aptitude &amp; motivation to 2 sciences min.</td>
<td>Student’s interests, skills, aptitude &amp; motivation carefully match 2 science fields given</td>
<td>Most student interests, skills, aptitude &amp; motivation match science fields</td>
<td>Few student interests, skills, aptitude &amp; motivation match</td>
</tr>
<tr>
<td>20 points</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Essay explores 1 occupation in a science field in depth (training, work conditions, benefits, etc.)</td>
<td>Essay is about 1 science job in 1 field; gives full details of the career from college to job outlook ahead</td>
<td>Essay is about 1 science job in 1 field; lists many pros &amp; cons of pursuing this career</td>
<td>Essay is about 1 science job in 1 field &amp; has basic info about the job</td>
<td>Essay lacks details of 1 science job in 1 field or is off topic</td>
</tr>
<tr>
<td>40 points</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sources of info include: Internet, printed material &amp; personal interview</td>
<td>Multiple web, print &amp; personal contacts were researched for information</td>
<td>Several web, personal &amp; print contacts were researched for information</td>
<td>1 each of web, print &amp; personal contacts were researched for information</td>
<td>Less than 3 sources of information were researched</td>
</tr>
<tr>
<td>20 points</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All sources of information are cited &amp; essay is written clearly without errors</td>
<td>All sources are cited, the info is written clearly &amp; insightfully; there are no more than 3 writing errors</td>
<td>All sources are cited, the info is clearly written &amp; there are no more than 5 writing errors</td>
<td>All sources are cited, the info is mostly clear &amp; there are no more than 8 writing errors</td>
<td>Sources are not cited or correct; info is not clear; writing errors exceed 8</td>
</tr>
<tr>
<td>20 points</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Points Possible: 100</td>
<td>Total Given:</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

YOUR FINAL GRADE IS: A B C D F + -

COMMENTS: _______________________________________________________

___________________________________________________

_________________________________________________

___________________________________________________
Propose Your A/V Project & “Target Skill”:

- To do an Alternative Project submit a Proposal to your teacher. Identify the skill(s) you plan to learn &/or improve. Be honest about your current level of skill (familiarity with programs like iMovie, Powerpoint, etc.; filming, recording sound & editing; researching; writing; graphic design; &/or public speaking) and set a realistic goal to practice your skill and use it in your project.

Review the Copyright & Fair Use Fact Sheet (teachers see Unit 10):

- This will help you make a video or audio project without breaking the law or DOE school rules!

CHOOSE ONE BELOW:

To Make a JayCut Video go to:

- To begin online video-making go to: [http://jaycut.com](http://jaycut.com) On the homepage click on “Quick Guide” then “See Demonstration” for a 6 minute video tutorial. Next, on the homepage click “Register” to open a new account, the click “Upload” to gather your photos, videos and music. Last, click the tabs to see your materials, drag them to the editing bars, and finesse them with effects & transitions you choose. Then save!
- Use the storyboard worksheet (next page) to plan your video clips in advance.

To Make a Podcast (for a Radio Project) go to:

- Get free Audacity software to create audio files at: [http://audacity.sourceforge.net](http://audacity.sourceforge.net)
- Audacity Tutorial on the basics of audio recording (includes Digital Audio; Rules of Audacity; Setup, Audio Import and Playback; Recording with Audacity) is at: [http://audacity.sourceforge.net/manual-1.2/tutorial_basics_1.html](http://audacity.sourceforge.net/manual-1.2/tutorial_basics_1.html)
- Convert Audacity (save as .wav) to MP3: [http://media-convert.com/convert/](http://media-convert.com/convert/) (Follow these steps: 1. Choose file (find your .wav file on your computer); 2. Leave the "auto detect" in the file type box; 3. Choose MPEG 1/2 audio layer 3 (mp3) format in the Output box (scroll down the list in the pull down menu); 4. Choose OK to "accept terms"; 5. Wait for conversion (takes 2-3 minutes); 6. click OK for the default encoding rate after your file is converted; 7. Download your converted file

Other Options:

- If you have access to other video equipment and computer software such as a camcorder & iMovie, you may use them to create your project – just make sure you already have some skill or have the hours available to learn a lot
- If you have no access to technology or want to focus on speaking, writing &/or graphic art skills you may make a project for a newspaper, magazine or poster. See “Poster Key Visuals” at: [www.scihi.hawaii.edu/curriculum/unit1/studenthandouts/](http://www.scihi.hawaii.edu/curriculum/unit1/studenthandouts/)

[EXAMPLE] MY TARGET SKILL:
I want to improve my public speaking gradually, so I will do a combination of video interview and audio taped presentation to help me talk about my handout about a science career. I will also study the "Presentation Tips" at: [www.scihi.hawaii.edu/curriculum/unit1/studenthandouts/](http://www.scihi.hawaii.edu/curriculum/unit1/studenthandouts/)
Science Career Alternate Research Project – Grading Rubric

Your finished video or audio project should be 2-4 minutes long. Posters should be about 2x3 feet. Hand in all your preparatory materials (video storyboard, audio script &/or draft drawings), as well. You will be graded on:

<table>
<thead>
<tr>
<th>Grading Rubric</th>
<th>Exceeds expectations 100% to 90%</th>
<th>Meets expectations 89% to 80%</th>
<th>Approaching expectations 79% to 60%</th>
<th>Doesn’t meet expectations 59% to 0%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prep includes 2 science fields matching student’s own interests, skills aptitude &amp; motivation</td>
<td>Detailed assessments match student interests, skills, aptitude &amp; motivation to 2 sciences min.</td>
<td>Student’s interests, skills, aptitude &amp; motivation carefully match 2 science fields given</td>
<td>Most student interests, skills, aptitude &amp; motivation match science fields</td>
<td>Few student interests, skills, aptitude &amp; motivation match</td>
</tr>
<tr>
<td>20 points</td>
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<tr>
<td>Project explores 1 occupation in a science field in depth (training, work conditions, benefits, etc.)</td>
<td>Project is about 1 science job in 1 field; gives full details of the career from college to job outlook ahead</td>
<td>Project is about 1 science job in 1 field; lists many pros &amp; cons of pursuing this career</td>
<td>Project is about 1 science job in 1 field &amp; has basic info about the job</td>
<td>Project lacks details of 1 science job in 1 field or is off topic</td>
</tr>
<tr>
<td>40 points</td>
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<td></td>
<td></td>
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<tr>
<td>Sources of info include: Internet, printed material &amp; personal interview</td>
<td>Multiple web, print &amp; personal contacts were researched for information</td>
<td>Several web, personal &amp; print contacts were researched for information</td>
<td>1 each of web, print &amp; personal contacts were researched for information</td>
<td>Less than 3 sources of information were researched</td>
</tr>
<tr>
<td>20 points</td>
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</tr>
<tr>
<td>All sources of information are cited &amp; project is presented clearly without errors</td>
<td>All sources are cited, the info is clearly presented &amp; insightful; there are no more than 3 errors</td>
<td>All sources are cited, clear info is presented, there are no more than 5 errors</td>
<td>All sources are cited, the info is mostly clear &amp; there are no more than 8 errors</td>
<td>Sources are not cited or correct; info is not presented clearly; errors exceed 8</td>
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<tr>
<td>20 points</td>
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</table>

Points Possible: 100
Total Given: ____________

YOUR FINAL GRADE IS: A B C D F + -

COMMENTS: _______________________________________________________
___________________________________________________
__________________________________________________

Ka Hana ‘Imi Na‘auao – A Science Careers Curriculum Resource  Go to: www.cds.hawaii.edu/kahana
Teacher’s Notes for:

Science Career Alternate Project (Video, Audio, or Poster)

This project combines the career research project (Unit 2, Step #2) with alternative presentation formats for students to present their research. Rather than writing an essay, the student handout “Science Career Alternative Project (Video, Audio or Poster)” guides them, and you, to explore other ways information can be presented. Scientists regularly present their research in all these formats, and the technology skills will greatly benefit students in college.

These alternate formats for students presentation of their learning are the same options offered in Unit 1 “Science Interview A/V Project” and Unit 10 “PSA Project”, so students can practice and extend their skills in each unit, or simply try it once in only one of the units.

Suggested Preparation and Lesson Sequence:

1. Explore online video editing a little yourself. You do not need to become an expert to allow students to learn this, but some familiarity is recommended. Alternately, your school may have a computer lab with teacher and/or student aides who can help your class learn online video making and editing.

2. Show students any of these videos:
   - Go to http://jaycut.com and on the homepage click on “Quick Guide” then “See Demonstration” for a 6 minute video tutorial. You may want to show students a few other examples from the JayCut files of what they can do, or encourage them to explore these themselves.
   - Show the 4 minute “PSA Project” video in Unit 10. Discuss how this project content is different (how to make a public service announcement) but they can do all the same effects with their content (science career research).

3. Next, give students copies of these handouts and discuss as a class:
   - “Science Career Alternate Project (Video, Audio or Poster)” handout in Unit 2
   - “Copyright & Fair Use Fact Sheet” in see Unit 10 with the “Storyboard Handout” on the back (see also Unit 1 or Unit 2 Appendix)
   - “Science Career Alternate Research Project – Grading Rubric”. This document is available in Word™ format so you can edit the criteria. If you have time, get student input and discussion on criteria by giving them a blank rubric first.
   - “Science Career Alternate Research Project – Adult Interview” handout. This is identical to the one in Unit 10, and may be a good way to make this project more relevant to students and to develop their career skills.
Science Career Research Project - Adult Interview Handout

Here are several questions to ask someone (do not tell them to write their answers!) whose job is in a science-related career area in which you're interested. Record the answers you get (on audio-tape or paper), and skip or add questions as you like. This research will help you & your peers decide your goals.

1. What is your name & job title?

2. Where do you work?

3. What do you do most of the time at work?

4. What are the best things about your job?

5. What are the worst things about your job?

6. What are the job opportunities going to be like in your field in the near future?

7. When you were in high school, did you know you would get a job working in science one day? How?

8. Did you like Science in high school? Did you do well in Science?

9. Did your hobbies in high school affect your career choices? How?

10. Did you work when you were in high school? Tell me about that.
11. What special personality traits and/or technical skills does someone really need if they want a job like yours?

12. What things should I do now in high school to prepare for a job in a science-related career?

13. Did you go to college or get any training after high school? Please describe it.

14. How hard was your training for you? What were the biggest challenges? Did you get any help?

15. What was your first job after high school?

16. What other jobs have you had before this one?

17. Did your family want you to go into this career area? Did their wishes help you or make it harder for you? How?

18. What are your career and personal plans now? How do you hope to achieve them?

19. Can you think of other questions I should ask you?

20. Do you have any questions for me?

When pau, don’t forget to say: Mahalo for your time!
STEP 3: Science Career Experiment - Brainstorm

1. Use the Hawai‘i Science Career Cards to make a list of project topics that sound cool to you which you can do or adapt fairly easily. (The Career Cards lists projects that professional scientists do.) Choose topics related to a science career you're interested in. Imagine ways you can do the project at school &/or home.

I am interested in doing one of these 5 experimental projects:

a. ____________________________________________

b. ____________________________________________

c. ____________________________________________

d. ____________________________________________

e. ____________________________________________

2. All experiments begin with “nānā” or observations of patterns and differences in things ... what the scientist already knows or wonders about, including problems or curiosities. Choose one of your project ideas above and brainstorm things you’ve observed related to this topic. Use all your senses to do this (sight, smell, taste, touch, hearing) plus your mana‘o (thoughts):
3. Now circle the most interesting things you wrote above. All research begins with a research question (called `imi i ke kumu) or hypothesis (called mana’o kōkua). This is something you want to find out or something you believe you can test to try prove your belief is accurate. Write 3 or more research questions or hypotheses for your topic here:
   a) 
   b) 
   c) 

Can’t come up with research ideas? Go back & brainstorm a different topic (repeat #2 on previous page). Take your time … getting the right research question & hypothesis is the most important and trickiest part!

- Next, you need to find out background information, or `ike pa`a to plan and conduct your project. Check Internet, books & local experts. Use these sources to make changes to your project.
- Now you are ready to plan exactly what methods & protocols (called ki’ina hana) you must use to do your experimental project (called ho`āo).
- Write this so that anyone can read your notes and do the same experiment without your help. All good science must be repeatable and give the same results every time.
- You can also create a flowchart or other visual (such as a drawing) to show exactly what you plan to do, when, where and how.
- Consider how you will document and begin to analyze the results throughout your experiment.

Pau? Great! Complete the Proposal Sheet & hand in by:_______
STEP 3: Science Career Experiment Proposal - Example

1. Project Title: Red Dirt Plant Growth Project

2. Research Question: Does red dirt make native plants grow better?

3. Hypothesis & Prediction: Native plants will grow better in native dirt than in non-native soil.

4. Sources/Time for Background Research: Search Internet and library sources for soil experiments, info on red dirt and native plants to use in experiment; ask local gardeners.


6. Experimental Design: 1) put kalo, hibiscus & pili grass starter plants in 2 soil types, in 4" pots; give light, water as needed for 2 months; 2) record growth (height & width) each week; 3) make chart to compare 6 plants' growth, other observations.

7. Materials & Space Needed: Counter space by sunny window; 6 x 4" pots; red dirt; metric ruler; chart paper.

8. Other considerations: Plants must be outside on weekends & arrangements made to care for them on holidays.

Approx. time to work on this:

1 hr in class
1 hr homework
1 hr in class
0 hrs homework
1 hr in class
0 hrs homework

TOTAL TIME to COMPLETE:

15 min/wk over 8 wks
STEP 3: Science Career Experiment - My Proposal

1. Project Title: _______________________________
   ___________________________________________
   ___________________________________________

2. Research Question: __________________________
   ___________________________________________
   ___________________________________________

3. Hypothesis & Prediction: ______________________
   ___________________________________________
   ___________________________________________

4. Sources/Time for Background Research: __________
   ___________________________________________
   ___________________________________________
   ___________________________________________

   ___________________________________________
   ___________________________________________
   ___________________________________________

6. Experimental Design: __________________________
   ___________________________________________
   ___________________________________________
   ___________________________________________

7. Materials & Space Needed: ______________________
   ___________________________________________
   ___________________________________________
   ___________________________________________

8. Other considerations: __________________________
   ___________________________________________
   ___________________________________________

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Approx. time to work on this

<table>
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<th>Class homework</th>
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TOTAL TIME to COMPLETE:

<table>
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</tbody>
</table>

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Name: __________________________
Class: ________________________
STEP 3: Career Experiment Final Lab Report

1. Project Title: __________________________________________

2. a) Initial Observations (Nānā): __________________________________________

                __________________________________________

                __________________________________________

                __________________________________________

b) Research Question ('Imi I Ke Kumu): ______________________

                  __________________________________________

                  __________________________________________

                  __________________________________________

3. Hypothesis (Mana’o Kōkua) & Prediction: ____________________________

                  __________________________________________

                  __________________________________________

4. Background Research 'Ike Pa'a) & Sources: ____________________________

                  __________________________________________

                  __________________________________________

                  __________________________________________

                  __________________________________________

5. Hawaiian Protocol & Science Methods (Ki‘ina Hana):____________________
6. Experimental Design (Ho‘ā’o): __________________________

7. Analysis (Wehewehe ‘Ano): ______________________________

8. Conclusion (Hopena): ____________________________________

9. Future Research (Ka Hana A’e): ___________________________
LINING UP YOUR SCIENCE CAREER

While in high school science classes, focus on your skills & interests:

**Develop your General Skills**
- Improve Reading, Writing, Speaking, Social & Computers Skills
- Take Career & Interest Assessments

**Develop Specific Science Skills**
- Prepare for 1 or 2 Science Fields
- Take Ownership & Action Steps towards a Clear Goal!

Before entering college focus on transition opportunities & decide how much support you want.

I want lots of support opportunities:
- summer program
- peer group
- internship
- advance credit course

I want some support opportunities:
- mentor
- tutor
- job in a related field

I want just a few support opportunities:
- campus tour
- job shadow
- volunteer experience

At any stage you can choose short &/or long range goals.

My goals are long range:
- explore a science discipline through entry level work & college
- get a Bachelor’s, Master’s & Ph.D
- get my ideal job at the professional level

My goals are mid-range:
- explore a science discipline through entry level work & college
- get a Bachelor of Science degree
- get my ideal job above entry level

My goals are short range:
- explore science opportunities with short trainings &/or related work
- get an Associate’s degree or other training
- get my ideal job at the entry level

High pay & higher skill level

Medium pay & average skill level

Adequate pay & average skill level
STEP 4: EXPLORE SCIENCE-RELATED CAREER POSTINGS

Where do we look for good “green collar” jobs? Right here! The best source in Hawai’i is at this website: www.hear.org (see brochure at: http://www.hear.org/announcements/pdfs/HEARcareer.pdf)

The Hawaiian Ecosystems at Risk project (also called HEAR) updates great science-related job postings regularly. Follow the directions to see what kinds of jobs are out there … you might even find one for yourself today!

1. Go to: http://www.hear.org/announcements/jobs.htm

You’ll find postings that look like this:

- **Facilities and Grounds Maintenance Worker - Maui**
  The Hawaiian Islands Humpback Whale National Marine Sanctuary, located in Kihei, Maui, seeks a facilities and grounds worker. Closing date: 27 May 2009. (Follow the links for employment from RCUH and search for Job ID#20195. Posted 7 May 2009.)

To find out more about this job, click the underlined heading. This will lead you to a job summary which includes details about salary, duties, qualifications, when and how to apply for the job, as well as whom to address your cover letter to and contact for more information.

2. Other multi-agency websites to explore for jobs & volunteer opportunities locally and nation-wide are:
   - Research Corporation of the University of Hawaii (RCUH) job announcements at:
     RCUH is one of the largest employers in the state of Hawaii. (Click "Search" - no criteria in other blanks - to view all job postings.)
   - GovernmentJobs.com at:
     [http://www.governmentjobs.com/display.cfm?SubCatID=1](http://www.governmentjobs.com/display.cfm?SubCatID=1)
     GovernmentJobs.com allows users to easily search for Hawai’i state and county jobs.
     This is the official job site of the U.S. federal government.
The Society for Conservation Biology job board is a good place to find biological technician positions nation-wide.

Texas A&M job board at: http://wfsc.tamu.edu/jobboard/index.htm
The Texas A&M Wildlife and Fisheries Sciences job board is another good place to find biological technician positions nation-wide.

Eco-Consult Pacific at: http://www.ecoconsultpacific.com/vacancies.html
Pacific region consulting job openings are advertised through a Yahoo! Groups mailing list (requires free subscription).

3. Other sources to find jobs locally are newspapers. Explore these:

(Big Island) West Hawaii Today employment classifieds at: http://www.westhawaiitoday.com/classifieds/?loc=detail&main=Employment &


(Kaua'i) Kauai Garden News classifieds at: http://www.kauaiworld.com/jobs/

4. Some employers have their own websites. Good ones in Hawai'i are:

Charles Darwin Research Station in Galapagos jobs at: http://darwinfoundation.org/en/about-us/jobs

The Nature Conservancy (TNC) Careers Page at: http://www.nature.org/careers/

Maui County jobs at: http://www.mauicounty.gov/Jobs.asp

National Tropical Botanical Garden jobs at: http://ntbg.org/about/jobs.php

*Your teacher, counselor & family can help you get your application materials together & prepare you for interviews! If you aren’t ready to get a job now, practice for when you will be ready & do volunteer work to add to your resumé!*
Step 4: CREATE YOUR TIMELINE of SCIENCE CAREER STEPS

1. What science-related career is best for you to pursue? _______________
   What is your back-up career if this doesn’t work out? _______________

2. How much help did you decide you need to pursue your career goals?
   (look at the “Lining Up Your Science Career” handout)
   a lot  some  a little  none

3. Which opportunities are you looking for – or have you already lined up –
   so far? __________________________________________________________

4. What challenges do you need to anticipate and prepare for? __________
   ________________________________________________________________

5. Use the space below to list the steps to your career, and to organize
   them chronologically (starting from today all the way to your long
   range goal). Include all information from above in your notes.

Continue on back…
6. Create a Timeline of Career Steps here:
NAME:  

CLASS:

**STEP 4: CREATE YOUR RESUMÉ & COVER LETTER TO GET A JOB!**

**PURPOSE:** Use this handout to apply for a job that you want now, or to practice preparing for a job you plan to apply for in the future.

**FIRST:** CHOOSE ONE JOB POSTING IN YOUR INTEREST AREA. Science-related jobs may be advertised online, in newspapers, or at specific employer sites. Choose a job posting from one of the websites on the handout your kumu (teacher) gives you, or find a posting on your own.

**SECOND:** MAKE A CHECKLIST of what you need to create & gather to put together your job application for this job. Read the job posting completely!

**THIRD:** CREATE YOUR RESUMÉ. Address all the required and desired qualifications the employer is looking for. Think of yourself as the best applicant for the job – because you might be! So make your resumé prove this!
   a) Top of Resumé should include CONTACT INFO: your name, address, phone number and e-mail.
   b) Next, state your CAREER GOAL (this job & can add more – edit this info to interest the employer & suggest you will continue in their company)
   c) Next, give your EDUCATION HISTORY
   d) Next, give your TOP 3 SKILLS. Check out the Skill Words to use in resumés at: [http://www.argus-tech.com/resume/other-ac1.htm](http://www.argus-tech.com/resume/other-ac1.htm) (your kumu also has a handout of this document). Compare these words to the words used in the job posting & use the ones you have or believe you can develop.
   e) Finally, list any CERTIFICATES or AWARDS you’ve gotten, or any ORGANIZATIONS you belong to.

**FOURTH:** CREATE YOUR COVER LETTER … make a “sandwich” to convince them to interview you (i.e. why I’m great, how I can improve weak areas, & why I’m great). Include ADDRESSEE & EMPLOYER NAME at top, then:
a) PARAGRAPH 1: state how you meet most of their requirements

b) PARAGRAPH 2: state how you plan to meet those requirements which you presently don’t (make your deficits sound like attributes!)

c) PARAGRAPH 3: state why they should hire you & why you want to work for them (including long range goals)

Finish the letter up with contact information and times, plus your signature.

LAST: COMPILE EVERYTHING! Make sure you have: TRANSCRIPTS & LETTERS of REFERENCE from employers, teachers, etc. who know what job you’re applying for (write the letter for them & ask them to make revisions if they don’t have much time to help you). Submit your application on time! If you are applying late, explain why in a phone call or your cover letter.
USE THESE SKILL WORDS IN YOUR JOB APPLICATION, RESUMÉ & COVER LETTER

Source: [http://www.argus-tech.com/resume/other-ac1.htm](http://www.argus-tech.com/resume/other-ac1.htm)

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EXAMPLE JOB APPLICATION STEPS (Fish Surveyor Job)

This handout gives an example of how a student, Maika'i Haumana, chose a job posting online and prepared an application to get that job.

STEP 1: CHOOSE ONE POSTING – Fishing Surveyor

**HMR Fishing Survey Worker I, II**
http://www.hear.org/announcements/jobs.htm#rcuh27268

The Department of Land and Natural Resources (DLNR), Division of Aquatic Resources (DAR), State of Hawaii is seeking an HMR Fishing Survey Worker I, II in West Hawaii, on the Big Island, Hawaii. Duties will include conducting fishing field surveys. (closing date: 21 June 2007).

STEP 2: MAKE A CHECKLIST – requirements for this job are:

___ Cover Letter with Recruitment ID # 27268
___ Resumé
___ Referral Source (how did you find out about this job)
___ Narrative for qualifications & salary history
___ 3 References (supervisors' names, addresses, phone nos.)
___ Transcript (report card and grades, school attendance)
___ Certificates (i.e. CPR training, summer study program, etc.)

STEP 3: CREATE YOUR RESUMÉ (see example on handout pg. 4) with:

- CONTACT INFO: your name, address, phone number and e-mail (be sure to check for messages daily after you apply!)
- CAREER GOAL: this job & a related career you may pursue
- EDUCATION HISTORY: your high school & expected graduation date, plus courses that relate to this job posting
- TOP 3 SKILLS: the skills they are looking for which you have
- CERTIFICATES or AWARDS, ORGANIZATIONS: these may or may not relate to this job – show your interests & best abilities!

STEP 4: CREATE YOUR COVER LETTER (see example on handout pg.3). Note what this applicant did:
• PARAGRAPH 1: states how main requirements are met (fishing experience, communication and computer skills)
• PARAGRAPH 2: states how other requirements will be met (this employer asked for work & salary history; the applicant has no related work experience, but has held a steady job & wants to learn)
• PARAGRAPH 3: states why they should hire this applicant & why “Lee” wants to work for them

STEP 5: COMPILE EVERYTHING. This applicant will send copies of his/her report card & the CPR certificate, plus 3 letters of reference.
Maikaʻi Haumana  
123 Kahawaiʻi Lane  
Kona, HI 96789  

Director of Human Resources, Division of Aquatic Resources (DAR)  
The Department of Land and Natural Resources  
Research Corporation of the University of Hawaiʻi  
2530 Dole Street, Sakamaki Hall D-100  
Honolulu, HI 96822  

June 1, 2009  

Dear Sir or Madam,  

I write to apply for the Fishing Survey Worker I position #27268 which I saw on the HEAR website. As you will see in my resume (attached) I am an excellent candidate for this position. I have a keen interest and years of experience with various types of fishing in Hawaiʻi. I also am a diligent worker with excellent communication and computer skills.  

While I have no formal work experience related to this position, I have worked for minimum wage for two years at Zippy’s restaurant (see letter of reference). This employer and my other references will attest that I am a reliable employee with a positive attitude. I have excellent attendance at work and school and am very punctual. I am also able to learn quickly.  

I look forward to building on the skills I have related to surveying, which include conducting a scientific inquiry on coastal marine debris and water quality in a Marine Science 11 class. This project required us to design a survey and record and analyze the data we gathered. I am hopeful that complex survey design and implementation will interest me in the same way my studies have. I believe I can offer as much to your organization as you can offer me, and that this position will lead to advancement related to my long range goals of employment and education in fisheries.  

If you would like more information please don’t hesitate to contact me by telephone at (808) 555-4321 (between 4-8pm and on weekends) or at my e-mail: lee@yahoo.com. Thank you for your time and consideration.  

Sincerely,  

Maikaʻi Haumana
Maikaʻi Haumana
123 Kahawaiʻi Lane, Kona, HI 96789
TELEPHONE: (808) 555-4321 E-mail: haumana@yahoo.com

OBJECTIVE
I am applying as a part-time Fishing Surveyor. My long range goal is to work in this or similar entry level positions while pursuing college course work in fisheries.

EDUCATION
Waimea High School, current senior class
General courses including Marine Science, Speech, Computers

SKILLS
Fishing
• I can identify Hawaiian fish species on sight using all local and scientific names
• I have experience with shoreline and fly-cast fishing, boat fishing, and net fishing
• I am familiar with all types of salt water and sport fishing modes and methods
• I can accurately identify and use all types of fishing gear
• I can measure fish lengths and weights in a scientifically reproducible manner
• I have excellent math skills and understand and use the metric system with ease
• I am in excellent physical health and used to spending days in fishing environments

Technology and Writing
• I am computer literate and can do Internet research, e-mail and work efficiently with various Mac and PC software such as Excel spreadsheet, Word, Powerpoint
• I am able to collect and maintain data records

Communication
• I can communicate clearly, efficiently and regularly with supervisors
• I work well alone or with a team
• I converse easily with strangers and use my sense of humor and interests to engage others in conversation
• I am punctual, dependable and able to meet deadlines

AWARDS, ORGANIZATIONS, ETC.
• Assistant troop leader, Cub Pack 254
• Ulua Competitor, annually since 1999
• Computer club, Debate Club, Theatresports Club
• 4 hours CPR (cardio-pulmonary resuscitation training)
• Awarded 1st place in district team debates, May 2007
• Participant in Track and Field team, 2 years (including Honolulu Marathon)

EMPLOYMENT HISTORY (see cover letter and letters of reference)
Resume Worksheet

Name__________________________________________________
Address________________________________________________
Phone__________________________________________________
Email__________________________________________________

Education history

High school name and date of graduation_______________________________
Special certificates (name of certificate, place earned)_____________________
________________________________________________________________
Units completed in college___________________________________________

Top three skill categories with the top three skill words for each category listed

Find the categories and specific skills on the website at:

➢ http://www.argus-tech.com/resume/other-ac1.htm

Here’s a sample:

Category – Communication Skills ______________________________________
(e.g. I have good organization skills.)

Skill – The specific communication skill strength I have is motivating people.

Where used – I developed this skill when I motivated my girl scout troop
to weed every Saturday for an elderly woman; I motivated young campers to do environmental projects; I motivated people to volunteer for the library.

Pick your three strongest skill categories and the strongest specific skill in each of those categories. Then think of all the ways in which you developed, used, and strengthened that skill. The experiences could be recent or from childhood. The important thing is that you recognize your skill strengths and can back up how you got them.

Category_________________________________________________________

Skill__________________________________________________________

Where used_____________________________________________________

_______________________________________________________________

_______________________________________________________________
Resume Worksheet

Category________________________________________________________

Skill__________________________________________________________________

Where used________________________________________________________________

Category________________________________________________________

Skill__________________________________________________________________

Where used________________________________________________________________

Category________________________________________________________

Skill__________________________________________________________________

Where used________________________________________________________________

Awards/recognitions:_____________________________________________________

Describe special skills or abilities that haven’t already been listed, in the space below.
STEP 5: Science Career Project - Find a Mentor!

Lots of people reach their career goals because they have planned well, are very determined, and have solved the biggest challenges (such as improving their skills and finding financial support). Sometimes people do not succeed, though - even with all this planning.

Why is this so? How can you make sure you succeed?

Researchers have proven that the best chance to succeed, especially for long range goals, comes to young people who have a mentor.

CLASS BRAINSTORM & DISCUSSION:
1. Who do we know who is successful?
2. What help did these people get? Who were their mentors?
3. How did they find their mentors?
4. How do you think their mentors helped them?
5. How do you ask someone to be your mentor?

FIND YOUR OWN MENTOR:
1. Who might you be able to depend on to help you with your goals?
   a. Family members: _________________________________
   b. Friends: _______________________________________
   c. Professional people: _____________________________
   d. Community people: ______________________________
2. List the best 3 people as your mentors here: 1\textsuperscript{st} ____________
   2\textsuperscript{nd} ______________________ 3\textsuperscript{rd} ______________________
   Use the Mentor Search Sheet to talk to possible mentors, and record your efforts to find a mentor. You may need to get someone to introduce you to a mentor. Ask friends, family and school staff for help if you need it. Good luck! Mentor Search Sheet is due: _____________________
Science Career Project – Mentor Search Sheet

Aloha!
As a teacher at __________________________ School I very much want to help all our students prepare for their future. Whether students study science or have other career and personal goals, young people often need a mentor. I thank you for considering being a mentor to this student, and ask you to please contact me if you have any questions or concerns.

Mahalo nui loa!

___________________________
(teacher’s name)

Teacher’s tel. no: _______ E-mail: ______________________________

Mentor’s Commitment Letter

My name is _______________________________ and I have been asked by _______________________________ to be a mentor to them as they pursue their future goals.

I have read this student’s Timeline of Career Steps and he/she has explained to me how I can help at each step of the way. I know that this student needs me to mentor them almost every week for ____________________________.

(give years or months)

I agree to be this student’s mentor for this long and believe I can help because

_______________________________________________________
_______________________________________________________
_______________________________________________________

I can be reached at ____________________________ should the need arise.

Signed: _____________________

(mentor’s signature)

Date: _____________________
List of Mentors Consulted

You may have to ask several people to consider being your mentor who may want to help you but are unable to at this time.

Even if you are lucky and find a suitable mentor right away, you may need to list others whom you can ask for help in future (in case something comes up and your 1st mentor cannot continue to help you). Write information about these other people you asked in the spaces below, if you have their permission. If you don’t have their permission, just describe them (ie neighbor, relative, etc.):

1. Possible mentor’s name & contact information: ________________________________
   ________________________________
   Date interviewed: ____________  Declined or did not ask? ____

2. Possible mentor’s name & contact information: ________________________________
   ________________________________
   Date interviewed: ____________  Declined or did not ask? ____

3. Possible mentor’s name & contact information: ________________________________
   ________________________________
   Date interviewed: ____________  Declined or did not ask? ____

4. Possible mentor’s name & contact information: ________________________________
   ________________________________
   Date interviewed: ____________  Declined or did not ask? ____