Charles M. Weber Institute of Applied Sciences and Technology

WEBER PORTFOLIO GUIDEBOOK

Est. 2000

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Stockton Unified School District

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Why a Weber Portfolio?

During your time at the Weber Institute, you will have developed skills and abilities that are in demand in college and in the workplace. You will need to demonstrate your capabilities to future employers, schools, and the community. You will need to demonstrate to the faculty and staff of the Weber Institute that you have met the graduation standards. When you compile your Weber Portfolio, you are gathering together documents that indicate your level of readiness to receive a diploma from the Charles M. Weber Institute of Applied Sciences and Technology.

In order to graduate from the Charles M. Weber Institute of Applied Sciences and Technology, you must complete the Weber Portfolio. This guidebook was designed to help you through the process. Your academy teachers will work closely with you in planning and building your portfolio.

What is the Weber Portfolio?

The Weber Portfolio is the culmination of your learning at the Weber Institute. It contains samples of work representing the best of your skills and abilities, including class work, projects, and community involvement. Specifically, the Weber Portfolio is divided into eight sections, each containing evidence of specific skills and abilities you have developed:

- Choosing Topics for Project and Paper
- Physical Project
- Research Paper
- Pre-Employment
- Writing Samples
- Career Exploration
- 21st Century Competencies
- Community Service

A ninth task that does not need a section in your portfolio is the Weber Project Presentation. This presentation is a graduation requirement. You will not be scheduled for a Weber Project Presentation until your portfolio is complete and approved by your academy teachers. In the following pages of this guidebook, you will learn about what each of the portfolio sections must contain. On page 48, there is a portfolio checklist.

Frequently Asked Questions

Can I graduate without doing a Weber Portfolio?

No. Completing a portfolio is a graduation requirement of the Weber Institute.

When is the deadline for completing the portfolio?

The portfolio should be completed and handed in during the fourth quarter, before your oral presentation. You will get a specific deadline at the start of the school year.

Will my portfolio be graded?

No, but the entire portfolio will be judged by your academy teachers as either complete or incomplete — it is either pass or fail. Your teachers will work with you to help you produce a complete portfolio. Note: several of the individual pieces of the portfolio may be graded if they are parts of class assignments.

Frequently Asked Questions, continued

What if I am missing parts of my portfolio? Can I still graduate?

No. You must complete all the parts of the portfolio in order to graduate from Weber Institute.

How much help will I have in preparing the portfolio?

Academy teachers will provide help and guidance to students as they work on the different parts of the portfolio.

What happens if I lose some of my portfolio work?

You are responsible for turning in a complete portfolio, so you will have to redo any work you lose. In addition to keeping hard copies of all your work in a safe place, your should back up all work electronically, either on flash drives or in a Google drive.

Can I take my portfolio with me after I graduate?

Yes. Your Weber Portfolio belongs to you.

Weber Portfolio Document

- Your portfolio **must** include:
  - ✓ Letter of Intent
  - ✓ Parent Consent Form
  - ✓ Physical Project Log
  - ✓ Project Documentation
  - ✓ Project Self-Evaluation Form
  - ✓ Research Paper Outline
  - ✓ Research Paper
  - ✓ Resume
  - ✓ Business Letters
  - ✓ Letters of Recommendation
  - ✓ Autobiography
  - ✓ Two Formal Essays
  - ✓ Career Exploration Documents
  - ✓ Transcripts and Certifications
  - ✓ 21st Century Rubrics
  - ✓ Community Service Contract
  - ✓ Community Service Paper

- All papers and reports in your portfolio **must be** typed.

- Your portfolio should include other relevant material, especially items that document your work. You should also include a cover page, table of contents, dividers, photographs, and appropriate decoration.

- Your portfolio must be presented professionally in a binder.

- A complete checklist of portfolio documents appears on page 48.

Physical Project Rubric

Minimum expectations — to score higher than 1, all of the following standards must be met.

- ❑ All verification items are turned in: Parent Consent, Project Log, and Physical Project Self-Evaluation.
- ❑ Project follows through on Letter of Intent.
- ❑ Documentation (photos, receipts, etc.) shows process of work completed by student.

4 — *an Excellent project will have <u>most</u> of the following characteristics:*

- ❑ is of exceptional quality overall and demonstrates excellent creativity and attention to detail.
- ❑ goes far beyond the minimum time requirement and demonstrates consistent, efficient, and thoughtful use of time.
- ❑ makes a clear learning stretch, which may be emotional, physical, intellectual, or a combination.
- ❑ shows obvious depth and complexity of understanding of subject.
- ❑ involves good analysis of problems and persistence in dealing with them.
- ❑ includes excellent use of teamwork and/or mentor(s).

3 — *a Proficient project will have <u>most</u> of the following characteristics:*

- ❑ is of good quality overall and demonstrates good creativity and attention to detail.
- ❑ goes beyond the minimum time requirement and demonstrates time management skills.
- ❑ makes a clear learning stretch.
- ❑ shows a good application of general knowledge.
- ❑ involves some analysis of problems and some persistence in dealing with them.
- ❑ includes good use of teamwork and/or mentor(s).

2 — *a Competent project will have <u>most</u> of the following characteristics:*

- ❑ is of average quality overall and demonstrates limited creativity and attention to detail.
- ❑ meets the minimum time requirement.
- ❑ makes a limited learning stretch.
- ❑ uses knowledge superficially.
- ❑ involves limited problem-solving ability; student may give up too easily.
- ❑ includes minimal use of teamwork and/or mentor(s).

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1 — *a Less-than-competent project will have <u>at least one</u> of the following characteristics:*

- ❑ is of poor quality overall with a lack of creativity or detail.
- ❑ falls short of the minimum time requirement and/or shows poor use of time management.
- ❑ lacks a stretch in effort.
- ❑ shows a very limited understanding, or even a misunderstanding, of the material.
- ❑ shows little ability or willingness to work through difficulties or to work with others.
- ❑ includes little or no use of teamwork and/or mentor(s).

Student's name _____ Score _____

Comments _____

_____

Evaluated by _____

Research Paper Rubric

Minimum expectations: to earn portfolio approval, a paper must:

- ❑ be typed in a standard font, 12-point, double-spaced, with one-inch margins all around.
- ❑ be at least 5 full pages (not including outline or Works Cited page).
- ❑ include at least 10 citations from at least five sources, all of which are listed on the Works Cited page.
- ❑ include a Works Cited page that contains bibliographic information about sources actually used.
- ❑ score a 2.0 or better on this rubric.

4 — *an Excellent paper meets minimum expectations and has <u>most</u> of the following characteristics:*

- ❑ IDEAS: Highly engaging introduction with a clear and focused thesis; strong sense of closure
- ❑ IDEAS: Paragraphs with appropriate and accurate detail thoroughly supporting the thesis
- ❑ IDEAS: Author demonstrates in-depth understanding and insight
- ❑ IDEAS: Evidence of sound, thorough research from a variety of sources
- ❑ ORGANIZATION: Logical organization throughout with smooth transitions
- ❑ VOICE: Distinctive, lively, authoritative voice maintains a formal, third-person style
- ❑ WORD CHOICE: Mature vocabulary; sophisticated writing; specialized vocabulary clarified
- ❑ SENTENCE STRUCTURE: Thoughtfully constructed sentences vary in length and structure; fluid style
- ❑ SENTENCE STRUCTURE: Writer's words smoothly integrated with quoted material; effective paraphrasing
- ❑ CONVENTIONS: Nearly flawless conventions: capitalization, grammar, punctuation, and spelling
- ❑ CONVENTIONS: Proper MLA citations and Works Cited

3 — *a Proficient paper meets minimum expectations and has <u>most</u> of the following characteristics:*

- ❑ IDEAS: Generally strong introduction with a clear and focused thesis; adequate sense of closure
- ❑ IDEAS: Paragraphs with appropriate and accurate detail sufficiently supporting the thesis
- ❑ IDEAS: Author demonstrates sufficient understanding and insight
- ❑ IDEAS: Evidence of sound research; some gaps may be noticeable
- ❑ ORGANIZATION: Generally strong organization with less polished transitions
- ❑ VOICE: Sufficiently clear writing voice maintains a formal, third-person style
- ❑ WORD CHOICE: Appropriate vocabulary; proficient writing; specialized vocabulary largely clarified
- ❑ SENTENCE STRUCTURE: Sufficient variety in length and structure of sentences; largely fluid style
- ❑ SENTENCE STRUCTURE: Writer's words sufficiently integrated with quoted material; sufficient paraphrasing
- ❑ CONVENTIONS: Strong conventions: minor errors in capitalization, grammar, punctuation, and spelling
- ❑ CONVENTIONS: Proper MLA citations and Works Cited with minor errors

2 — *a Competent paper meets minimum expectations and has <u>most</u> of the following characteristics:*

- ❑ IDEAS: Adequate introduction and thesis; some sense of closure
- ❑ IDEAS: Paragraphs with limited accuracy, limited supporting detail, or limited connection to thesis
- ❑ IDEAS: Author shows limited understanding or insight
- ❑ IDEAS: Evidence of adequate research; sources are not as broad, current, or thorough as appropriate
- ❑ ORGANIZATION: Adequate organization lacking effective transitions
- ❑ VOICE: Limited writing writing voice generally maintains a formal, third-person style
- ❑ WORD CHOICE: Limited vocabulary; largely simplistic writing; specialized vocabulary lacks clarification
- ❑ SENTENCE STRUCTURE: Limited variety in length and structure of sentences; writing lacks fluidity
- ❑ SENTENCE STRUCTURE: Awkward integration of writer's words and quoted material; awkward paraphrasing
- ❑ CONVENTIONS: Fair to good capitalization, grammar, punctuation, and spelling, with occasional distracting errors
- ❑ CONVENTIONS: Frequent mistakes in MLA citations or Works Cited

1 — *a Less-than-competent paper will have <u>at least one</u> of the following characteristics:*

- ❑ IDEAS: An unfocused and/or poorly developed introduction and thesis; lacks closure
- ❑ IDEAS: Paragraphs lacking focus, accuracy, support, development, or connection to thesis
- ❑ IDEAS: Author lacks understanding or insight
- ❑ IDEAS: Insufficient or poor use of research
- ❑ ORGANIZATION: Poor, confusing, or absent organization
- ❑ VOICE: Immature, inappropriate, or absent writing writing voice
- ❑ WORD CHOICE: Insufficient or overly simplistic vocabulary; failure to understand specialized vocabulary
- ❑ SENTENCE STRUCTURE: Choppy writing style; sentences often start the same; frequent fragments or run-ons
- ❑ SENTENCE STRUCTURE: Major problems with integration of researched material
- ❑ CONVENTIONS: Poor conventions that often confuse or distract the reader
- ❑ CONVENTIONS: Major omissions or errors in MLA citations or Works Cited

Student's name _____ Score _____

Evaluated by _____

Weber Presentation Rubric

Minimum expectations — to receive a score, the following requirements must be met:

- ❑ Student is on time.
- ❑ Dress is appropriate.
- ❑ Student is courteous.
- ❑ Speech is at least 7 minutes and no longer than 10 minutes.
- ❑ Presentation includes a visual aid utilizing multimedia skills.
- ❑ Student presents a complete, professional Senior Portfolio.

Directions:
Enter score in each category. Compute the average to calculate total score. A score of 2.0 is required to pass.

	Beginning – 1	Developing – 2	Accomplished – 3	Exemplary – 4
Explanation of Ideas and Information	• Information, ideas, or findings are unclear or illogical; audience cannot follow the line of reasoning • Development of ideas and presentation style inappropriate to the purpose, task, or audience	• Information, findings, and/or supporting evidence not always clear or logical; line of reasoning sometimes hard to follow • Development of ideas and presentation style largely appropriate to the purpose, task, and audience but does not fully succeed	• Information, findings, arguments, and supporting evidence are largely clear, concise, and logical; audience can follow the line of reasoning • Development of ideas and presentation style are appropriate to the purpose, task, and audience	• Information, findings, arguments, and supporting evidence are presented unmistakably, concisely, and logically; audience can effortlessly follow the line of reasoning • Development of ideas and presentation style are well-suited to the purpose, task, and audience
Organization	• Fails to meet requirement of presenting physical project and research paper findings • Lacks an introduction and/or conclusion • Uses time poorly	• Mostly meets requirement of presenting physical project and research paper findings • Introduction and/or conclusion unclear or undeveloped • Generally times components of presentation well	• Meets requirement of presenting physical project and research paper findings • Clear, interesting introduction and conclusion • Organizes time well	• Exceeds requirement of presenting physical project and research paper findings • Strong, thought-provoking introduction and conclusion • Organizes time well
Delivery	• Mumbles; speaks too quickly or slowly; or speaks too softly • Frequently uses filler words (um, uh, so, and, like, etc.) • Fails to make eye contact with audience; reads notes or slides • Does not use movements or gestures • Lacks poise and confidence (fidgets, slouches, appears nervous	• Speaks clearly, loudly enough most of the time • Occasionally uses filler words • Makes infrequent eye contact with audience; relies too heavily on notes or slides • Uses some movements or gestures • Shows some poise and confidence (only a little fidgeting or nervous movement)	• Speaks clearly, loudly enough; changes tone and pace to maintain interest • Rarely uses filler words • Largely maintains eye contact with audience; only glances at notes or slides • Uses natural movements or gestures • Looks poised and confident	• Speaks smoothly, clearly, loudly enough; changes tone and pace to maintain high level of interest • Does not use filler words • Maintains eye contact with audience throughout presentation; only glances at notes or slides • Uses natural movements or gestures • Has poise and confidence; natural rapport with audience
Presentation Aids	• Does not use audio/visual aids or media • Audio/visual aids or media used distract from presentation	• Audio/visual aids or media used may distract from or not add to presentation • Audio/visual aids or media used not smoothly integrated into presentation	• Well-produced audio/visual aids or media enhance presentation; add interest • Audio/visual aids or media used are suitably integrated into presentation	• Uses excellent audio/visual aids or media to enhance presentation and engage audience • Audio/visual aids or media used are smoothly integrated into presentation
Response to Questions	• Does not address question; goes off topic or misunderstands without seeking clarification	• Answers questions, but not always clearly or completely	• Answers questions clearly; seeks clarification when necessary; admits "I don't know"; explains how answer might be found	• Answers questions clearly and completely without effort; seeks clarification when necessary; admits "I don't know"; explains how answer might be found

Student's Name _____ Evaluated by _____

Comments _____ Score _____

Weber Portfolio Rubric

Student's name _____

Physical Project Score _____

Research Paper Score _____

Presentation Score _____

Overall Score _____

Comments _____

_____

_____

_____

Staff Signature _____

CHOOSING YOUR PROJECT & PAPER TOPIC

Tips for Choosing a Project and a
Topic for Your Paper
Paper and Project Examples
Letter of Intent

Tips for Choosing a Physical Project and a Topic for Your Paper

When deciding on a project, make sure you can describe it using a verb.

What do you want to *build*, *create*, *design*, *learn*, *teach*? It is too general to say that your project is on child development. A better project would to *create* an educational video on important stages of early childhood development.

Your paper and your project must be related.

If you know that you want to paint a car for your project, then your paper topic will also be on auto body work. But be careful — the paper cannot simply be a how-to version of the work you do in your project. You must research some aspect of auto body work for the paper. An example would be to write a research paper that examines the chemicals used in auto body repair.

Make sure to choose something you can learn about *and* something you can do.

So you want to research the development of railroads in America for your paper, but what will you do for your project? Or you decide to produce a video on the Weber Institute for your project, but what will you do your research on? With any topic you want to be sure to avoid one of two common traps: 1) having something great to research but nothing to do for a project; or 2) having a great project idea but nothing to research.

Turn your research paper topic into a specific question.

OK, now that you know your project will be to custom design a home using architectural software, you know that your paper will be somehow related to this topic. Now you need to narrow down this topic by turning it into a specific question about something you want to know. For example: How did architects go from designing buildings on paper to designing them on computers? The answer to this question is what you hope to discover in your research, and it may well become your paper's thesis statement.

Make arrangements as early as possible for your physical project.

Do you wish to volunteer somewhere? Do you plan on taking lessons? Does your project include taking a night class at Delta? With cases like these you will rarely be able to take care of the necessary details in a day. Such arrangements usually take many weeks or even months. Making your plans well ahead of time is crucial to your success.

Ask someone (a former student, a mentor) about what you may be getting into.

Can you really build a model of the human skeletal form? Do you have the time and patience to build a working computer? Do you have the money necessary to buy materials to repaint your car? Be realistic about what you can accomplish for your project, and if you're not sure about it, ask. If you ask good questions early and find that a project is just not suited for you, then you can make the change.

Paper and Project Examples

Note: The sample paper topics below are general — the theses will need to be much more specific. Also, these are samples only. You are encouraged to come up with whatever idea suits you.

Technology Academy

Paper	Project
Architectural software	Design a floor plan
The importance of computer literacy	Write a computer program
The Internet economy	Develop a web-based business from scratch
Violence in video games	Create a video game
African-American inventors	Create a database of inventions in America

Health Academy

Paper	Project
Effects of methodone treatment	Create a plan for drug abuse treatment
Careers in sports medicine	Plan and execute a career fair
Alzheimer's disease	Develop activities for convalescent home patients
Effects of child abuse	Create a booth at the mall for Child Abuse Prevention Month
Causes of heart disease	Produce heart disease prevention pamphlets for a doctor's office

Automotive Academy

Paper	Project
Improving gas efficiency	Rebuild an engine
History of the electric motor	Install an electric motor
History of biodiesel fuel	Create biodiesel fuel
Environmental regulations of refrigerants	Install air conditioning in a vehicle
Vehicle pollution	Perform California smog tests; diagnose and repair problems

Letter of Intent

The Letter of Intent is an important early step in the process. Students should not assume that just anything will be approved. It is likely that the project will be either approved altogether or tentatively approved with modifications. Approval is based on the relationship of the project to the student's academy theme, the quality of the student's class work, the student's level of self-motivation, and the quality of the Letter of Intent itself. The Project/Paper Evaluation Form that academy teachers use is on page 44.

Format

The Letter of Intent must be typed and it must follow the following four-paragraph structure:

- 1st paragraph: Introduction: purpose of the letter; description of your overall idea; reasons
- 2nd paragraph: Detailed description of your **physical project**: process and steps to be taken, expected end product; anticipated problems and possible solutions; resources you will use; time estimate; cost estimate
- 3rd paragraph: Detailed description of your **research paper**: topics you will cover; research questions; research resources you will use
- 4th paragraph: Pledge not to plagiarize

There is a sample Letter of Intent on the next page. Follow the same structure, but do NOT use the same wording. It is especially distressing when students plagiarize the fourth paragraph, which is the promise not to plagiarize!

Approval

Once the paper and project are approved, keep the Project/Paper Evaluation Form and your Letter of Intent for your portfolio. If you need to make any changes to your paper or project topic after this point, notify your mentor teacher. Small changes may be necessary and won't require a new Letter of Intent. But if the change is dramatic, a new Letter of Intent must be written.

Sample Letter of Intent

1 inch from top of paper

Business style calls for your home address

123 Sunshine Drive
Stockton, CA 95207
Phone number and/or email address

15 August 2016

Business style requires you to skip 4-6 lines after the date

Weber Institute
302 West Weber Avenue
Stockton, CA 95203

Dear Weber Project Evaluators:

Paragraph 1 states the letter's purpose and uses general terms to identify the project and paper topic.

I am writing this letter to request approval for my senior project, which is to remove the head of an old, non-running engine, get it machined, and reinstall it to make the engine function once again. I am also asking for approval of my research topic on engine performance. I have always enjoyed taking things apart and putting them back together. It is amazing how you can bring a car back to life without buying a new one. I know I will learn a lot from working on this project.

Paragraph 2 explains the physical project in detail. The writer shows that he has thought about the demands of the project and problems he may encounter, and he identifies resources he will use as well as time and cost estimates.

For my physical project, I will be working on my 1995 Honda Civic. The problem with the engine is that the head gasket got burned. I will take the engine head off and get it machined. Then I will clean the engine block and reassemble the engine with the goal of getting it running again. I will also change and replace other parts that may be worn out. All these steps will take a lot of time because it will be my first time doing this work, so I want to take my time and do it correctly. The biggest obstacle I may encounter is reconnecting all the hoses and wires correctly, so I plan on taking pictures when I disassemble the engine to keep track of everything. I will also consult with Mr. Yonan to keep myself on track. This project will take more than the fifteen hours required. I believe this project will help me understand how engines work and give me a better sense of how all machines work. I anticipate this project will cost at least one hundred dollars. I am currently working at a tire shop which will help me pay for any expenses.

Paragraph 3 explains the topic of the research paper. It is detailed and includes questions the writer hopes to answer as well as plans for where to research information.

Since my project involves hands-on engine work, for my research paper I would like to conduct research on engine performance and what you can put into a car to increase its horsepower. There are many parts that can be added to a car's engine in order to make it run more powerfully. Can a different shape of pistons help improve horsepower? Can installing headers and an intake affect the engine in the long run? I will research different bolt-on systems such as superchargers and turbochargers. How do they compare? What are their advantages and disadvantages? Are there simple, low-cost steps that can produce more power too? I plan on getting some of my information by talking with mechanics. People with a lot of experience know a lot about car engines and can help answer my questions. In addition to asking mechanics, I will also use books and the Internet for my research.

In paragraph 4, use your own words to pledge that you will not plagiarize.

Plagiarizing is something that students end up doing when they get behind and don't have time to finish their work. I don't consider plagiarizing an option because I believe that cheating comes back at you and it's not worth doing. I like learning and experimenting, and plagiarizing will take that away from me.

Sincerely,

Don't forget to sign your name.

sign here

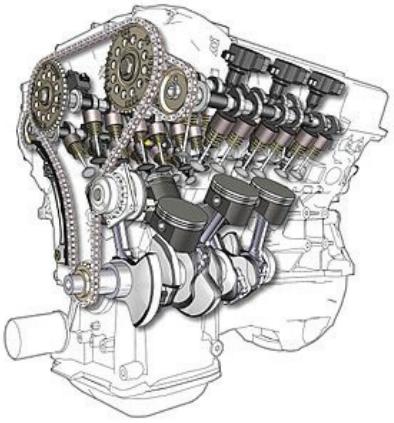
type your full name

PHYSICAL PROJECT

Project Standards and Policies
Physical Project Log
Physical Project Documentation
Physical Project Self-Evaluation

Project Standards and Policies

- ❑ You cannot begin work on the project until you have completed the Parent Consent Form (see page 43) and your Letter of Intent has been approved.
- ❑ The project may be started as early in your senior year as necessary or desired.
- ❑ You should work at least 15 hours overall on your project.
- ❑ The project should be a learning stretch. This means it is not acceptable for students to do something they already know. Topics that are too closely connected to school activities will be rejected.
- ❑ The project cannot simply be job shadowing. Students must be more active than merely to observe others.
- ❑ The project cannot be part of a student's paid job.
- ❑ A faculty mentor is required.
- ❑ Project checks will take place during third quarter, or whenever appropriate.
- ❑ Projects must maintain high standards: no obscenity; sexually explicit content; etc.



- ❑ Project documentation must include photographs of the student at work. Other examples of documentation include photocopies of sign-in sheets and receipts for purchases.
- ❑ A project log is required as documentation of your work.
- ❑ Project documentation is expected to be honest and thorough. Plagiarism is wrong at any stage of the project, and students who lie about their project work jeopardize their graduation.
- ❑ Your project must score a 2 or better to pass. You must pass the physical project to meet graduation requirements! See the grading rubric on page 5. Your teachers will evaluate your project.

What former seniors have said:

"If I could do the Weber project all over, I would choose a more personal topic. . . . Be careful about what you choose to do because after October it is too late to change your mind."

"I believe that if you have an interest in your topic, you will put the time and effort into developing a good project."

"First thing's first. Deciding on your subject matter is the most critical part of the whole project. Choosing your project is your way to be creative."

Physical Project Log

Expectations

- ❑ The log should describe what you do at one time in specific detail. You should not wait until the end of the week to write several entries or for too many activities into one long entry. Instead, write your entries **each time** you do work on your project.
- ❑ The log must include contacts you make with mentors or other people who help you along the way.
- ❑ The log should report successes, disappointments, surprises, problems, and changes you make.
- ❑ The log should be written clearly — but it can be informal. It does not require the serious tone that a research paper does.
- ❑ The number of hours and minutes spent on that day's activity should be reported at the end of the entry in parentheses.
- ❑ There should be an adequate number of entries suitable to the project you are doing. For example, four entries is not enough for someone who sets out to rebuild an engine.
- ❑ Write your entries in a Google doc to print out at the end.
- ❑ The teacher will not evaluate your log or give you credit until your Parent Consent form is turned in.

Sample entries

Thursday, Jan. 30

From my Chilton's Volkswagen book, I found out what type of front suspension my 1974 type 1 uses. It's a trailing arm suspension and it gets its name from the four trailing arms that are connected to the axle. There's one trailing arm per axle beam and my front end uses two. (30 minutes)

Note how this student documents the time spent researching his project.

Friday, Feb. 7

Now I know what kind of front suspension I have, but I still don't know how it works. So I went downtown to the library to find out. There wasn't much, but according to "The Small Wonder" it works with torsion bars that are housed within the axle beams. It says the principle of the torsion bars are that when the tire goes up or down the springing action caused by the bars causes a force in the opposite direction.

T o find out how to lower the front end I went to Bob's German and talked to a mechanic named Chad. He explained to me how to do it. He said I would have to pull the torsion bars out in order to get more than a one-inch drop. If I only want to go down about an inch I can use lowering shocks.

It's a good idea to talk to people who have expertise and who can explain steps to you.

Determining the distance my car will drop is the amount of torsion bars I'll take out. I forgot to ask Chad how many bars to pull, so I called him when I got home. He said to pull three but if that wasn't enough pull two out of the bottom beam. (2 hours and 20 minutes)

Saturday, Feb. 8

The first step was to jack up the car and pull off the front wheels. Next I loosened the screws on the axle beam. Those screws are what keep the bars tight when they're under pressure. Since I'm only taking the bars out of the top beam I only needed to loosen the first set of screws. I got stuck when it came to taking off the trailing arm. (1 hour)

More than just a series of steps, a good project log includes setbacks and difficulties.

Sample Log entries, continued

Monday, Feb. 10

Since there's no school today I knew I could get a lot done. I called Don's Buggy Shop about the trailing arm. I found out I had to remove not just the top trailing arm but also the top of the spindle where it connects to the arm.

To take the trailing arm off I had to loosen a set screw which I forgot about earlier. I had to run a screwdriver along the arms to remove all the road debris that was hiding the screws. After I loosened the screw the arm could have been slid off if the spindle wasn't stopping it.

Getting the spindle off was the hardest obstacle I've encountered. There are two screws with bolt type heads that interlock with the king pin that are called link pins. They're old and rusty, so it was very frustrating. It took a long time to get them off.

It seemed like after I took the link pins out of the spindle it would fall right off but I guess all the rust and all the pressure it was under kind of held it together. I had to pound with a hammer to bust it loose.

Now with everything out of the way and the axle exposed, the bars were ready to be taken out. I could see the bars through a hollow square in the spindle, and I used a hammer and screw driver to push three bars out the other end. Then I was able to grab the bars with a pair of vice grips and pull them all the way out. Reassambly was the opposite of assembly. (3 hours)

It is evident from this entry that the student is putting in quality time. The specific details are necessary. You can tell that he did not wait until much later to write his entries.

Remember to write the time you spent working at the end of each entry. It is important that the content of the entry supports the time you write. Writing just one paragraph for 3 hours of work isn't adequate.

This student wrote several more entries, with his time totalling more than the 15 hours required. In his additional entries, he explains what he did and refers to several people he spoke with for help on completing the project.

Physical Project Documentation

The Project Log is one way to document, or prove, the work you do for the physical project. But it is important that you include in your portfolio other pieces of evidence that you completed your project. Examples of documentation include the following:

- ❑ Photographs of the project as you work on it. Any project can be documented with photos.
- ❑ Receipts of purchases.
- ❑ Drawings/sketches/plans/drafts of work leading to the final product.
- ❑ Photocopies of sign-in sheets (if you are doing your project in a workplace)
- ❑ Video of the work on progress.

Physical Project Self-Evaluation

The Physical Project Self-Evaluation is a two-page form which asks you to reflect on your experience working on your project. This evaluation is due upon completion of your Physical Project. It must be turned in before your project will be evaluated. When you get it back, place it in your portfolio. The form is on page 45 and an electronic version can be found on our school's web page.

RESEARCH PAPER

Paper Standards and Policies
MLA Citations Formatting
Sample Outline
Sample Paper

Research Paper Standards and Policies

- Paper must be preceded by an approved Letter of Intent. Topics may be rejected because they are sensitive or too close to what a student already does, especially as part of a school program.
- Paper must follow Modern Language Association (MLA) format. Included in this guidebook MLA citation formatting (see pages 19-20). Your English teacher will also provide lessons and materials to help students learn MLA format.
- Paper must go through the writing process including drafts, revisions, and editing. Major deadlines, determined by your academy teachers, must be met.
- Paper must be **at least** 5 full pages, typed, double-spaced, with 1-inch margins all around. Font size is 12 point. Select an easy-to-read font such as Arial or Times New Roman. (This page is typed in Times New Roman 12 point.) Do **not** type in all capitals or in a decorative or italic font. There is a sample in this guidebook of what an outline and research paper should look like (see pages 21-37).
- Paper must have a minumum of 5 sources which are properly listed on the Works Cited page. To score well on the paper the student must use a variety of sources — do not rely solely on Internet sources, for example.
- Within the text of the paper, there must be at least 10 citations indicating the sources from which information was taken. These parenthetical citations will be taught in class.
- Paper must be the student's **original work**. Students suspected of plagiarism will be asked to produce their sources. Students unable to produce proper sources will be asked to rewrite their paper. It will be considered a late paper and the grade will drop as a result.
- Paper's final draft must be turned in by the announced deadline to be eligible for full credit. Students who fail to turn in papers will not meet their graduation requirements.
- Papers that do not pass may be rewritten and resubmitted for a score. Students who receive scores of 1 will be urged to see a tutor. They must rewrite the paper to the same standards as before.
- Papers must be a 2 or better on the rubric in order to be passing (see the rubric on page 5). **Students must pass the research paper in order to meet graduation requirements.**

MLA Guide: Citation Formatting for Common Source Types

Basic Order of Bibliography Information

1. Author**.**
2. Title of source**.**
3. *Title of container italicized***,** (such as a book, website, or journal title)
4. Other contributors**,**
5. Version**,**
6. Number**,**
7. Publisher**,**
8. Publication date**,**
9. Location**.** (page numbers or Internet URL)

Lacey, Robert. *Ford: The Men and the Machine*. Little, Brown and Company, 1986.

Book by one author

Author last name**,** first name**.** *Title italicized***.** Publisher**,** year of publication**.**

Note: The first word of a title, last word, and all key words in between are capitalized.

Eggins, Suzanne, and Diane Slade. *Analyzing Casual Conversation*. Cassell Books, 1997.

Book by two or three authors

Author last name**,** first name**,** and first and last name of second (and, if needed, third) author**.** *Title italicized***.** Publisher**,** year of publication**.**

Note: When listing more than one author, go by the order they are listed on the book, which is not always alphabetical.

Gilman, Sander, et al. *Hysteria Beyond Freud*. University of California Press, 1993.

Book by more than three authors

Author last name**,** first name**,** et al**.** *Title italicized***.** Publisher**,** year of publication**.**

Note: "Et al" is a Latin abbreviation that means "and others."

Dillard, Annie. "Living Like Weasels." *Literature and Language Arts Fifth Course*, program authors Kylene Beers et al, Holt, Rinehart, and Winston, 2009, pp. 210-213.

Essay or article in a larger book or collection

Author last name**,** first name**. "**Title of essay in quotation marks**."** *Title of book italicized***,** Other contributors such as editors**,** Publisher**,** year of publication**,** pages of essay**.**

Note: If you find version or edition numbers, include them before listing the publisher.

MLA Guide: Citation Formatting for Common Source Types

Hollmichel, Stephanie. "The Reading Brain: Differences between Digital and Print." *So Many Books*, 25 Apr. 2013, www.somanybooksblog.com/2013/04/25/the-reading-brain. Accessed 3 Aug. 2016.

Article or Posting found on the Internet

Author last name**,** first name**. "**Title of Article in Quotation Marks**."** *Website name italicized***,** Version or edition numbers**,** Publisher or sponsor of website**,** Publication date**,** Internet location**.** Date accessed**.**

Note: Web sites may not always contain all the information shown here. Use the information you can find. For example, if the article has no author, begin with the title of the article.

"History of Computers: A Brief Timeline." *Live Science,* Live Science LLC, 8 Sept. 2015, www.livescience.com/history/computer-timeline/. Accessed 31 July 2017.

"Engine Performance and Diagnostics." *YouTube*, uploaded by Larry Johnson, 9 Nov. 2014, www.youtube.com/watch?v=WR3-v7QXXw.

Online Videos

"Title of video in quotation marks**."** *Website name italicized***,** Name of director/producer/person who uploaded the video**,** Publication date**,** Internet location**.**

Belton, John. "Painting by the Numbers: The Digital Intermediate." *Film Quarterly,* vol. 61, no. 3, May 2008, pp. 58-65.

Articles from Magazines, Journals, or newspapers

Author last name**,** first name**. "**Title of article in quotation marks**."** *Title of magazine italicized***,** Version or publication numbers**,** Date of publication**,** page numbers**.**

Liu, Catherine. Marine biologist. 3 Sept. 2014, interview conducted by email.

Personal Interviews

Last name of person interviewed**,** first name**.** Description of person, usually a job title**.** Date**,** description of interaction**.**

Cindy Senior

Mrs. Teacher

English IV

15 October 2015

Radiation and Chemotherapy Treatments for Cancer

I. Introduction

A. Worldwide cancer statistics

B. Reader connection and empathy

C. Treatment options: mainly radiation and chemotherapy

D. Thesis: This in-depth look at radiation and chemotherapy shows how these treatments were developed and how they and other treatments have improved as medical science has progressed.

II. Defining Cancer

A. Abnormal Cell Growth

1. Billions of cells constantly reproducing
2. All have the same DNA
3. Occasional DNA damage in reproduction process creates abnormal cells
4. Typically the abnormal cells die
5. Abnormal cells that don't die but instead reproduce other abnormal cells are cancerous
6. Tumors are masses of abnormal cells

B. History of Cancer Discovery

1. Earliest mention of cancer-like disease was 3000 B.C.
2. Treatments used in ancient civilizations
3. Egyptians used cautery, knives, and salts.
4. Sumerians, Chinese, Indians, Persians, and Hebrews used herbal remedies and pastes made from iron, copper, sulfur, and mercury.

III. Development of Early Cancer Treatments

A. Radiation

1. Radiation is defined as the movement of energy through space or another medium.
2. Medicinal radiation is a high energy level radiation that can change the atoms' structures, also known as ionizing radiation.
3. Radiation first discovered as x-rays by Wilhelm Roentgen in late 1800s.
4. One year later, Dr. Emil Grubbe built an x-ray machine that he used to treat a breast cancer.
5. Harmful effects of radiation were at first unknown.
6. Doctors tested dosages out on themselves and became ill.
7. LINAC developed by Kaplan in 1956 at Stanford.
8. "Fifty years and forty million patients later, medical linear accelerators have become the backbone of radiation therapy for cancer worldwide. Roughly half of all cancer patients receive radiation therapy, primarily from the rays generated by a linear accelerator" (Baker).
9. Modern imaging technology, such as LINAC, CT, and MRI, can better pinpoint cancer locations for treatment.

B. Chemotherapy

1. Chemotherapy is defined as the treatment of diseases, including cancer, using drugs.
2. Discovered by accident during World War II
3. Nitrogen mustard created as warfare agent; it was found to damage blood cells.
4. In 1942 it became the first drug to treat cancer; was used as lymphoma treatment.
5. Nitrogen mustard is an alkylating agent that replaces an alkyl group in cells, damaging cells' DNA and causing them to die.
6. Nitrogen mustard served as basis for modern chemotherapy drugs.

IV. Staging

A. Definition

1. Physicians determine treatment or combination of treatments based on the stage of the cancer.
2. "Stage refers to the extent of your cancer, such as how large the tumor is, and if it has spread," (National Cancer Institute).
3. The stage of the cancer is determined based on the cancer's specific characteristics such as location, type, size, spread method, length of spread, and how likely it is to spread.

B. TNS Staging System

1. T represents the description of the **t**umor like the size and shape.
2. N describes the number of surrounding **n**odes with cancerous cells.
3. M describes whether or not the cancer has **m**etastasized.
4. Metastasize means beyond control and describes to what extent the cancer has spread.

C. Numeral Staging System

1. Stage 0 describes the presence of abnormal cells or cancer in situ, or present. This is not cancer yet but may become cancer.
2. Stages I, II, and III describe cancer that is clearly present.
3. The higher the number, the larger the mass and/or the more it has spread.
4. Stage IV cancer has metastasized throughout the entire body

V. Radiation Treatment

A. Radiation Treatment Basics

1. Radiation oncologist is the doctor that makes treatment decisions
2. Gray unit: how much radiation can be absorbed by one kilogram of human flesh without being harmful
3. Radiation focuses high energy atomic particles, such as protons or electrons, to localized tumors.
4. Radiation breaks bonds within the cancerous cells and damages their DNA.
5. Goal: destroy the tumor or shrink it to an operable size

B. Types of Radiation Treatment

1. Most common type: external-beam radiation.
    a) The tumor is mapped with CT or MRI.
    b) Resulting image is used to focus the beam of radiation.
    c) Administered on a linear accelerator, or LINAC machine.
    d) External beam strength is controlled with precise computer guidance
    e) Also called intensity modulated radiation therapy or IMRT
    f) Some external beam radiation techniques use proton particles instead of regular x-ray particles. One such technique is called conformal proton beam radiation therapy.
2. Internal radiation
    a) Can either be liquid or solid.
    b) Solid internal radiation, aka brachytherapy, is implanted inside the patient near the cancer in the form of a small steel seed or capsule.
    c) Brachytherapy releases the radiation slowly and over time.
    d) Liquid form of internal radiation is administered through IV or catheters.
3. Systemic radiation
    a) Radioactive substance, such as Iodine 131 or Strontium 89, is injected into the body or taken by mouth.
    b) Whole body radiation
    c) Used to treat thyroid cancer because thyroid cancer cells naturally absorb radioactive iodine.
    d) Relies on monoclonal antibodies: lab-made chemicals that help the radioactive substance attach to only the cancerous cells, leaving healthy cells untouched.
    e) Systemic radiation is often used as a palliative treatment (relieves symptoms but does not cure the patient).
4. Dosing strategies

a) Depends on the type of cancer cell and how fast it reproduces.
b) Hyperfractionation: a patient receives radiation very often but in small doses.
c) Hypofractionation: a patient receives radiation much less often but in larger doses.

C. Chemotherapy Basics

1. The use of one or more drugs to treat diseases such as cancer.
2. Goals: shrink a cancer in size, kill cancer cells that have spread around the body, or support other treatments.
3. There are many different chemo drugs.
4. The drugs can be administered orally, in topical creams, or by injection.
5. The drugs are prescribed and monitored very carefully.
6. Reproduction cycle of cancer cells is used to determine dosage and frequency of chemotherapy drugs.
7. The efficiency of anticancer drugs depends largely on how well they attack the cells during the reproductive cycle ("How Chemotherapy Drugs Work").

D. Types of Chemotherapy Drugs

1. Alkylating agents: directly damage the DNA; effective at any point in the cell cycle.
2. Antimetabolites: don't directly damage the cells' DNA, but instead interfere with the cells' ability to reproduce.
3. Anti-tumor antibodies: alter DNA to keep cells from multiplying. A major type of anti-tumor antibodies is called anthracyclines.
4. Topoisomerase inhibitors: interfere with enzymes that assist in the separation of DNA strands. If the DNA strands don't separate, then the DNA cannot reproduce itself.
5. Mitotic inhibitors: Plant-based drugs that damage cells during mitosis, which is when the cell separates into an exact copy.

6. Corticosteroids: hormones used in combination with other chemotherapy drugs to help alleviate symptoms like nausea and vomiting.

E. Adjuvant Treatment
    1. Combination of radiation and chemotherapy treatments.
    2. Some patients may receive radiation before or during a tumor removing surgery, followed by chemotherapy to prevent the return of cancer after radiation.

VI. Side Effects of Cancer Treatment
- A. Treatments are so strong that in the process of killing cancerous cells they also harm the body's healthy cells.
- B. Extreme fatigue
- C. Alopecia: hair loss
- D. Dietary problems: constipation, diarrhea, weight gain, nausea, mouth sores
- E. Skin burns from radiation
- F. Prior medical conditions may be a factor.

VII. Cutting Edge Cancer Treatments

A. Targeted Gene Therapy
    1. Treatments that are directed to specific genes that only grow on cancer cells.
    2. Does not harm healthy cells

B. Pharmacogenomics
    1. Scientists can see how genes affect the way the body reacts to the drugs, and create "personalized medicine" for each patient.
    2. Genes have such an effect that two seemingly similar people might react extremely differently to the same medication.
    3. The human genome carries the instructions that tell our body what enzymes and proteins to produce. These enzymes determine how long it takes for a drug work; will be different from patient to patient.
    4. By using the patient's genome, doctors can find a "safer" drug for the patient by reducing side effects.

5. "Pharmacogenomics is constantly changing. Researchers continue to identify gene variations that affect how a drug works. As personalized medicine grows, testing for gene variations may become more common" ("Understanding Pharmacogenomics").

VIII. Conclusion

A. Success of radiation and chemotherapy

1. Over forty years ago, only half of cancer patients surpassed five years, now two-thirds of people survive past that time.
2. New cancer treatments increasing success rates

B. Cancer Prevention

1. Education against tobacco and too much alcohol
2. Healthier diets
3. Physical activities
4. Understanding personal cancer risks
5. Genetic testing and screening
6. Early detection has more than tripled cancer survival.

Cindy Senior

Mrs. Teacher

English IV

15 November 2015

Radiation and Chemotherapy Treatments for Cancer

Cancer is one of the most prevalent causes of death worldwide. Cancer is a disease that takes about 7.6 million lives a year. In fact, in developing countries, it kills more than HIV/AIDS, malaria, and tuberculosis combined (Moten). With such large numbers, it is no coincidence that many of us know people who have been impacted by this illness. Now, let us practice a bit of empathy and imagine that we are the patient. After receiving the harrowing diagnosis, what are our choices? There are many cancer treatments available, and medicine is always advancing. Presently, the two most common options are chemotherapy and radiation, used separately or in combination. They have varying degrees of efficacy depending on factors such as the type of cancer, its stage at the start of treatment, and often most importantly, the patient receiving the treatment. This in-depth look at radiation and chemotherapy shows how these treatments were developed and how they and other treatments have improved as medical science has progressed.

To start with, it is important to know what cancer is. It comes from abnormal cell growth. The human body contains billions of cells that are constantly reproducing. Although all of the cells have different purposes, they all contain the exact same DNA. Occasionally, during the reproduction process, a cell will experience damage in its DNA. This is usually fatal to the cells because the DNA is essentially the genetic instructions for cell reproduction and functioning. So these abnormal cells die (Hajdu). The dying cells aren't the problem; the problem occurs when the damaged cells don't die. Cancer occurs when those abnormal cells don't die and instead thrive and continue to reproduce similar abnormal cells with the same flaw in structure. Cancerous cells can also invade surrounding tissue and therefore can spread throughout the entire body. Often times, the word tumor is used as a synonym to cancer. A tumor is a mass of abnormal cells, but those cells cannot invade other tissues and therefore a tumor doesn't spread. Also, although many cancers do become tumors, there can be cancers, such a lymphoma, that flow through body vessels and rarely become tumors (Servan-Schreiber 25). Cancer has been observed

in humans for a long time, with the oldest description of cancer being dated back to 3000 B.C. (Hajdu). Ancient civilizations had a variety of treatments. According to the American Cancer Society journal Cancer, "The Egyptians attempted to treat tumors and cancers with cautery, knives, and salts... The Sumerians, Chinese, Indians, Persians, and Hebrews of the same epoch were partial to herbal remedies such as tea, fruit juices, figs, and boiled cabbage, but in advanced cases, they did not hesitate to resort to solutions and pastes of iron, copper, sulfur, and mercury" (Hajdu). Obviously, cancer treatment today relies on modern medical science, but we have yet to get a solid grasp on effectively treating such a common disease.

Radiation therapy is one of the oldest modern cancer treatments, and it is still commonly used. Radiation describes the movement of energy through space or another medium. Medicinal radiation is a high energy level radiation that can change the atoms' structures, also known as ionizing radiation. It can enter cells and damage them enough to destroy them ("Understanding Radiation Therapy"). Radiation, in the form of x-rays, was first discovered by Wilhelm Roentgen in the late 1800s. After just one year of the discovery, Dr. Emil Grubbe built an x-ray machine that he used to treat a breast cancer (Knight). Before this point, only surgically removable cancers could be cured. So, many physicians flocked to radiation and used it like a miracle treatment. To test the dosage before applying it to the patients, many doctors focused radiation on themselves. At the time, the serious dangers of overexposure to radiation were unknown, so Dr. Grubbe, like many of his colleagues, developed cancer and died (Knight). Fortunately, through trial and error, we have developed safer and more precise methods of radiation that are safer and more effective. For example, we now have the medical linear accelerator or LINAC, which is a device that concentrates high energy beams in one location. Dr. Henry Kaplan became the first person to treat a patient with a medical linear accelerator in 1956, when he treated a small child's carcinogenic, or cancerous tumor, using an electron beam. According to Stanford University, where Kaplan developed LINAC, "Fifty years and forty million patients later, medical linear accelerators have become the backbone of radiation therapy for cancer worldwide. Roughly half of all cancer patients receive radiation therapy, primarily from the rays generated by a linear accelerator" (Baker). And with modern imaging technology, such as computed tomography (CT) and magnetic resonance imaging (MRI), medical science can better pinpoint tumors and can make radiation therapy less dangerous to the whole body.

Another more recent cancer treatment is the use of drugs. Chemotherapy literally means the treatment of diseases, including cancer, using drugs. This discovery came about, like many discoveries, by accident. During World War II, the U.S. Army was developing warfare chemicals similar to mustard gas. One such compound was nitrogen mustard, which was found to damage blood cells in people and by 1942, it was being used to treat lymphoma, a cancer that affects the lymph nodes. Nitrogen mustard is what is known as an alkylating agent that replaces an alkyl group in cells and in that way it damages cells' DNA and causing them to die. Nitrogen mustard, or mustine, was successful in killing cancer cells and so it became the first drug used to treat cancer. It is currently not used in its original form because it is extremely poisonous to cells, or cytotoxic, but it served as a basis for many modern anti-cancer drugs ("Evolution of Cancer Treatments"). Our modern cancer drugs are much more sophisticated than crude chemical war techniques. The most advanced chemotherapy drugs can kill cancer cells without causing significant damage to the surrounding cells. Now, not only can doctors cure inoperable cancers, they can also annihilate cancer cells throughout the body.

A cancer patient has these two options to treat his/her cancer. The physicians, however, are the ones that recommend which treatment or combination of treatments would be beneficial. This decision is usually based on the stage of the cancer. "Stage refers to the extent of your cancer, such as how large the tumor is, and if it has spread," writes the National Cancer Institute. Physicians use a variety of staging systems. Typically, the stage of the cancer is determined based on the cancer's characteristics such as location, type, size, spread method, and how likely it is to spread. The most common staging system is the TNS system. T represents the description of the tumor like the size and shape. The letter N describes the number of surrounding nodes with cancerous cells. And the letter M describes whether or not the cancer has metastasized. The word metastasize simply means beyond control and describes to what extent the cancer has spread. Another popular staging system is the numeral system. Stage 0 describes the presence of abnormal cells or cancer in situ, or present, this is not cancer yet but may become cancer. Stages I, II, and III describe cancer that is clearly present. The higher the number, the larger the mass and/or the more it has spread. Finally, stage IV cancer has metastasized throughout the entire body ("Cancer Staging"). Knowing the stage of the cancer is important to both the physician and the patient. The stage helps them determine how serious the cancer is, the chances of survival, and the plan for treatment.

Once the stage of the cancer is determined, the physician may decide to proceed with a radiation treatment. The patient's care is then passed on to a radiation oncologist, a doctor specializing in treating cancer with radiation. He/she is in charge of the radiation treatment and calculates the dosage in gray (Gy) units. A gray unit measures how much radiation can be absorbed by one kilogram of human flesh without being harmful. Physicians usually recommend radiation because it focuses high energy atomic particles, such as protons or electrons, to localized tumors. This high density radiation is strong enough to break bonds within the cells and damage their DNA. The destruction of cancerous cells kills them and ultimately destroys the entire cancerous tumor or shrinks it to an operable size ("Radiation Therapy to Treat Cancer"). There are different types of radiation that kill cancerous cells.

The most common type of radiation used to treat cancer is called external-beam radiation. In external beam radiation, the tumor is mapped out using imaging technologies like the computed tomography or magnetic resonance imaging. The image of the tumor is used to focus the beam of radiation. External-beam radiation is administered on a linear accelerator, or LINAC machine. The patient lies on his/her back while the machine moves around them, treating the tumor from all sides. With modern technology, the external beam strength, or dose, can be controlled with precise computer guidance and therefore cause less damage to surrounding tissue. This procedure is called intensity modulated radiation therapy or IMRT. IMRT is one of the most modern forms of external beam radiation ("Radiation Therapy to Treat Cancer"). There are also external beam radiation techniques that use proton particles versus the regular x-ray particles. One such technique is called conformal proton beam radiation therapy, and it is very effective because the proton beams can be targeted directly to the tumor yet cause little damage to the surrounding tissue ("Radiation Therapy to Treat Cancer").

But external-beam isn't the only type of radiation. There is also internal radiation, which can either be liquid or solid. Solid internal radiation is implanted inside the patient near the cancer in the form of a small steel seed or capsule. Implants usually lose their radioactivity over time but remain in the body. This therapy is also known as brachytherapy, because it releases the radiation slowly and over time. It is most commonly used to treat head, neck, pelvis, breast, prostate, and eye cancers. The liquid form of internal radiation is administered through IV or catheters. Liquid radiation, or temporary implantation of radiation, can be given for as little as a few minutes. During both solid and liquid forms

of internal radiation, radioactive particles travel through the patient's body seeking and destroying the cancer cells ("Radiation Therapy to Treat Cancer").

The final form of radiation is called systemic radiation. In systemic radiation a radioactive substance, such as Iodine 131 or Strontium 89, is injected into the body or taken by mouth. This form of radiation is also known as whole body radiation because it travels throughout the entire body before leaving through bodily fluids ("Radiation Therapy to Treat Cancer"). It is usually used to treat thyroid cancer because thyroid cancer cells naturally absorb radioactive iodine. The radioactive radiation is usually bound to monoclonal antibodies. Monoclonal antibodies are miracles of modern medicine. They are lab-made chemicals that help the radioactive substance attach to only the cancerous cells, leaving healthy cells untouched. Often, systemic radiation is used as a palliative treatment. A palliative treatment just relieves symptoms but does not cure the patient. An example of a time when systemic radiation is used as palliative treatment is when Strontium-89 chloride is used to treat pain during bone metastases Servan-Schreiber 52).

For any radiation treatment, the doses are spread out depending on the type of cancer cell and how fast it reproduces. One dose treatment strategy is known as hyperfractionation where a patient may receive radiation very often but in small doses. Other patients may receive radiation much less often but in larger doses, and this is called hypofractionation ("Radiation Therapy to Treat Cancer"). The radiation oncologist determines these doses based on the patient's reaction and his/her cancer. The strict measurement of doses ensures that the radiation doesn't cause serious bodily harm to the patient. The positive results of radiation make it the most popular treatment. Radiation in all its forms is used by at least half of cancer patients ("Radiation Therapy to Treat Cancer").

The second most commonly used cancer treatment is chemotherapy. Chemotherapy is the use of one or more drugs to treat diseases such as cancer. It can shrink a cancer in size, it can kill cancer cells that have spread around the body, or it can support other treatments. There are many different drugs used to treat cancer. The drugs can be administered orally, in topical creams, or by injection into the muscles, veins, arteries, skin, and even the peritoneum or abdominal area ("Chemotherapy"). The drugs are prescribed and monitored very carefully. The frequency which the drugs are taken is actually dependent on the cancer cells themselves, more specifically, the growth and reproduction of the cancer cells. All cells

reproduce in a similar manner. To put it simply, cells have a resting stage, then a stage to make proteins, then a DNA copying stage, and finally a point during which the cells splits into two identical cells. The efficiency of anticancer drugs depends largely on how well they attack the cells during the reproductive cycle ("How Chemotherapy Drugs Work"). Most of the cancer drugs hurt cells so badly, that cells engage in apoptosis, or cell suicide. The drugs used to treat cancer can be categorized into about six major groups. The first type of anti-cancer drug actually used belonged to the group called alkylating agents. These drugs directly damage the DNA and are effective at any point in the cell cycle. Examples of alkylating agents are nitrogen mustards such as mechlorethamine and melphalan. Another group is known as the antimetabolites. These drugs don't directly damage the cells' DNA, but rather interfere with the cells by replacing normal DNA building blocks and not allowing the DNA to make a copy of itself. There are anti-tumor antibodies which are not like typical antibodies. Instead, they alter DNA to keep cells from multiplying. A major type of anti-tumor antibodies is called anthracyclines. They stop DNA reproduction by interfering with enzymes. The fourth group of anticancer drugs is called topoisomerase inhibitors. These drugs interfere with topoisomerase enzymes that assist in the separation of DNA strands. If the DNA strands don't separate, then the DNA cannot reproduce itself. One more group of medicines is called mitotic inhibitors. These drugs are plant based and damage cells during mitosis, which is when the cell separates into an exact copy. Mitotic inhibitors can, however, damage cells during any stage by stopping reproductive enzymes. The last group is known as corticosteroids. They are natural hormones that aren't exclusively cancer treatment drugs, but in combination with other chemotherapy drugs, they help alleviate symptoms like nausea and vomiting ("How Chemotherapy Drugs Work").

Both radiation and chemotherapy can be used independently, but most patients receive a combination of treatments. When treatments are used in combination they are called adjuvant treatments. For example, some patients may receive radiation before or during a tumor removing surgery. Or a patient may only receive chemotherapy to prevent the return of cancer after radiation cured the patient. Sometimes drugs are not given to the patient to treat the actual cancer, but instead to alleviate the symptoms that come with the actual treatment ("Chemotherapy").

All treatments, regardless of how effective they are, have side effects. The most common physical side effects of both radiation and chemotherapy are directly related to the fact that the treatments

are so strong that in the process of killing cancerous cells they also harm the body's healthy cells. Side effects that both radiation and chemotherapy include: extreme fatigue, alopecia, and dietary problems ("Managing Physical Side Effects"). The fatigue felt by cancer patients is nothing like when a healthy person missed some sleep. No, the fatigue felt by the cancer patient is an overall tiredness that does not improve with rest. Just imagine what your body would feel like if you were fighting millions of strong abnormal cells. The second side effect is alopecia, or hair loss. This treatment side effect is so common that some people confuse it with a symptom of cancer. Alopecia is a direct consequence of the death of the hair follicles because of the treatments. The patient usually recovers his/her scalp health about six months after their last treatment. The third physical effect is actually a great umbrella that encomapasses many effects. Dietary problems vary from constipation or diarrhea to loss of appetite and loss of taste or weight gain. There are some side effects that only affect radiation therapy patients, such as the light skin burns on the skin. This effect is caused by the radiation that comes in contact with the skin. Likewise, patients receiving chemotherapy might experience symptoms like mouth sores and bleeding in the intestines. This is caused by the destruction of the lining cells where the drug passes through. There are many side effects but each patient is affected differently. Some patients may never experience constipation, while some patients might not lose their appetite. So why so much variety in physical side effects? That continues to be a mystery to many scientists. Some known reasons for these side effects are diabetes, weak health prior to cancer, or other previous medical problems ("Managing Physical Side Effects").

These treatments and side effects paint a pretty bleak picture of what it would be like to be a cancer patient, but there is hope in cutting-edge medical technology. Scientists are developing more gentle medicines to treat cancer. For example, they have been developing targeted treatments that are directed to specific genes that only grow on cancer cells. Scientists find a target gene around the cancer and use a drugs that will reach it without harming the healthy cells on the way. There are still some problems to work out in this treatment mainly because a cancer may not even have a target, and even if it does, the tumor might not respond to the drugs ("Understanding Targeted Therapy"). Another advancement is thanks to genetic testing. In the past, patients found the best medicine for them using previous medical history and simple trial and error. Now, with genetic testing, scientists can see how genes affect the way the body reacts to the drugs, and create "personalized medicine" for each patient in a new treatment

science called pharmacogenomics ("Understanding Pharmacogenomics"). Genes have such an effect that two seemingly similar people might react extremely differently to the same medication. The human genome carries the instructions that tell our body what enzymes and proteins to produce. These enzymes determine how long it takes for a drug to activate and begin to work and how soon to deactivate and be metabolized by the body. Sometimes, enzymes make the drugs activate too slowly and they don't work for the patient. Other times, the enzymes don't metabolize the drugs quick enough and they remain active for too long, thus increasing side effects in patients. By using the patient's genome, doctors can find a "safer" drug for the patient by reducing side effects. According to Cancer.Net, "Pharmacogenomics is constantly changing. Researchers continue to identify gene variations that affect how a drug works. As personalized medicine grows, testing for gene variations may become more common" ("Understanding Pharmacogenomics").

For a long time, chemotherapy and radiation have been our main support in defeating cancer. Now because of chemotherapy and radiation along with new treatments, cancer isn't winning. Over forty years ago, only half of cancer patients surpassed five years, now two-thirds of people survive past that time ("Advancement in Cancer Survival"). So there is a bright light up ahead for cancer patients. Many people volunteer for clinical trials that test the effectiveness of new treatments. Cancer doesn't have to be a harrowing reality. Today, we can take steps to educate people on how to prevent cancer. Prevention is key in defeating cancer. Let's start with the basics like warning against tobacco and too much alcohol, encouraging youth to have healthier diets, teaching families to enjoy physical activities, and helping people know their personal risks. Soon, everyone can know what cancers they are more at risk for. Genetic testing isn't just for people that already have cancer. Healthy people can get testing to know what screening tests to be especially focused about. Early detection can literally mean life or death for someone at risk. In the past thirty years, early detection has more than tripled cancer survival (Servan-Schreiber 12). We can not only imagine a world where cancer does not have to sound like a death sentence; we can make it a reality.

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OTHER PORTFOLIO REQUIREMENTS

Pre-Employment
Writing Samples
Career Exploration
21st Century Competencies
Community Service
Weber Project Presentation

Pre-Employment

This section of your portfolio serves as a record of your skills and abilities in designing and executing a successful job search. At a minimum, this section must contain the following:

- ✓ **One current resume**
- ✓ **Three business letters to include:**
  - **At least one cover letter**
  - **Two other business letters**
- ✓ **Three letters of recommendation** written by adults (not relatives) who can comment on your skills, abilities, and character, such as employers, teachers, coaches, or pastors. No more than two of these letters may be from current or former employees of the Weber Institute.

You will develop the skills and abilities needed to build this section of the portfolio as a part of your classes.

Writing Samples

This section of your portfolio serves as a record of your skills and abilities to effectively communicate in writing. For this section, you will choose three exceptional samples of your writing that demonstrate your mastery in a variety of writing styles.

You will write the essays listed below as part of the requirements for your English classes. It is important that you save all the essays you write for English and any other subject in which essays are assigned. You will then have a variety of essays from which to choose when you are preparing your portfolio. It is recommended that before you place your essays in the portfolio, you make all the corrections and changes noted by your teacher on the graded essays — this way, the writing samples in your portfolio will be the best they can possibly be. The writing samples you choose must include:

- ✓ An autobiographical essay
- ✓ Two formal papers or essays of your choice

Career Exploration

In this section of your portfolio, you will demonstrate that you have investigated the various career options in your chosen academy theme. The assignment and requirements for this section of your portfolio will be determined by your academy teachers.

21st Century Competencies

This section of your portfolio serves as a record of specific skills and abilities you have developed while at the Weber Institute. This section should contain the following:

- ✓ High School Transcript (required)
- ✓ Delta College Articulation Agreement (required)
- ✓ 21st Century Skills Rubrics (required)
- ✓ Certifications for course completions specific to your academy (if available)
- ✓ Any awards you have received
- ✓ Any certificates, honor roll announcements, or other recognitions
- ✓ Newspaper articles in which you appear
- ✓ Scholarship award letters
- ✓ Any other documents which will verify your skills and abilities

Community Service

During your time at the Weber Institute, you will be required to perform a minimum of 30 hours of community service. This service must be performed for a nonprofit organization of your choice. You can perform this community service during any year(s) of high school.

Nonprofit organizations are agencies that provide services to the community and that do not seek to earn profits. Some examples of nonprofit organizations include hospitals, libraries, community centers, animal shelters, schools, environmental agencies, churches, homeless shelters, food banks, and museums. Beware: volunteering for a business is not community service.

Keep in mind that finding an agency that needs volunteer help may not be easy. Start early. Ask your teachers for help in locating a nonprofit agency you will enjoy helping. You may do your community service all at once (fall break and spring break are ideal times), or in small increments, such as an hour or two a week.

Once you find an agency willing to take you on as a volunteer, you must fill out the Volunteer Contract. A copy of the contract is on page 46. Once you have obtained all the necessary signatures, you may begin your community service. Keep track of your hours using the Community Service Log sheet, located on page 47. **The contract and log must go into your portfolio.**

After completing your community service, you must produce an MLA-formatted, one-page summary of your experience. **This summary is a portfolio requirement.** In this summary, reflect on your service: Where did you volunteer? Why did you choose this agency? What did you accomplish? What did you like? Dislike? What did you learn? Would you volunteer for this kind of agency again? Why? Your social sciences teacher will check your summary.

Weber Project Presentation

Purpose

- ✓ To present your physical project and research paper to a panel of teachers and business professionals
- ✓ To inform and instruct the panelists what you learned about your topic in your research
- ✓ To inform and instruct the panelists about your physical project
- ✓ To present the panelists with your complete and approved Weber Portfolio

Presentation standards

- ✓ Presentation must be preceded by a successful paper, project, and complete portfolio. Students who do not complete these items will not be scheduled for a speech.
- ✓ Presentation behavior must be exemplary: students must be on time, dressed **professionally**, and courteous at all times, especially during other students' presentations.
- ✓ Presentation must be between **7-10 minutes**.
- ✓ A successful presentation will have an effective introduction, clear organization, and excellent use of detail.
- ✓ Note cards may be used.
- ✓ Eye contact with the panelists is important.
- ✓ **Presentation must include a visual aid**, something that displays your multimedia skills. Some suggestions include Power Point presentations, web pages, and videos. You will have access to computers and projectors for your presentation.
- ✓ After your presentation, be prepared for questions from the panelists.
- ✓ **Presentation must be a 2.0 or better to pass**. (See the rubric on page 7). Students must pass the presentation to meet graduation requirements. The average of the panelists' scores will be your presentation grade.

Speech Writing Tips

- ✓ Like an essay, a speech should have an introduction, a body, and a conclusion. Be prepared to write several drafts.
- ✓ Rehearse your speech in front of a mirror or in front of a teacher, peer, or family member. Time yourself! A good plan is to have a 1-2 minute introduction, a 6-minute body, and a 1-minute conclusion.
- ✓ Practice your speech over and over — the better you know it, the better your presentation will be.
- ✓ The goal of your speech is to present your physical project and research paper, and the work you put into them, so stay focused on this goal as you write the speech.
- ✓ Consider the following questions as you write your speech — the answers may make good material for the body of your presentation:
  - Specifically, what do you want the panelists to learn about your topic by listening to your speech?
  - Describe the process of your physical project in detail.
  - Describe your physical project in detail.
  - Describe what you learned about your topic in doing your research paper.

FORMS

Parent Consent Form
Project/Paper Evaluation Form
Physical Project Self-Evaluation
Community Service Volunteer Contract
Community Service Volunteer Timesheet
Portfolio Checklist and Due Dates

Stockton Unified School District
Since 1852

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302 WEST WEBER AVENUE ● STOCKTON, CA 95203
(209) 933-7330 ● FAX (209) 466-7533

WEBER PROJECT — PARENT CONSENT FORM

This form -- and the Weber Portfolio Checklist (page 48) with due dates -- must be completed and turned in before student begins project. Without these two forms, teachers will not evaluate any project work.

As parent or guardian of _____, a student at the Weber Institute of Applied Sciences and Technology, I am aware that the following projects and assignments are critical parts of class grades and graduation requirements:

Weber Project	Research Paper
Weber Project Presentation	Community Service
Career Exploration	Pre-Employment
Writing Samples	21st Century Competencies.

My child has received a copy of the *Weber Portfolio Guidebook*. As a whole, the projects listed above and described in the *Weber Portfolio Guidebook* demonstrate my child's success at the Weber Institute and his or her capabilities as a future employee and/or college student. I understand that my child must adequately complete the Weber Project, Research Paper, Weber Project Presentation, and remaining components of the Weber Portfolio in order to graduate from the Weber Institute.

The topic of my child's Research Paper is _____. For the Physical Project, my child has decided to _____.

I understand that the selection of a project topic is the responsibility of the student. I understand that this project involves a minimum of 15 hours of work. I also understand that a teacher will be available to help my child with the Weber Project, Research Paper, and other components of the Weber Portfolio. I understand that my child can select a project that requires no expense. I also understand that if my child selects a project that involves a personal expense, I will provide the financial assistance necessary to complete the project.

____ Agree ____ Disagree ____ Nonapplicable

Parent or Guardian Signature _____

Date _____

Student Signature _____

Date _____

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WEBER PROJECT AND PAPER TOPIC EVALUATION FORM

After submitting a Letter of Intent, teachers will use this form to evaluate your topic proposals. Once approved, place this form and your Letter of Intent in your portfolio.

Student _____

Teacher _____ Date _____

Teacher _____ Date _____

- ❑ Your paper and project are approved.*
- ❑ Your paper and project are approved; correct the errors in your letter and reprint it for your portfolio (see below).
- ❑ Your paper and project are not approved. You must take care of the following:
  - ❑ Paper _____
  - ❑ Project _____
  - ❑ Excessive errors in Letter of Intent (see below)

Errors noted in Letter of Intent _____

* Approval is based on the letter written. A revised paper or project must be judged again.

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WEBER PROJECT — PHYSICAL PROJECT SELF-EVALUATION

Complete this evaluation when you finish your Weber Project. It must be turned in before your project will be evaluated. A digital copy of this form can be found on the Weber Institute web page. Please take the time to reflect thoughtfully on each question or statement. Your answers should be in-depth. Type your answers and then print the document for your portfolio.

Student's name_____

Project _____

1. What was the picture in your mind before you started working on your project? How does this picture compare to the project you actually completed?

2. If given the opportunity, what would you do differently, now that you have the experience?

3. Describe what you learned about time management and using resources, including people.

4. Would you recommend your project to future seniors? Why/why not?

5. How would you feel about showing your work to an expert for evaluation? Explain.

6. What insights, knowledge, and personal satisfaction have you gained? Be specific.

7. Describe the stretch, or effort, you made in completing this project. Consider physical as well as emotional and intellectual challenges.

8. Beyond the project itself, what did you learn about yourself? Be specific.

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COMMUNITY SERVICE — VOLUNTEER CONTRACT

This contract must be completed and turned in before the student begins his or her Community Service volunteer work.

Student _____

Mentor teacher _____

Approximate dates of service _____

Name of organization _____

Address _____

Phone number _____

Name and title of superviser _____

Brief description of student's obligations _____

_____

The student shall:

1. Keep a timesheet to be signed by the superviser.
2. Contact the agency by phone if unable to volunteer that day.
3. Dress appropriately.
4. Be timely, respectful, and cooperative.

Student signature _____ Date _____

Supervisor signature _____ Date _____

Parent signature _____ Date _____

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COMMUNITY SERVICE VOLUNTEER TIMESHEET

Student _____

Organization _____

Address and phone of organization _____

Date	Time in	Time out	# hours	Supervisor signature

TOTAL HOURS _____

Weber Portfolio Checklist and Due Dates

Use this checklist throughout the school year to help build your portfolio. Your portfolio will not be complete until you have checked off every item on this list and placed the documents neatly in a professional-looking binder. When you have completed your portfolio, it must be approved by the teachers of your academy. You will not be scheduled for a Weber Project Presentation until your portfolio is complete and approved.

Sections of Portfolio	Documents for Portfolio	Due Dates
Choosing Topics for Project and Paper	❑ Letter of Intent	_____
	❑ Project and Paper Topic Evaluation	_____ n/a_____
Physical Project	❑ Parent Consent Form	_____
	❑ Project Log	_____
	❑ Project Documentation	_____
	❑ Physical Project Self-Evaluation	_____
	❑ Physical Project Rubric (graded)	_____ n/a_____
Research Paper	❑ Outline	_____
	❑ Research Paper	_____
	❑ Research Paper Rubric (graded)	_____ n/a_____
Pre-Employment	❑ One Resume	_____
	❑ One Cover Letter	_____
	❑ Two Other Business Letters	_____
	❑ Three Letters of Recommendation	_____
Writing Samples	❑ Autobiographical Essay	_____
	❑ Two Formal Essays	_____
Career Exploration	❑ To be determined by academy faculty	_____
21st Century Competencies	❑ High School Transcript	_____
	❑ Delta Articulation Agreement	_____
	❑ 21st Century Rubrics	_____
	❑ Awards and Certificates	_____
Community Service	❑ Community Service Volunteer Contract	_____
	❑ Community Service Log	_____
	❑ Community Service Paper	_____
Portfolio Due Date		_____
Weber Project Presentation (Upon approval of portfolio)		_____

Parent/guardian and student: By signing below, you acknowledge the requirements and due dates shown above.

Parent or Guardian Signature _____ Date _____

Student Signature _____ Date _____