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Welcome to Mission: Project Management!

This instructional module is designed to help teach your students the fundamentals of project management. We have specifically designed this tool kit to be an integrative set of materials that will work with your curriculum and teaching activities.

Project management is a critical skill for your students. The foundations of project management provide a structure to help students manage their own projects while applying workplace processes and skills. By using this material, you enable your students to ensure their learning is both rigorous and relevant.

This kit is intended to provide you with a self-contained learning module that will assist you and your students in implementing project management principles and practices into your specific teaching environment.

Included in this kit please find:

- Information explaining what project management is and why it's important
- Lesson plans and examples to teach from
- A step-by-step process for designing and implementing a project using this tool set.

We appreciate and applaud your willingness and enthusiasm to integrate this material into your curriculum. For additional educational references, please see our corporate K-12 website:

http://grants.hp.com/us/education/

Best regards,

Mission: Project Management Team
K-12 Volunteers – Roseville Site
Hewlett Packard Company

http://grants.hp.com/us/education/mission_proj_mgmt.html
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PROJECT MANAGEMENT OVERVIEW

Project Management for Teaching Staff

Project Management for Students

LESSON PLAN

Project Management Phases Chart

Project Lesson Plan 1

Project Lesson Plan 2

Project Lesson Plan 3

Project Lesson Plan 4

PROJECT FORMS

Project Proposal

Project Task List/Project Schedule

Project Status Update

Project Retrospective

Personal Retrospective

SAMPLE PROJECTS

Pancake Breakfast
– Project Proposal
– Project Task List/Project Schedule
– Project Status Update
– Project Retrospective
– Personal Retrospective

Water-Rocket Measurement
– Project Proposal
– Project Task List/Project Schedule
– Project Status Update
– Project Retrospective
– Personal Retrospective

GLOSSARY

APPENDICES

Project Management for Teaching Staff

WHAT'S THE PROBLEM?

- Do students dread project assignments?
- Are they as successful as they should be?
- Is coaching hard?
- Do students know the skills and knowledge to finish complex assignments?
- Are projects a time drain for you?
- Are assignments hard to monitor and grade?
- Are deadlines missed?
- Is everything handed in at the last possible moment?

WHAT'S PROJECT MANAGEMENT?

Skills, Processes, Artistry

Project management is a set of learned skills and processes which, when artistically applied, improve project results. Projects can be managed in phases, with each phase including specific activities and producing well-defined results. Project management phases will include:

1. ***Defining*** the project, including clearly defining project objectives, constraints, schedule expectations, criteria for completion, and measures for success
2. ***Planning*** the project, including work breakdowns and task lists, schedule, and time requirements, resource commitments, PERT and GANTT charts.
3. ***Executing*** the project, including task execution, performance against the planned schedule, and management of changes to the project objectives or scheduled deliverables.
4. ***Analyzing*** the results of the project, including both a project retrospective and a personal analysis for each project participant.

WHY IS PROJECT MANAGEMENT IMPORTANT?

Minimize risk, pain, frustration, surprises, and extra work

In the workplace project management is a critical, essential skill. Successful projects are very well planned. Industrial experience shows that well-planned projects are done on time, within resource constraints, and with high quality and well-motivated participants. Poor planning leads to surprises: Tasks are not done on time, dependencies are not understood, deadlines are missed, quality suffers, and participants are frustrated and feel unsuccessful.

WHAT'S IN IT FOR ME?

Integrating project management skills and processes into academic assignments will…

- Structure assignment definition, making it easier for instructors to design, document, and assign projects for class work.
- Organize student work into structured phases, making grading easier and faster and simplifying coaching students for success.
- Introduce critical relevant working skills early in a student's academic career.
- Maximize the results possible by students at varying skill levels.

WHAT'S THE PROBLEM?

- Do you dread project assignments?
- Are team projects complicated and difficult?
- Do projects seem difficult to get done on time? Do you miss deadlines?
- Would you like to finish your project as quickly as you can, and get it completed on time?
- Would you like better grades for your work?

WHAT'S PROJECT MANAGEMENT?

Skills, Processes, Artistry

Project management is a set of skills and processes that project results. Projects can be managed in phases, with each phase including specific, well-defined activities. Project management phases include:

1. ***Defining*** the project, including clearly defining project objectives, constraints, schedule expectations, criteria for completion, and measures for success.
2. ***Planning*** the project, including work breakdowns and task lists, schedule, and time requirements, materials required, and PERT and GANTT charts.
3. ***Executing*** the project, including all required tasks, performance against the planned schedule, and management of changes to the project objectives.
4. ***Analyzing*** the results of the project, including both a project retrospective, and a personal analysis for each project participant.

WHY IS PROJECT MANAGEMENT IMPORTANT?

Minimize risk, pain, frustration, surprises, and extra work

In the workplace, project management is a critical, essential skill. Successful projects are very well planned. In industry, well-planned projects are done on time, within resource constraints, and with high quality and well-motivated participants. Poor planning leads to extra work because tasks are not done on time or in the right order. Therefore, deadlines are missed, quality suffers, and participants are frustrated and feel unsuccessful.

WHAT'S IN IT FOR ME?

Integrating project management skills and processes into academic assignments will…

- Structure assignment definition, making it easier to know what to do, who will do it, and when it needs to be done.
- Organize work into structured phases, making it easier to measure progress, and eliminating surprises and extra (emergency) work.
- Maximize the results (grades) possible.
- Give you experience with critical and relevant working skills which you can apply directly in the work place.

Project Management Phases

	1. DEFINITION	2. PLANNING	3. EXECUTION	4. ANALYSIS
WHAT HAPPENS	Define the team	Work breakdown	Actual work	Review project success
	Define schedule requirements	Task list	Completed tasks	Understand changes required
	Define objectives	Project Schedule	Changes to objectives, tasks, or schedules	What went well / not so well
	Define completion criteria	Preliminary research	Prepare presentations	Contribution of team
		Time Budget for tasks and team members	Finish documentation	
WHAT GETS COMPLETED	Project Proposal Form	Task List Form	Project Schedule Form (updated)	Project Retrospective Form
		Project Schedule Form	Project Status Update Form(s)	Personal Retrospective Form
			Project is Completed	

Estimated Time: 40-55 minutes

Title: Project Management—Definition Phase.

Objective: To teach students to manage a project to a successful completion, using techniques used by employees at Hewlett-Packard.

Teaching Material Provided: Glossary of Terms, including the definition of project management.

Preliminary Activity: Students are introduced to group dynamics in general terms. They are divided into groups (suggested: 3 to 5 students each). Students should have prior group experience or teacher needs to explain his or her rules of group work.

New material: Todays lesson will cover stating objective and defining completion criteria.

Each assignment has an objective or goal that the teacher wants the student to accomplish. The definition of a project objective is "the scope of the project expressed in terms of outputs, resources and timing." The objective should also identify the constraints in which the project must be managed.

The completion criteria is the end result of the project. Students need to state what the project will be when it is finished. This helps them to determine when they are done and the quality of the project results.

Demonstration Problem: Show students the demonstration problem, Planning a Pancake Breakfast (see samples). Teacher should give students the example assignment of a fund raiser for the drama club. Read the project objective statement. Stress to students that this is a concise statement of the purpose of the project.

Next, go over the Completion Criteria. Stress that students need to have a view of the final outcomes.

Group Exercise/ Check for Understanding: Give each group an example project assignment from the following list and have them develop their own objective and completion criteria. Have students post on poster paper around the room or present ideas on overhead transparencies. Bring the class back together and go over objectives and criteria together, adjusting where needed. Have class critique or peer edit.

List of Example Projects Vacation • Camping/Hiking trip • Blood Drive • Surprise party • Shopping trip • Making pizza/cookies • Moving • Performance/Production • School dance • 5K/10K Run • Painting a house • Boy Scout Eagle Project • Senior Girl Scout Gold Award Project • Creating a website • Founding a new club • Hosting a tennis tournament (or swim meet or track meet or...) • Picking a college • Finding a job • Graduation party • Cheerleader tryouts

Estimated Time: First time: 120-160 minutes (includes Project Task List and Project Schedule teaching)
Later projects: 50-70 minutes

Title: Project Assignment--Planning Phase

Objective: To teach students to manage a project by assigning roles, setting a due date, completing an objective statement, deciding criteria, developing a Project Task List and creating a Project Schedule (GANTT chart).

Preliminary Activity: Students should have objective and completion criteria work out from previous lesson and be in their groups.

New material: Todays lesson will cover assigning roles, scheduling, stating your objective, project criteria, creating task list for their specific project and making a project schedule. This lesson follows the handout (from the definition phase labeled *Project Proposal*).

Roles

The duties each person will perform. Students ***can pick from but are not limited to***:

- ***Recorder***-The secretary, in charge of notes and compiling material for the final presentation of the project.
- ***Time Keeper***-Keeps group on schedule and on task in accordance with the GANTT chart.
- ***Runner***-Team member in charge of getting needed material from the instructor, store, other members, copiers, etc.
- ***Researcher***-Person who investigates the needed information to complete the project.
- ***Project Manager***-Directs the team, and the project.
- ***Key Communicator***-Communicates concerns with the Project Manager and teacher. Establishes and maintains communication with all team members.
- ***Materials Specialist***-In charge of gathering all material needed.
- ***Technical Support***-The computer specialist in the group
- ***Team Member***-Role given to every worker in the group

Other roles are listed in the glossary and students are encouraged to define their own roles.

Projects Dates

This is the start date and completion date of the project.

Project Objective Statement

Students should know how to write an objective statement from the previous lesson.

Completion Criteria

In their groups, students need to talk about what the end result of the project will look like and how they will know when they are done. They need to determine what a quality assignment would look like and what they need to do to obtain that level of quality.

Project Task List *(*See the "Sticky Note" reinforcement exercise at the end of this lesson)*

This is a critical part of the planning phase. The Project Task List determines all the work that needs to be done to meet the project completion criteria. Select one of the problems from the "List of Example Projects" from Lesson 1 and have the class do the "Sticky Note" exercise on the next page. Students decide who will take which task and talk about how the task will be completed. Use the tasks defined in the "Sticky Note" exercise to complete the Task List Form.

Project Schedule *(*See the "Sticky Note" reinforcement exercise at the end of this lesson*)*

Students estimate the time (minutes, hours, days) it will take to complete the tasks of a project. They also decide which tasks are dependent on another task.

Students have not been exposed to a GANTT chart. Demonstrate how the Task List is used to develop the chart in the Project Schedule. Use transparencies of the Pancake Breakfast.

Assignment: Hand out *Project Proposal*, *Task List* and *Project Schedule*. Students receive their individual or group project assignment. Set them to work on the above items. Correct as needed when walking around the classroom.

"Sticky Note" Exercise

The purpose of this exercise is to help students develop a Project Task List and Project Schedule (GANTT chart). It will reinforce the process of brainstorming ideas, defining priorities and estimating time requirements.

1. Define student teams
Group students into teams of 3-6 each. (Larger groups will take longer than smaller ones to finish the exercise.) For the exercise, you can use any of the Example Projects or any other project. However, for the sake of simplicity, we recommend doing the process for the first time with a simple project, such as "Making a peanut butter & jelly sandwich".

2. Generate ideas/brainstorm
Give each team member 10-12 sticky notes (3M™ Post-It® Notes or any other brand).

a. Working alone, each student writes onto a sticky note a very concise (10 word) description of a task that must be completed to finish the project. Each student should come up with 5 or 6 tasks, each written on a separate sticky note. (10 minutes)

b. Each team will need their own area of empty wall, white board, butcher paper, or other suitable space. Each team member sticks his or her sticky notes onto the wall. The students review each others' tasks to make sure they understand them. Encourage everyone to follow the protocol of brainstorming (e.g., no criticizing of ideas). From this process, each team will likely come up with additional tasks to add to those on the wall. (10 minutes)

3. Organize ideas
Students collectively organize the tasks on the wall by placing the sticky notes of similar tasks next to each other. (They can remove any that are agreed by the team to be redundant or unnecessary.) The result of this activity is a set of tasks logically grouped and, if the team has brainstormed well, nearly all those necessary to complete the project (10 minutes)

4. Order tasks and identify dependencies
Each team decides on the order in which the tasks need to be completed. Which tasks depend on other tasks being completed? The team member who has agreed to function as the recorder writes the tasks into the Project Task List form in the order of what needs to be done first. In addition, each team adds to the Project Task List an owner for each task and how the task will be completed. (15 minutes)

5. Create the Project Schedule
The team recorder transfers the tasks (in order) and task owners from the Project Task List to the Project Schedule. Team members then collectively decide how long each task will take to complete (duration). In order to complete the time scale on the Project Schedule, the students will need to decide on the appropriate time scale (hours? days? weeks?) for their project. They then draw in on the time scale when each task will begin (based on whether there are dependencies) and the number of time units it will occupy. (15 minutes)

Estimated time: 25-35 minutes

Title: Project Update-- Execution Phase

Objective: Check status of project and team tasks (half way to project deadline).

Material: Have extra Project Schedule forms for students to update if there are changes.

New Material: *Project Status Update Form*. This form helps the teacher determine where students are in their project. It also causes students to determine what still needs to be accomplished and how it will be done. The Update form causes students to evaluate what is going well and what needs to be improved before the deadline.

Examples: Bring out the Pancake Breakfast sample problem. Draw attention to the fact that it is now a Spaghetti Dinner! Changes to the project are explained on the *Project Status Update Form*.

Define milestones as "an event or announcement which marks the completion of a significant set of tasks of the project." For example, there are many components to planning a dance. The set of tasks could include "selecting the type of music", "hiring a band", setting up microphones and speakers". When these tasks are complete, a milestone of "Music Complete" could mark their completion. Have students list the major milestones accomplished from the project schedule. Have students mark milestones with a diamond at the end of the tasks.

Walk through the *Project Status Update Form* for the Pancake/Spaghetti Fundraiser.

Assignment: Give class time to work on project**.**

Lesson 4: Analysis Phase Project and Personal Retrospectives

Estimated Time:	20-45 minutes
Title:	Project Evaluations--Analysis Phase
Objective:	To evaluate the success of group planning and individual contributions.
Prior Knowledge needed:	Had to be present for the project.
New Material:	*Project Retrospective* and *Personal Retrospective*. This is the procedure used to evaluate a project when a project is complete.

Assignment:

As a group, reflect on the schedule and tasks you planned for the project. Review the changes that were made and the result of these changes. Together decide what went well with the project and what could have been improved. Be honest and thorough with your responses.

Hand out *Project Retrospective Form*.

As an individual contributor to the project, reflect on your tasks and how well you accomplished them. Evaluate yourself and your teammates.

Hand out *Personal Retrospective Form*.

PHASE 1: PROJECT DEFINITION

Project Proposal

PHASE 2: PROJECT PLANNING

Project Task List

Project Schedule

PHASE 3: PROJECT EXECUTION

Project Status Update

PHASE 4: PROJECT ANALYSIS

Project Retrospective

Personal Retrospective

Project Proposal

Date	

Project Title	

Project Team	Name	Role

Project Dates	Start	Completion

Complete and attach the Project Schedule form with your start date, completion date and individual tasks.

Project Objective Statement

What will you do, by when, and what resources (people and things) do you need to get it done?

Completion Criteria

What should the end result of the project look like? How will you know when you're done? How will you judge the quality of the results?

Notes

Project Task List

Instructions:

1. Brainstorm a list of tasks you need to do in order to complete your project.
2. List and number each task below.
3. Assign a team member to each task.
4. Describe below how you will complete the project tasks.

Date		Project Title	

Number	Task	Owner's Initials	How will this task be completed?

Project Schedule

Instructions:

Estimate the amount of time (duration) for each task on the *Project Task List*. (Remember, some tasks will need to be completed before others can start).

Date		Project Title	

Number	Task	Team	Duration	Time Scale									

Date	

Project Title	

Project Team	Name	Role

Milestone Update

What major tasks (milestones) from your Project Schedule have been completed to date?

Project Changes

1. What has changed within your project? (Example: project objectives, schedule, tasks, resources, or team members). Why did these changes occur?

2. How will you compensate for the changes in your project in order to meet your scheduled completion date?

3. What is going well with the project?

4. What needs improvement?

Project Schedule Changes

Complete and attach an updated Project Schedule to this sheet.

Note: If you have only minor changes to the schedule, use your original schedule and draw in the changed dates using a different colored pen or pencil. If the changes to your schedule are major, such as new tasks or many new dates, use a new Project Schedule sheet.

Project Retrospective

Date	

Project Title	

Project Team	Name	Role

Schedule & Task Evaluation

All major tasks (milestones) from your Project Schedule should be completed by this date. How well did your team meet the Project Schedule you predicted? Were all major tasks met on time? If not, why not? List any that are not completed and why.

Project Changes

1. What has changed within your project? (Example: project objectives, schedule, tasks, resources, or team members). What were the results of these changes?

2. What went well with the project?

3. What could have been improved?

Final Project Schedule

If required by your teacher, complete and attach a final Project Schedule to this sheet.

Personal Retrospective

This form will only be read by your teacher, and will not be viewed by your team members.

Name		Date	

Project Title	

Project Evaluation

1. What were your greatest personal contributions to the project? What did you feel went well?

2. From a team perspective, what about the project do you feel could have been improved?

Evaluate Your Team

1. List your team members below.
2. Determine the percentage of the TOTAL PROJECT that you feel each individual team member contributed. (The sum of all team members' contributions must equal 100%).
3. Circle the letter grade you'd give to each members' contributions (use + or – only as needed).

Team Member	Contribution to Total Project (Total =100%)	Grade
		A B C D F +/–
		A B C D F +/–
		A B C D F +/–
		A B C D F +/–
		A B C D F +/–

Project Proposal

Date	February 1, 1999

Project Title	Pancake Breakfast

Project Team	Name	Role
	Amy Aveni	Project Lead
	Michael Martinez	Head Chef
	Pam Parker	Facilities Coordinator
	Tamara Takagishi	Crew Leader, Treasurer

Project Dates	Start 2/1/99	Completion 2/20/99

Complete and attach the Project Schedule form with your start date, completion date and individual tasks.

Project Objective Statement

What will you do, by when, and what (resources) people and things do you need to get it done?

On the morning of February 20, 1999, we will have a pancake breakfast as a fund-raiser for our drama club. We will sell tickets prior to the event and at the door. We will set up the cafeteria, cook the food, serve the guests, and clean up afterward. Our core group will make the major arrangements, but members of the drama club will participate in the actual serving.

Completion Criteria

What should the end result of the project look like? How will you know when you're done? How will you judge the quality of the results?

We will have all the arrangements made, know how to cook the food, have all work crews assigned, and most of the tickets sold several days before the breakfast. On February 20, we will have the room prepared, people in all positions necessary and the event will be enjoyable to all attendees.

Notes

We decided not to schedule work for ourselves on the weekends to allow us time for schoolwork.

Project Task List

Instructions:

1. Brainstorm a list of tasks you need to do in order to complete your project.
2. List and number each task below.
3. Assign a team member to each task.
4. Describe below how you will complete the project tasks.

Date	2/1/99	Project Title	Pancake Breakfast

Number	Task	Owner's Initials	How will this task be completed?
1	Learn Recipes	MM	Cookbooks, talk with others who have done this.
2	List and Price Ingredients	MM	From recipes, trips to stores
3	Determine cost of tickets	AA	From price of ingredients and goal for fund-raising
4	Design & Print tickets	AA	Computer lab
5	Advertise with fliers/posters	AA	Computer lab, butcher paper & paint
6	Sell Tickets	AA	Drama club members
7	Reserve Cafeteria	PP	School Office
8	Arrange use of kitchen & supplies	PP	School Office
9	Schedule cooking staff	TT	Drama club members
10	Schedule serving staff	TT	Drama club members
11	Schedule cleanup staff	TT	Drama club members
12	Schedule cashier at door	TT	Tam – Treasurer will do this
13	Buy Food (non-perishable)	MM	Run to store after some tickets are sold
14	Buy Food (perishable)	MM	Store, night before breakfast

Project Schedule

Instructions:

Estimate the amount of time (duration) for each task on the *Project Task List*. (Remember, some tasks will need to be completed before others can start).

Date	2/1/99	Project Title	Pancake Breakfast

Number	Task	Team	Duration	Time Scale									
				2/1	W/Th	F/Sa	Su/M	Tu/W	2/11	Sa/Su	M/Tu	W/Th	F/Sa
1	Learn Recipes	MM	1 day										
2	List and Price Ingredients	MM	1 day										
3	Determine cost of tickets	AA	1 day										
4	Design & Print tickets	AA	1 day										
5	Advertise with fliers/posters	AA	2 days										
6	Sell Tickets	AA	9 days										
7	Reserve Cafeteria	PP	½ day										
8	Use of kitchen & supplies	PP	½ day										
9	Schedule cooking staff	TT	1 day										
10	Schedule serving staff	TT	1 day										
11	Schedule cleanup staff	TT	1 day										
12	Schedule cashier at door	TT	1 day										
13	Buy Food (non-perishable)	MM	½ day										
14	Buy Food (perishable)	MM	½ day										

Project Status Update

Date	February 10, 1999

Project Title	Spaghetti Dinner (was Pancake Breakfast)

Project Team	Name	Role
	Amy Aveni	Project Lead
	Michael Martinez	Head Chef
	Pam Parker	Facilities Coordinator
	Tamara Takagishi	Crew Leader, Treasurer

Milestone Update

What major tasks (milestones) from your Project Schedule have been completed to date?

Almost all of our tasks are complete. We've determined our recipes and costs, created our advertising and tickets, reserved the cafeteria, and set up all our work crews. We are currently selling tickets and should have enough money for our purchases soon

Project Changes

1. What has changed within your project? (Example: project objectives, schedule, tasks, resources, or team members). Why did these changes occur?

Pam wasn't able to make it to the office until last Tuesday and found the cafeteria is in use every Saturday morning until May for sports. Since any other location would cost too much and we wanted to complete our fund-raiser before March, we chose to change our plans to a spaghetti dinner, the cafeteria is available the evening of 2/20.

2. How will you compensate for the changes in your project in order to meet your scheduled completion date?

Actually, most of our tasks are similar to our original tasks. Our crew assignments were redone to make sure people could attend in the evening, and we had to increase our ticket price to accommodate the change in the menu. Amy worked on the weekend on the advertising to help catch up as well.

3. What is going well with the project?

It's nice to see that our original planning was able to keep us on track for the new project. We all took the change in stride and were able to keep working.

4. What needs improvement?

There are a few more food arrangements for dinner than for breakfast, so Pam has agreed to help Michael with the extra purchasing and planning.

Schedule Changes

Complete and attach an updated Project Schedule to this sheet.

Note: If you have only minor changes to the schedule, use your original schedule and draw in the changed dates using a different colored pen or pencil. If the changes to your schedule are major, such as new tasks or many new dates, use a new Project Schedule sheet.

See the attached new task list and schedule.

Project Task List

Instructions:

1. Brainstorm a list of tasks you need to do in order to complete your project.
2. List and number each task below.
3. Assign a team member to each task.
4. Describe below how you will complete the project tasks.

Date	2/10/99	Project Title	Spaghetti Dinner

Number	Task	Owner's Initials	How will this task be completed?
1	Learn Recipes	MM	Cookbooks, talk with others who have done this.
2	List and Price Ingredients	MM	From recipes, trips to stores
3	Determine cost of tickets	AA	From price of ingredients and goal for fund-raising
4	Design & Print tickets	AA	Computer lab
5	Advertise with fliers/posters	AA	Computer lab, butcher paper & paint
6	Sell Tickets	AA	Drama club members
7	Reserve Cafeteria	PP	School Office
8	Arrange use of kitchen & supplies	PP	School Office
9	Schedule cooking staff	TT	Drama club members
10	Schedule serving staff	TT	Drama club members
11	Schedule cleanup staff	TT	Drama club members
12	Schedule cashier at door	TT	Tam – Treasurer will do this
13	Buy Food (non-perishable)	MM	Run to store after some tickets are sold
14	Buy Food (perishable)	MM	Store, day before dinner

Project Schedule

Instructions:

Estimate the amount of time (duration) for each task on the *Project Task List*. (Remember, some tasks will need to be completed before others can start).

Date	2/10/99	Project Title	Spaghetti Dinner

Number	Task	Team	Duration	Time Scale									
				2/1	W/Th	F/Sa	Su/M	Tu/W	2/11	Sa/Su	M/Tu	W/Th	F/Sa
1	Learn Recipes	MM	1 day										
2	List and Price Ingredients	MM	1 day										
3	Determine cost of tickets	AA	1 day										
4	Design & Print tickets	AA	1 day										
5	Advertise with fliers/posters	AA	2 days										
6	Sell Tickets	AA	9 days										
7	Reserve Cafeteria	PP	½ day										
8	Use of kitchen & supplies	PP	½ day										
9	Schedule cooking staff	TT	1 day										
10	Schedule serving staff	TT	1 day										
11	Schedule cleanup staff	TT	1 day										
12	Schedule cashier at door	TT	1 day										
13	Buy Food (non-perishable)	MM	½ day										
14	Buy Food (perishable)	MM	½ day										

Date	February 22, 1999

Project Title	Spaghetti Dinner

Project Team	Name	Role
	Amy Aveni	Project Lead
	Michael Martinez	Head Chef
	Pam Parker	Facilities Coordinator
	Tamara Takagishi	Crew Leader, Treasurer

Schedule & Task Evaluation

All major tasks (milestones) from your Project Schedule should be completed by this date. How well did your team meet the Project Schedule you predicted? Were all major tasks met on time? If not, why not? List any that are not completed and why.

All tasks were completed on time. There was more work at the dinner itself than expected, but there were enough people on each of the work crews to make sure everything was done. All the project planning worked well. We had lots of time to sell tickets and make the fund-raiser a big success.

Project Changes

1. What has changed within your project? (Example: project objectives, schedule, tasks, resources, or team members). What were the results of these changes?

There were no major project changes since the Project Status Update.

2. What went well with the project?

Our team was able to adapt well to the change in plans from a breakfast to a dinner, and our original planning needed very little changing to stay on schedule.

3. What could have been improved?

We might have put more people on the food planning at the beginning, to find others who had gone through the process and learned from the experience.

Final Project Schedule

If required by your teacher, complete and attach a final Project Schedule to this sheet.

Personal Retrospective

This form will only be read by your teacher, and will not be viewed by your team members.

Name	Pam Parker	Date	February 22, 1999

Project Title	Spaghetti Dinner

Project Evaluation

1. What were your greatest personal contributions to the project? What did you feel went well?

I scheduled the cafeteria and worked with the school administration to make sure we could use all of the kitchen facilities. I feel I had good communication with the team and passed on the schedule conflicts as soon as I knew about them, allowing us to reach a decision on what to do quickly (though I probably should have found out about them earlier.) Also, since I had time, I was able to help Michael with some of the food planning, mostly taking care of things other than the spaghetti and sauces (salad, bread, seasonings, etc.)

2. From a team perspective, what about the project do you feel could have been improved?

We had so much figured out early, it might have been a good idea to try a small trial version of what we were going to do first, to be sure that everything we were going to do went well, maybe just among the drama club, for example. We might also have spread out the advertising work, since Amy had so much of that to do.

Evaluate Your Team

1. List your team members below.
2. Determine the percentage of the TOTAL PROJECT that you feel each individual team member contributed. (The sum of all team members' contributions must equal 100%).
3. Circle the letter grade you'd give to each members' contributions (use + or – only as needed).

Team Member	Contribution to Total Project (Total =100%)	Grade
Amy Aveni	35%	(A) B C D F (+) –
Michael Martinez	25%	(A) B C D F + / –
Pam Parker	20%	(A) B C D F + (–)
Tamara Takagishi	20%	(A) B C D F + / –
		A B C D F + / –

Date	September 23, 1998

Project Title	Water Rocket Measurement

Project Team	Name	Role
	Kyle Daly	Mathematical Analyst
	Stefan Waters	Device Construction

Project Dates	Start 9/23/1998	Completion 10/1/1998

Complete and attach the Project Schedule form with your start date, completion date and individual tasks.

Project Objective Statement

What will you do, by when, and what (resources) people and things do you need to get it done?

By the competition date of October 1, we will create and test a method for determining the height of a water rocket in flight, including the physical measurement device(s) and the supporting formulae needed. We will use our own knowledge of math, and any references we can find via the web or other research.

Completion Criteria

What should the end result of the project look like? How will you know when you're done? How will you judge the quality of the results?

When the actual competition starts, this project is done. We will have the equipment needed to measure the height of the water rocket and a full understanding of how to use it and get good results. We will have other people review the method we create for any comments. We may also measure the height of known objects and see how well our method works.

Notes

Project Task List

Instructions:

1. Brainstorm a list of tasks you need to do in order to complete your project.
2. List and number each task below.
3. Assign a team member to each task.
4. Describe below how you will complete the project tasks.

Date	9/23/1998	Project Title	Water Rocket Measurement

Number	Task	Owner's	How will this task be completed?
1	Find formula for height measurement	KD	
1a	Web Research for formula	KD	Web Search Engines
1b	Book Research for formula	KD	Library lookup, asking other people for sources
1c	Understanding how to use formula	KD	Derivation and use
2	Create measurement device	SW	
2a	Web research for possible devices	SW	Web Search Engines
2b	Confirmation of formula to use	SW	Result from Task 1c. (From KD's research.)
2c	Find supporting equipment	SW	Hardware stores, garage rummaging
2d	Build final device	SW	Actual construction
3	Test and use device		
3a	Confirm we have all needed equip.	KD	Try formula and verify we have equipment to find each input to formula.
3b	Rocket competition	KD	Using the device and formula in the competition!

Project Schedule

Instructions:

Estimate the amount of time (duration) for each task on the *Project Task List*. (Remember, some tasks will need to be completed before others can start).

Date	9/23/1998	Project Title	Water Rocket Measurement

Number	Task	Team	Duration	Time Scale
				9/23	9/24	9/25	9/26	9/27	9/28	9/29	9/30	10/1	
1	Find formula for height measurement	KD											
1a	Web Research for formula	KD	½ day										
1b	Book Research for formula	KD	½ day										
1c	Understanding how to use formula	KD	1 day										
2	Create measurement device	SW											
2a	Web research for possible devices	SW	½ day										
2b	Confirmation of formula to use	SW	milestone										
2c	Find supporting equipment	SW	1 day										
2d	Build final device	SW	2 days										
3	Test and use device												
3a	Confirm we have all needed equip.	KD	½ day										
3b	Rocket competition	KD	milestone										

Date	September 28, 1998

Project Title	Water Rocket Measurement

Project Team	Name	Role
	Kyle Daly	Mathematical Analyst
	Stefan Waters	Device Construction

Milestone Update

What major tasks (milestones) from your Project Schedule have been completed to date?

The equation for the height has been derived, and the initial ideas for equipment have been determined and found. We will use two compass plots to measure horizontal angle from two locations, and a long stick or tube on a camera tripod to sight the vertical angle from one of them, measured using a slope-finder with an angle measurement on it.

Project Changes

1. What has changed within your project? (Example: project objectives, schedule, tasks, resources, or team members). Why did these changes occur?

Before we started, we had some ideas for measurements that involved expensive or complicated pieces of equipment (digital measurements, and small altimeters which would actually fly with the rockets, for example.) After our initial research, we realized there are simpler methods that are just as accurate, perhaps even more so. No goals or tasks have changed.

2. How will you compensate for the changes in your project in order to meet your scheduled completion date?

We had no changes in our project. From our web research we considered many possible measurement methods and have stayed with the one we originally chose.

3. What is going well with the project?

We understand the math, and the measurement devices seem like they will be accurate and simple to use.

4. What needs improvement?

After construction, we may not have time to fully test our final product.

Project Schedule Changes

Complete and attach an updated Project Schedule to this sheet.

Note: If you have only minor changes to the schedule, use your original schedule and draw in the changed dates using a different colored pen or pencil. If the changes to your schedule are major, such as new tasks or many new dates, use a new Project Schedule sheet.

There are no schedule changes to report.

Project Retrospective

Date	October 2, 1998

Project Title	Water Rocket Measurement

Project Team	Name	Role
	Kyle Daly	Mathematical Analyst
	Stefan Waters	Device Construction

Schedule & Task Evaluation

All major tasks (milestones) from your Project Schedule should be completed by this date. How well did your team meet the Project Schedule you predicted? Were all major tasks met on time? If not, why not? List any that are not completed and why.

All tasks were completed on time. Finding a suitable sighting device to attach to the camera tripod took longer than expected, and getting the computer to print a large compass for the two measurement locations also took some time, but they were done the morning of the competition, so the measurements could be made.

Project Changes

1. What has changed within your project? (Example: project objectives, schedule, tasks, resources, or team members). What were the results of these changes?

There were no major project changes to report.

2. What went well with the project?

We were able to create a formula and measurement system. We both understood the goals and worked cooperatively toward it.

3. What could have been improved?

With more time, we might have created an impressive high-tech solution.

Final Project Schedule

If required by your teacher, complete and attach a final Project Schedule to this sheet.

4 PROJECT ANALYSIS — *Personal Retrospective*

This form will only be read by your teacher, and will not be viewed by your team members.

Name	Kyle Daly	Date	October 2, 1998

Project Title	Water Rocket Measurement

Project Evaluation

1. What were your greatest personal contributions to the project? What did you feel went well?

I provided the mathematical equation research and final product to the project, as well as consulting on what equipment would be both easy and functional for the final device. I also set up the devices and organized the people to perform the measurements on the day of the competition. The final equation I found was:

Height = D * tan(x) * sin(y) / sin(w+y), where D is the distance between the observers, w and y are the horizontal angles measured, and x is the vertical angle measured (from the same location as w.)

2. From a team perspective, what about the project do you feel could have been improved?

We probably could have worked a little faster, giving ourselves time for testing of what we created. And we had very little outside review; it probably would have been a good idea to schedule in some other people to review our work to see where it could be improved.

Evaluate Your Team

1. List your team members below.
2. Determine the percentage of the TOTAL PROJECT that you feel each individual team member contributed. (The sum of all team members' contributions must equal 100%).
3. Circle the letter grade you'd give to each members' contributions (use + or – only as needed).

Team Member	Contribution to Total Project (Total =100%)	Grade
Kyle Daly	55%	(A) B C D F + / –
Stefan Waters	45%	(A) B C D F + / –
		A B C D F + / –
		A B C D F + / –
		A B C D F + / –

Project Management Glossary

Analysis Phase	The fourth and final phase of project management, following the completion of the project, in which successes and failures of and during the project are reviewed. This analysis is invaluable in improving the planning for future projects.
Brainstorming	A technique in which all members of a group contribute to a list of ideas or tasks related to a project. All ideas should not be criticized, because important ideas can be developed from seemingly unrelated ideas.
Commitment	An agreement to provide a deliverable at a scheduled date.
Consensus	A group decision; an agreement among all team members.
Constraints	Restrictions which affect the project's scope or schedule.
Critical Path	The shortest possible length of a project, determined by a series of dependent tasks. The critical path may change as tasks are completed sooner or later than expected.
Definition Phase	The first phase of project management, in which the project proposal is established, including the scope. The work breakdown structure and project schedule are created. The project team and the roles of each team member are defined.
Deliverable	The tangible result of completing a task; usually needed before another activity can begin. For example, a product or document.
Documentation	The records of a project, including back-up explanation, user information and references.
Duration	The time needed for the completion of a task or project.
Execution Phase	The third phase of project management in which the goal of the project is assured and the progress toward the completion of the project is maintained.
GANTT or Bar Chart	A graphic representation or chart used in project management which graphically represents all activities using a series of timescaled bars.
Milestone	An event marking the completion of a set of tasks in the project.
Planning Phase	The second phase of project management in which the project's tasks and resources are organized, time frames are established and necessary actions are identified to ensure the success of the project.
Primary Responsibility	The responsibility to provide leadership for each task, assigned to a designated individual or group.
Project	Any type of interrelated activities that are undertaken to accomplish a specific goal or end result. Projects have a defined start and finish date or point.
Project Manager	The appointed person who has the responsibility for managing or overseeing the entire project. This individual has the authority and responsibility to ensure that the project is effectively managed.
Project Management	The overall actions that are taken to define the project's requirements, plan the activities to complete the requirements and ensure the implementation of the project is successful.

Project Management Phases

Project management consists of a number of required activities that are grouped into four major stages of activity referred to as phases. They are: Definition Phase, Planning Phase, Execution Phase and Analysis Phase.

Project Objective The scope of the project expressed in terms of outputs, resources and timing. Also identifies the constraints in which the project must be managed.

Project Objective Statement

A concise statement of the purpose of the project.

Project Proposal A document that describes the project team the purpose of a project and its requirements.

Project Schedule A list of the project's tasks, with predicted durations, along with a graphical representation of the time each task will take. The graphical schedule helps show how some tasks cannot begin until others finish.

Resource Any factors, such as people, time and money, that are required or used to accomplish an activity. Also, any essential requirement of an activity that can be quantified and defined (i.e. individual team members, material, equipment, etc.).

Risk The potential for changes to occur in the project or in the project management process that will affect the project's outcome or timeline.

Roles A specific function or part that is performed by individuals or groups, especially in a particular operation or process. Some examples are as follows:
Senior Management: Ensures that the organization has a project management process that project teams can follow. Also provides the appropriate resources needed to support certain projects (i.e. principal).
Functional Manager: Provides resources from his or her area to support the project and the project objectives (i.e. department head).
Sponsor: Ensures that the project has clear direction and support. Provides a project proposal to the project team and ensures that the project plan satisfies both the customers' needs and the organization's needs (i.e. teacher/educator).
Team Leader: Ensures that the project is completed on time and within the project's limits and constraints as well as satisfies both the customer and the organization (i.e. project manager).
Team Member: Ensures that his or her activities/tasks meet the needs of the project and are completed on time and within the forecasted budget (i.e. recorder, time keeper, researcher, etc).

Scope A description of the necessary deliverables, such as activities, resources and general objective(s) that will meet the project's needs and requirements.

Status The current condition of the project at any certain point in time.

Task An activity or action required to reach a milestone of the project.

Task List A list of tasks with owners assigned and descriptions of how the tasks will be completed.

MISSION PROJECT MANAGEMENT DEVELOPMENT TEAM

Ken Duisenberg

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Wendy Rose

Jana Tetreault

Melissa Yue

INTERNET RESOURCES

For the most recent version of this kit, visit the Mission: Project Management website:

http://grants.hp.com/us/education/mission_proj_mgmt.html

For other educational resources, visit HP's corporate K12 website:

http://grants.hp.com/us/education/

Comments, improvements, questions and success stories are all welcome via e-mail:

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