

IPRO 332: “How Many Earths?”

Multi-Media Education Modules for K-12 Classrooms

Spring 2009

Instructor: Jim Braband

1. Team Information

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Member	Strengths	Knowledge/skills to develop	Overall expectations
Leah	Organization, Research(when given a direction), Commitment, Willing to lend a hand, Editing.	Presentation skills, Learn more about the problem being tackled.	Provide a way for people to learn about issues concerning sustainability and what they could do about it.
Eliza	Organizational skills, research, events coordination, sustainable system knowledge	Teamworking	Ability to teach (kits, programs, games, etc.) others about environmental concern
Charleen	Working with children, experience and knowledge of previous semester	Increased punctuality and environmental policy knowledge	To create and present a 3rd finalized Policy module in junior high and high schools
Joseph	Team workability, commitment, strong knowledge of topic	Teaching effectiveness, improve speaking abilities	Effectively teach others about energy efficiency and sustainability
Madison	Organization, research, Auto CAD, Photoshop (making posters),	Working in a group, pulling together information from various fields	To produce to a final product that I can be proud of
Clayton	Organization, clear thinking, focus, commitment	Presenting ideas, working efficiently with a group	Learn more about sustainability, effectively teach others environmentally-friendly habits, develop friendships within the group

Project Plan

Spring Semester 2009

Nick	Background knowledge in fields of energy and sustainability and some work being done in the areas; previous experience with IPRO; some ability to lead, as well as follow; decent writer, web designer, and presenter	Learning the challenges of being a kind of educator, more experience working in a team (either as a normal contributor or as a leader, most likely both)	I expect that the IPRO will be a challenge needing many of the skills of everyone in the group, and will be effective at improving them as well, especially teamwork and the ability to communicate our material with larger audiences
Rodolf	Marketing skills, good researcher	Develop my communication skills	Teach effectively in a specific area and gradually moving on to a much wider community
James	Document Design, word-processing	General management skills and presentation skills	To learn how to operate in an office environment, learn the rules of thumb for working in a structured team management (as opposed to just a simple group of people), develop a larger appreciation for team-based working
Sarah	Strong Organization and good at working with a group.	Better group leadership and board presentation abilities.	I would like to develop a strong sustainability program to encourage young kids to appreciate and respect the world they live in.
Hiren	Knowledge on sustainability, design, and presentation skills	Working with a group of various disciplines in an effective and innovative way	Find a way to teach/inform others on aspects of sustainability in a creative new way that allows people to not only talk about and remember "green", but BE "green". To create a solution that makes people care.
Timothy	Organization skills, and being able to better work with a group.	Better group working skills	To make a good sustainability program to educate the Chicago area schools.
Chris	Strong technical understanding of alternative energy technologies. Good writer.	Presentation skills	Develop a new module to present/serve as teaching kit, Present module and distribute teaching kit, collect feedback and refine.

To create a team identity, the group has chosen the name “How Many Earths?” This question is used to inspire people to give thought and respect to the limited resources one planet can provide. Therefore the motto: “How Many Earths? There’s Only One” has formed. The logo that accompanies the name and motto is an image of earth with the text motto forming the edge:



2. Team Purpose and Objectives

The mission of “How Many Earths?” is to educate people on the issues of sustainability and energy needs, concerns, and sources. In doing this we look to expand on work that has been done in previous semesters in addition to developing modules for a wider age base. Previously the modules have been focused on High School and Middle School students; this semester, we look to develop a program for elementary school classrooms in addition to post-high school education.

The objectives that the team has set are to:

1. Enhance and finish the “Cradle-to-Cradle” module, present it to five classrooms to get audience feedback, and establish an outline for a third educational module to be developed in future semesters.
2. Collect and evaluate response from students and teachers concerning both the “How Many Earths” and “Cradle to Cradle” modules, presentation styles and the teaching kit materials, especially by implementing the feedback worksheet, and use this information to continually improve presentations.
3. Develop a program for elementary school classrooms that includes an environmental learning approach and age-appropriate modification of the “How Many Earths” and “Cradle to Cradle” modules that have been developed, develop an interest in the program, and test it in classroom setting.
4. Develop a module on Policy for High School and Middle School students that includes a Teaching Kit and to introduce it to five classrooms.
5. Further the development of the IPRO 332 website <http://www.howmanyearths.com> to update it with current information and make it more user friendly.
6. Promote interest and exposure of our education modules by publishing stories in local media outlets and participating in three community events to promote “How Many Earths” to the general public.
7. Identify and execute a number of fundraising and sponsorship drives to help fund the “How Many Earths?” project.

8. Work to establish collaborative relationships with other sustainability-oriented organizations.

3. Background

Energy can neither be created nor destroyed. This is one of two things one can know for certain about energy. The other is that energy has become increasingly scarce.

Over the past years, "green" became the buzzword that screams for attention in every media outlet around the world. "Green" was often paired with automobiles, houses, appliances and even airplanes to advocate energy saving and the noble act of saving our planet. There are countless other things that every student help to save our planet. The goal of this semester's incarnation of IPRO 332 "How Many Earths" is to continue to educate young adults to become more energy conscious.

It is IPRO 332's fifth semester, and it is beginning to slowly become a well-established IPRO, with the work of the previous semesters serving as a strong foundation for this semester. Initially, previous semesters took the very broad task of "creating Multi-Media Education Modules for K-12 Classrooms" and narrowed it to high school-level classrooms. Following semesters managed to produce several modules as well as a few complete teaching kits, and to spend some time in classrooms testing these modules to see how effective they were. More recently, the task of expanding operations to create modules for middle school classrooms as well was investigated, and a website was set up to give this project a permanent online presence. From this base this semester's team will start their tenure with the project by doing extensive research, preparing various materials, and promoting awareness of the IPRO. All four previous teams reached the goal of having a well prepared program that is now to be refined, expanded, and better promoted.

The project will utilize existing material available via the World Wide Web and organize the information into easy to understand and concise teaching kits. The bulk of the teaching kits will consist of PowerPoint presentations that will introduce the students to the ideas of recycling, reusing, energy consumption, and to idea of the Ecological Footprint. The presentations will become more interactive, which will allow the students to part take in surveys, quizzes and games.

Because this is a continuation IPRO, the current-semester's team will evaluate the pros and cons of the previous semester via returning team members and the analysis of previous semester's project outcome. The team will also respond to the ideas that new members of the team have in mind, allowing the project to improve and expand.

Ethics remain one of the most important issues during the development of the project. All of the information must be kept in an un-biased and instructive form. The previous teams have accomplished this successfully according to feedback received. The current team plans to build on this and will continue to remain unbiased as new materials and methodologies are added to the project.

The current team wants to promote a strong sustainability-oriented appearance by adding to the existing official Web Page, improving the quantity and quality of the team's marketing, and refining educational tools developed in previous semesters as well as developing new ones.

4. Team Values Statement

The "How Many Earths?" team spent quite some time contemplating what character traits we would like our members to display most, and in the end we chose Cooperation, Commitment, Participation, Contribution, and Communication.

- **Cooperation:** We expect team members to respect the opinions of other members of the group, listen and respond when prompted, reach and agree with compromises when necessary, and always *willingly* be available to work with the group.
- **Commitment:** Team members are also expected to show dedication to individual and group responsibilities, to do work on their own initiative, and to be loyal and positive to group decisions and compromises even when they personally disagree with them.
- **Participation:** Team members will show participation by regularly attend almost all meetings (barring acceptable reasons for absence), and at those meetings to provide helpful comments and questions during discussion, and to volunteer to take on new tasks on a regular basis.
- **Contribution:** Individuals are expected to contribute by collecting and presenting great deals of relevant information, offering well-developed and clearly expressed ideas directly related to the group's purpose, and having this information available by use of timesheets, iGroups, and other means of communications.
- **Communication:** Each member is responsible for clearly communicating their information and progress through iGroups, weekly reports at group and subgroup meetings, promptly responding to any questions sent via email or other means, and by clearly sharing their viewpoints on all group decisions and responding to group emails that require a response with concise and logical reasons. Members are also expected to provide honest and constructive feedback to other team members, and to take the initiative when they have questions, while communicating with others about concerns.

If a member of the team does not display one or more of these values, their fellow team members will privately discuss this with subteam and group leaders (who will be available before and outside of class), or if necessary the instructor. If an issue can be resolved by a personal conversation or other non-recorded methods it will; if it is more severe, online and/or documented discussions (such as emails or discussion boards on iGroups) will be used to work out the issue.

5. Methodology/Brainstorm/Work Breakdown Structure

With a growing need to raise awareness with respect to rising energy demands, the challenge of creating such awareness among young adults has been placed before us. A foundation for solving this problem has been established for this IPro by previous

classes with the establishment of a website and two educational modules for students concerning the topics of the "Ecological Footprint" and "Cradle to Cradle," which were presented to several high schools in the Chicago metropolitan area. It is the challenge of the current IPRO to investigate and implement tactics to further this awareness among individuals on a much greater scale. In order to achieve this task, questions such as; "how can this information be conveyed new, unique ways other than physical presentation?" and "how can this information be tailored to each individuals intellect and interest levels?" must be addressed and answered.

"How Many Earths?" will address the problem of expanding the organization in a few key ways. To address the first question and establish new means of educating, the team this semester will focus on creating modules with heightened interactivity and innovation in order to engage even the youngest students. Steps will also be taken to market the cause of sustainability to the general public through participating in public events. In order to address the second question and tailor information for specific individuals or groups of individuals the team will work to enhance the modules and teaching kits of the previous semester and to build new modules and interactive lessons for students at all levels of secondary schooling. The work of the group will be divided among three main subteams that will focus on elementary education, high school and junior high education and marketing, respectively. This division of labor will allow to address the problems and goals of the group overall most efficiently. Each subteam will need to work separately and together throughout the course of this challenge in order to achieve the final goal.

Analyzing the reactions and suggestions of our audience is essential to the perpetual improvement of the work produced by the group. Last semester the IPRO worked to expand the audience of both the Ecological Footprint and Cradle-to-Cradle modules to junior high schools while continuing to present to high schools. This semester we will continue on with that work, but work to create a third module on the policy and institutional issues faced in America when working to make sustainable energy choices. This third module will be modified also for eventual use in junior high schools as well as for the general adult public. A new subteam will also be created to focus on expanding the audience of our works to elementary school aged children through more interactive modules. A marketing subteam will continue to pursue fundraising and sponsorship opportunities, while simultaneously working to spread awareness of the IRPO . The two Education teams will make it a priority to create worksheets and databases through which to collect feedback and analyze the effectiveness of the modules and other teaching materials created. Within the high school education team it will also be a key goal to assess the progress made by teachers currently using the teaching kits distributed last semester as well as to create a mechanism to follow through with students taught by the IPRO in previous semesters.

After developing the testing mechanisms described previously, each subteam will work independently to gather their results and document them. This responsibility is best left to the individual subteams as a priority to insure that it is done accurately at the most basic team level. The high school education team will continue to use the pre- and post-tests to

document the success of the previous two modules, and create analogous worksheets to be used with whatever new policy module or modules are created. This subteam will then be responsible for documenting these findings into an Excel spreadsheet and further assessing the findings. The same type of worksheets and tests will also be produced by the elementary education team. The documentation of the progress made by the students here will inherently be done more by the teachers of the students and the team members working in the classroom. The marketing team will work to set up guidelines and specific deadlines as the group travels out to local community events and works to pursue a grant. The work and writing of that final grant proposal as well as whatever press materials are created throughout the semester will be the ultimate documentation of the marketing subteams' accomplishments and achievements.

The goals of this semester's IPRO are divided into three main categories that correspond to the subteams established. Prior to the midterm presentation the group will work to assess the progress made upon all of the seven objectives established in section 2 of this plan. The remaining tasks will then be noted and the group will work to accomplish them by IPRO Day. Before then the group will assess the final accomplishments and create a report to analyze exactly how effective the teaching and marketing efforts of the subteams has been. This analysis will be based on the previous testing and documentation outlined for all the three subteams. The website will also be a last form of analysis for how well the group has solved the problems and issues of awareness by increasing user content and recording number of visits. All three categories can be analyzed to determine if they were a success. Finally, the results of this semester's analysis will be compared to the work of last semesters and used as a basis for recommendations on the possible continuation of this "How Many Earths?" IPRO!

Previous IPRO deliverables will be used as a basis for this semester's deliverables. The deliverables will include the required documents listed under the IPRO nuggets. These include a project plan, an abstract statement, a midterm presentation, and a final presentation. Other non-required deliverables that created will be an improved website, more teaching kits from the previous semester modules, one new high school and adult education module, and a module and teaching syllabus for elementary level students. Our project notebook will document our process and incorporate ideas that future IPRO's may build upon. Our project plan and schedule will guide our objectives and the time lines of their delivery. We will work united as a group to insure that all deliverables are completed on schedule and that no one individual is unduly burdened with work.

6. Expected Results

- A. Our activities for the project are divided amongst three categories: refining and developing modules for high school and post-high school education, developing a module for elementary-level students, and marketing and making our material available to a broader audience.
- B. We will collect data (including surveys for teachers and students) from last semester's modules as well as new modules, and use this information to revise and improve our modules.

- C. We expect to produce new modules, refinements on previous semesters' modules, and refined and completed teaching kits. In addition, we expect to produce an expanded and more user-friendly website.
- D. The potential outputs we desire to produce this semester include an education module that explains Policy for High School and Middle School students. In addition to the Module we will create a Teaching Kit. We will investigate environmental learning programs to introduce to the elementary school classroom as well as age appropriately modify the Ecological Footprint and Cradle-to-Cradle modules and Teaching Kits. The Kits that are produced will include the presentation itself, extra-curricular activities, and other relevant education material.
- E. The deliverables that we will produce throughout the semester will focus on survey information gathered before and after introducing the modules into classrooms. We are looking to visit more High School and Middle School classrooms to assess the information that was developed for the "Ecological Footprint" and "Cradle to Cradle" modules and modify those programs accordingly. We are also going to get feedback on the modules that are put together for the elementary classrooms by surveying teachers and students. We are looking to promote the awareness of our IPRO group by establishing sponsorship opportunities, as well as through fundraising opportunities such as continuing the book drive begun at the end of the semester and recognizing individual donors on the website and collaborating with other more established sustainable organizations.
- F. The challenges that IPRO 332 will face this semester include organization and contacting classrooms for visits, as well as making sure everything has been prepared exceptionally for in class presentations. Also the flexibility of the school programs that we are going to visit is a variable that may affect how many classrooms we are able to visit this semester. We also are seeking fundraising that will require a lot of publicity and could prove challenging if there are setbacks with the community events we are planning to attend.
- G. The expected results are to educate our community about issues of sustainability and energy needs, concerns, and sources. The work we complete this semester will help people make better informed decisions regarding their energy future.

7. Project Budget

Item	Cost	Purpose
Elementary Ed. Team		
Classroom teaching supplies	\$250	Paper, notebooks and plant supplies for interactive sustainability lessons
High School Module Team		
Teaching Kits	\$250	Distributing to teachers
Marketing		
Press Kit	\$30	Informing and gaining sponsorship

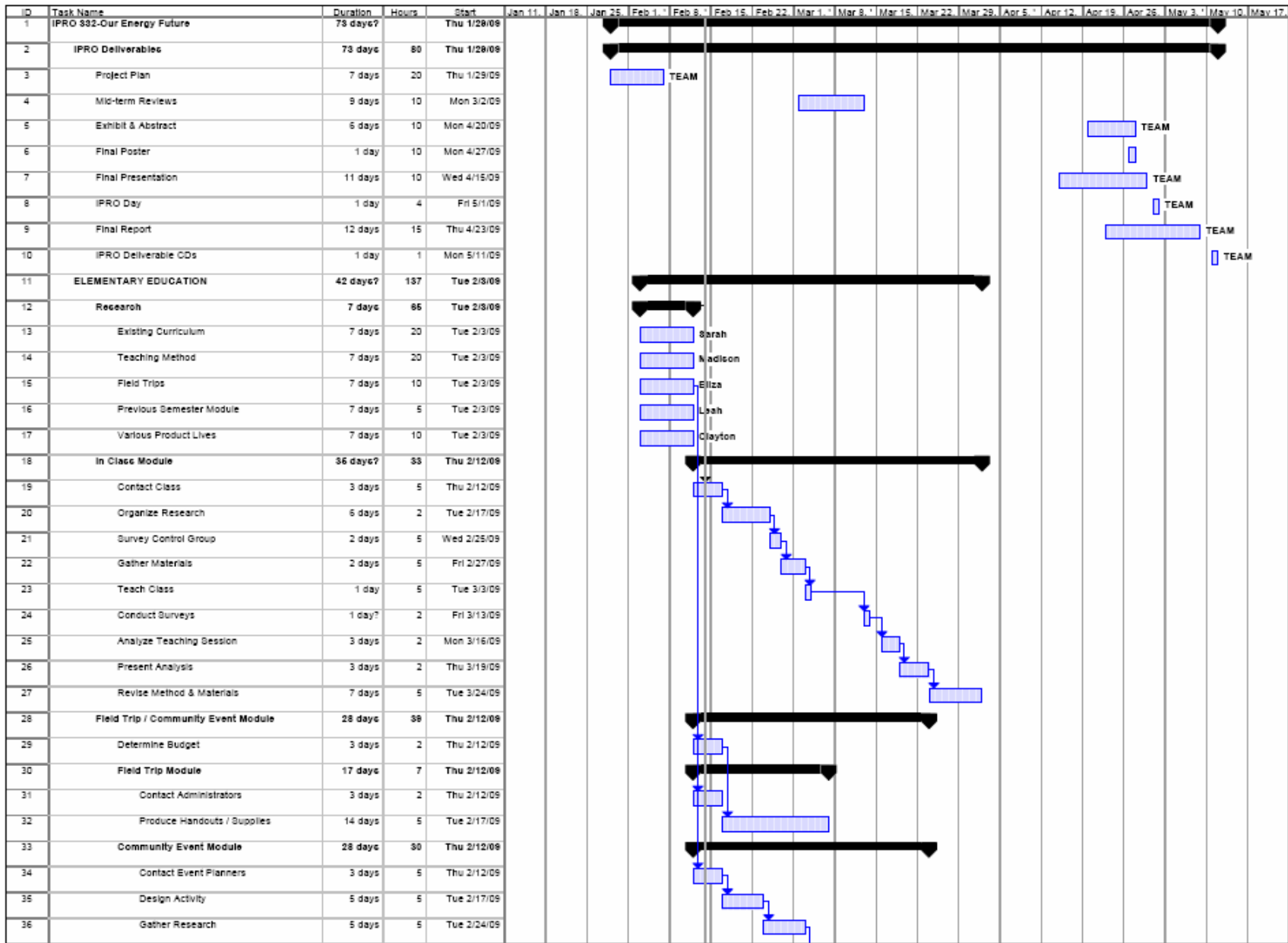
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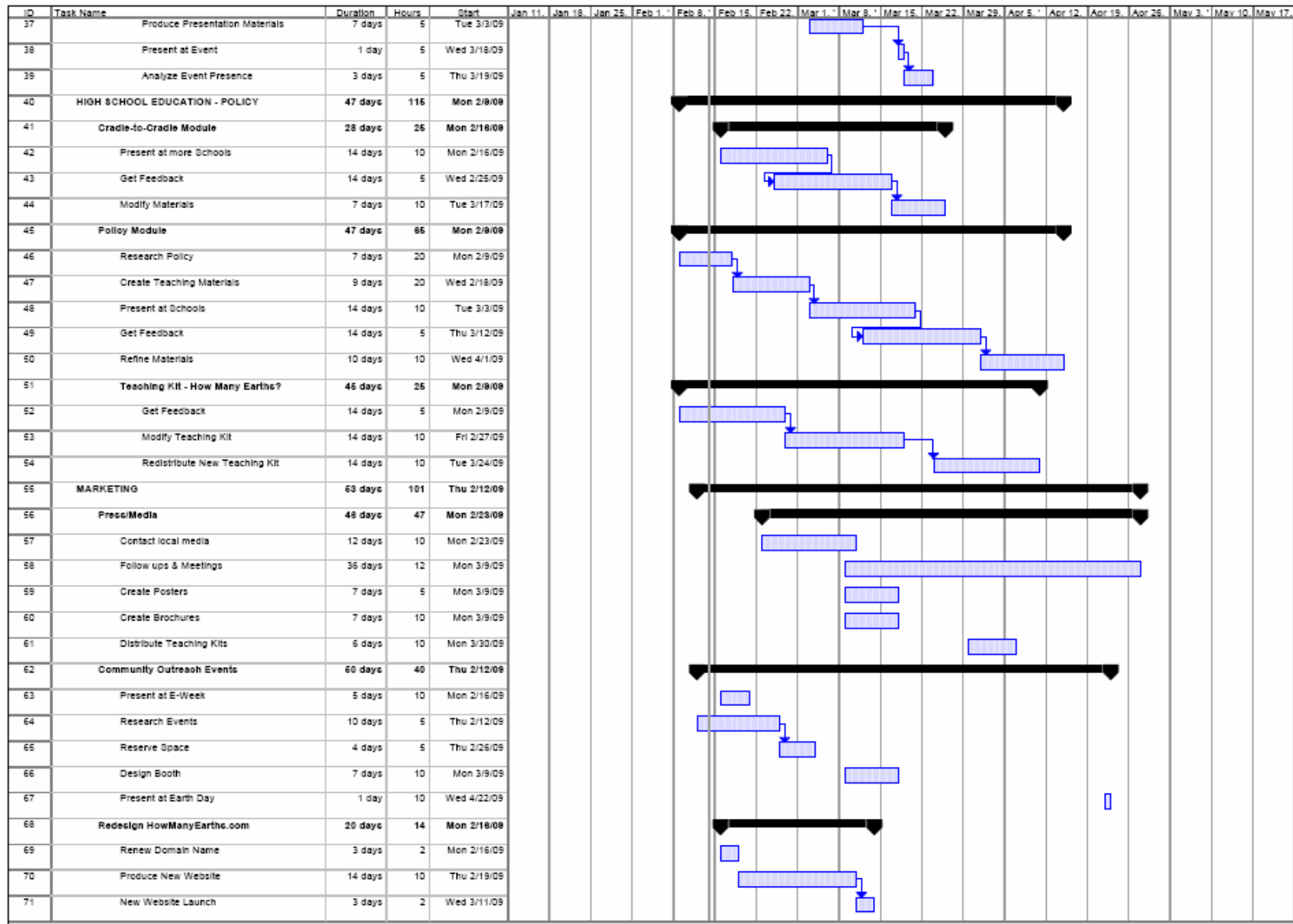
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Posters/Flyers	\$100	Advertising public events
Business Cards	\$25	Team use and distribution
Entire Group		
Public Event Registration	\$100	To promote sustainability and achievements
Gas	\$100	Transportation to events and classroom visits
Website server	\$30	To maintain HowManyEarths.com
Team items (shirts, buttons)	\$80	
Team Building	\$100	For pizza and such
Total	\$1065	

8. Schedule of Tasks and Milestone Events

The team choose to use Microsoft Project and the schedule is on the following pages.





9. Individual Team Member Assignments

- Team Leader: Nick Leep
- Project Manager: Charleen Colburn (main responsibility: seeing we're sticking to project plan, modifying plan)
 - Elementary School subgroup
 - **Responsibilities:** Research teaching methods, work on making the module and analyze effectiveness of the module.
 - Co-Leader: Sarah Olsen (foundation research, classroom coordination, classroom visits)
 - Co-Leader: Madison Kelly (foundation research, data collecting and analysis, classroom visits)
 - Eliza Broekere (foundation research, field trip coordination, classroom visits)
 - Leah Baldwin (foundation research, data collecting and analysis, classroom visits)
 - Clayton Kimball (foundation research, module design, and classroom visits)
 - High School and Policy Group
 - **Responsibilities:** following up with work done by previous semesters of this project and development of an educational solution for high school students and adults on the topic of energy policy in the U.S. Government
 - Subteam Leader: Joe Craven (analysis of previous modules)
 - Charleen Colburn (developing policy module)
 - Chris Wolcott (coordinate feedback on the modules by collecting and summarizing surveys)
 - Hiren Patel (Outreach)
 - Marketing Subgroup
 - **Responsibilities:** distributing the material produced by IPRO 332 to a wider audience and attracting more attention to this project, through such means as community outreach, printing and distribution of printed materials to more classrooms, and collaboration with the wider IIT community.
 - Subteam Leader: James Mulligan (document and poster design)
 - Tim Phillips (Teaching kit assembly and coordination)
 - Rodolph Masangkay (Sponsorship, teaching kit assembly and coordination)
 - Nick Leep (Website design and update)
 - Hiren Patel (outreach and organizing)

10. Designation of Roles

In order for team and subteam meetings to run smoother, we will be instituting and assigning several auxiliary roles:

Meeting Roles

- Minute Taker: Sarah Olson
- Agenda Maker: Split between Sarah Olson, Minute Taker (who will record in the minutes what next meeting's planned agenda is), Nick Leep, Team Leader (who will take the plan from one meeting's minutes and finalize an agenda out of it), and Charleen Colburn, Project Manager (who will go over the agenda and see that all project tasks that must be covered will be).
- Time Keeper: Charleen Colburn

Status Roles:

- Weekly Timesheet collector/organizer: This task will be done by subgroup leaders, on iGroups.
- Master Schedule Maker: Charleen Colburn, Project Manager
- iGroups Administrator: Madison Kelly
- Documentation Collector: Rodolph Masangkay