

ILLINOIS INSTITUTE OF TECHNOLOGY

PROJECT PLAN

I PRO 332

Advisor: Prof. Jim Braband

**Our Energy Future: Creating Multimedia Education Modules
for the Classroom and the Community Center**

IPRO 332 Project Plan

Section 1.0

OBJECTIVES

IPRO 332's objective is to develop the groundwork for a tool, to be implemented either in Chicago Public School classrooms or community centers, which will deliver balanced, non-biased information to its constituents about energy issues that affect their daily lives. We seek to do this, firstly, by familiarizing ourselves with the most pressing energy issues, identifying knowledge deficits concerning these issues, and selecting areas around which our concentrated effort will be most productive. Second, we will be studying current teaching methodologies and technologies in order to ensure our tool is as effective as possible. And, finally, we will identify companies, agencies and organizations currently working to deliver energy information, and learn from their expertise and experience. Through this research, we hope to learn from those currently endeavoring to spread fact-based information about energy, while developing a program of our own that ascribes to the requirements of the Chicago Public Schools' Curriculum guidelines.

Section 2.0

PROJECT BACKGROUND

Energy is indispensable to nearly every action in the modern world but there is no single or simple portrait of energy, its unintended consequences or its unimagined possibilities. Energy choices and challenges will become increasingly complicated as the nation and the world balance the expanding need for energy supply with the importance of increasing energy efficiency and conservation. The world energy market grows daily with new stakeholders, new limitations, new resources, and new challenges. As greater numbers of stakeholders appear, so do the means and reasons for presenting a complicated image from a singular perspective. Because multi-sided information is difficult to locate, lessons focused on the indispensable "total energy picture" get excluded from the curriculum of public schools and other teaching institutions, leaving a regrettable deficit in public knowledge.

In spite of stifling odds, organizations are currently working to bring balance back: organizations like NEED (the National Energy Education and Development Project). NEED brings together students, educators, business, government and community leaders to design and deliver objective energy education programs. Through this balanced network, NEED is able to teach the scientific concepts of energy and provide objective information about conventional and emerging energy sources—their use and impact on the environment, economy, and society. The program also educates students about energy efficiency and conservation while providing tools to help educators, energy managers, and consumers use energy wisely. By following precedent organizations, like NEED, this IPRO hopes to create the conditions for an objective, balanced, voice to be heard by those with the power to affect our energy future.

We have identified the following as the most pressing issues regarding the current state of energy: bio-remediation, climate change, endangered environments, energy conservation in the home, energy conservation in vehicles, non-renewable energy sources, renewable energy sources, political influence, recycling, and waste. These ten items begin to paint the full energy picture but fail to describe the complicated checks-and-balances at work within each category. For instance, an educator interested in conveying balanced information about wind power (a renewable resource) to his or her students would be obliged to discuss its history, basic science, potential for production as well as its land requirements, operating expense, lifespan, and threat to local fauna, etc. When charged with presenting each of these items thoroughly and without bias, the task at hand becomes overwhelming. This is why our IPRO has chosen to spend the semester developing a segment of a model teaching tool which will focus on one of these important categories. It is by researching and implementing both the information and the means required to produce this tool, that we hope to acquire all the knowledge necessary for another team (perhaps a future IPRO) to implement a complete, well-grounded product.

Section 3.0

METHODOLOGY

The problem is to develop the groundwork for a tool, to be implemented in either Chicago Public School classrooms or community centers, which will deliver balanced, non-biased information to its constituents about energy issues that affect their daily lives.

Phase 1

To solve this problem the team will first look at precedent endeavors in this field and examine their products, methodologies and relative successes and failures. From the research, we will then narrow our scope to one factor of the greater energy picture to be the focus of a carefully constructed educational tool. In this phase, it is important to develop criteria for determining the objectivity of the acquired material relating to a single energy topic. The criteria must also function to identify missing information that must be included in order to achieve objectivity. Both our research and development process will be documented in papers and diagrams for reference on iGroups. By thoroughly recording our process, present members of the IPRO, as well as those interested in learning about or continuing our work, will be able to access and understand our methodology. Phase one methodology is as follows:

1. Produce a research paper that surveys issues comprising the broad topic, "energy"
2. Produce a research paper that surveys organizations presently working on the problem of energy education
3. Produce a research paper that surveys current and potential teaching methods and materials
4. Produce a research paper that identifies deficits in the energy focus of the

Chicago Public School's science curriculum

5. Identify a single problem that is appropriate in scale and scope to be the focus of a prototype tool
6. Produce a research paper that identifies the issues comprising this acute topic
7. Establish a set of qualitative requirements for "balanced" information
8. Establish a set of qualitative requirements for objective sources of information
9. Create a list of information sources with our criteria applied
10. Upload our research papers onto iGroups

In order to ensure the education module we develop is appropriate and effective for use in the classroom, up-to-date multimedia technology must be considered with regard to the opportunities and constraints of the classroom environment. By involving Chicago Public School faculty and students throughout the research and development process, we can ensure that our project is being constantly refined. Our efforts in this area are as follows:

11. Conduct studies of effective teaching methods and materials
12. Interview teachers about teaching methods
13. Conduct video, literature, and software research

Phase 2

Our final product will be a prototype tool, as well as an organized paper, that will convey our findings and methodology. This will comprise all of the research and analysis, as well as our development process.

14. Compile and organize all prior research into one, understandable paper
15. Develop a prototype tool for immediate implementation in Chicago Public Schools or community centers

Section 4.0

EXPECTED RESULTS

After PowerPoint presentations on the survey of themes, organizations presently working on the problem of energy education, and on current and potential teaching methods and materials, the group will discuss the information presented, and will make an informed decision on an effective focus for the rest of the project.

Detailed research papers on the survey of themes, organizations presently working on the problem of energy education, and on current and potential teaching methods and materials will be available, on iGroups, for future reference. Additionally, the final report and PowerPoint presentations will be completed and available by the end of the semester. Future IPROs will be able to access our reports and correspondence with professors, companies, and organizations throughout the semester.

Once we have refined our attention to one focus, research will turn to identifying organizations working on energy education. We expect to find criteria used by these

organizations both to gather and present information that we can incorporate into our project for the same purpose.

At the same time, we will also research current and potential teaching methods and materials in order to determine the most effective possible means of conveying this kind of information to the expected constituency. This will involve a study of teaching methods currently used inside Chicago Public Schools, as well as creative incorporation of methods and materials too new to have been used yet. We hope to involve Chicago Public School faculty and students directly in the process of research and development of this tool.

In addition to IIT faculty, we expect to find private companies and organizations who have a shared interest in balanced energy education, and with whom this IPRO could partner in the development of the project.

Our primary goal for the Spring 2007 semester is to develop the foundation for future IPROs or cohort organizations to build a complete and balanced energy education module. Although the goal of educating people objectively about the total energy picture is a lofty one, we believe that any effort to this end will be rewarded in better-informed consumers and more responsible energy decisions. It is our hope, however, that our work this semester will comprise the seminal step, establishing a program whose end will be a balanced educational tool, available to dedicated, concerned educators everywhere.

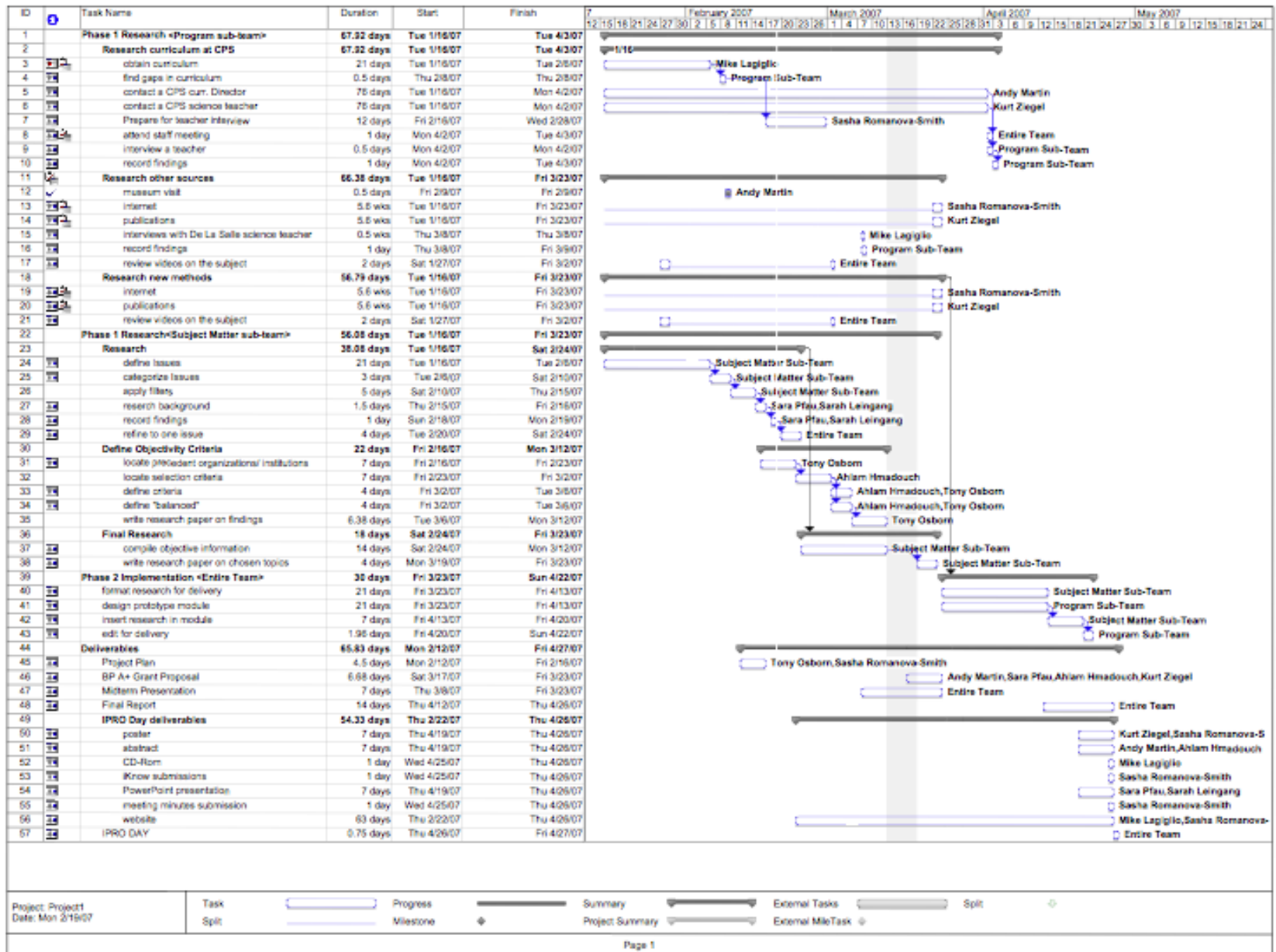
Section 5.0

BUDGET

Materials	Expenses
Portable Display Cases (2)	\$350.00
Books (research material)	\$300.00
21" Flat Panel Monitor (Digital Display Media)	\$350.00
Formal letters to possible partners (Mail)	\$5.00
Postage for grant application	\$3.00
Publishing (copies and binding of final material)	\$50.00
Digital Media Storage (CD-ROM, etc.)	\$25.00
ESTIMATED GRAND TOTAL	\$1083.00

Section 6.0

SCHEDULE OF TASKS AND MILESTONE EVENTS



Section 7.0

INDIVIDUAL TEAM MEMBER ASSIGNMENTS

A. Team Members

Ahlam Hmadouch: *Chemical Engineering*
Mike Lagiglio: *Computer Science*
Sarah J. Leingang: *Architecture*
Andy Martin: *Chemistry*
Tony Osborn: *Architecture*
Sara Pfau: *Architecture*
Sasha Romanova-Smith: *Architecture*
Kurt Ziegel: *Architecture*

B. Team Leader

Andy Martin

C. Sub-Teams

1. Subject Matter:

Ahlam Hmadouch
Sarah J. Leingang
Sara Pfau
Tony Osborn

2. Program:

Mike Lagiglio
Andy Martin
Sasha Romanova-Smith
Kurt Ziegel

3. Implementation:

All

D. Sub-Teams' Leaders

Sara Pfau – Subject Matter
Andy Martin – Program, Implementation

E. Sub-Teams' Responsibilities

Sub-Team 1: Subject Matter

- To survey and apply filters to a range of energy concepts
- To determine criteria for identifying objective sources of information
- To compile research into a format ready for implementation

Sub-Team 2: Program

- To research current education methods and materials
- To research current and new models for multi-media education
- To determine which model is best suited to the material and the intended constituency

Sub-Team 3: Implementation

- To combine the accumulated research and the selected education model into a prototype tool
- To test the tool on a group of high school students and faculty

F. Sub-Teams Individual Responsibilities

Sub-Team 1:

Ahlam Hmadouch- Objectivity Criteria, Internet Research
Sarah J. Leingang- Categorization of themes, Topic Research
Sara Pfau- Constructing Surveys, Topic Research
Tony Osborn- Precedent Surveys, Objectivity Criteria

Sub-Team 2:

Mike Laqiglio- Teacher Interviews, Web Site Design
Andy Martin- Team Leadership, Module Design
Sasha Romanova Smith- Web Site Design, Presentation Design
Kurt Ziegel- Curriculum Research, Presentation Design

Section 8.0

DESIGNATION OF ROLES

A. Assign Meeting Roles

- **Meeting Minutes:** Sasha Romanova-Smith
- **Agendas:** Andrew Martin
- **Time Keeper:** Tony Osborn

D. Other Roles

Time Sheet Manager: Tony Osborn
Define Paper Layout: Mike Lagiglio
Define PowerPoint Layout: Kurt Ziegel
Presentation Boards: Kurt Ziegel & Sasha Romanova-Smith
Websmaster: Mike Lagiglio & Sahsa Romanova-Smith
Schedule Monitor: Tony Osborn