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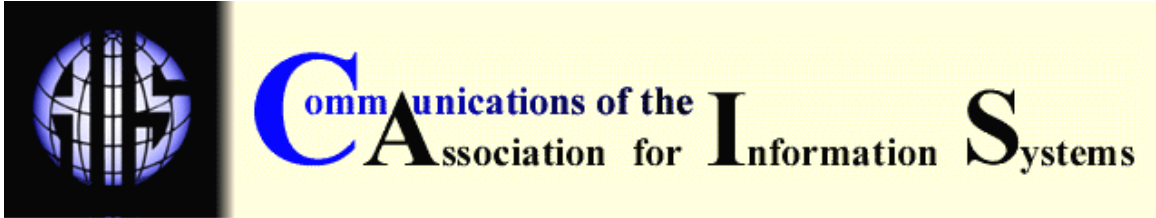
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TEACHING INFORMATION SYSTEM STUDENTS TO BE ENTREPRENEURS: A DOT.COM CASE STUDY

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ABSTRACT

This paper describes a unique entrepreneurial venture initiation class conducted in the spring 2007 semester at The Wharton School, University of Pennsylvania. The students of this class started a business together and shared in the value created. The business was a social networking Web site, www.wishfood.com, forming a community of individuals with an interest in food and wishing to share recipes. The course was designed to expose students to the process of starting a business, to teach the technical skills required, and to imbue an entrepreneurial spirit. This paper covers the structure of the course, the contributions of the students, the business timeline, and the outcomes of the course. This paper will allow a professor to replicate and learn from the successes and failures of the course.

Keywords: information systems, entrepreneurship, IS curriculum design, Web start-ups.

I. INTRODUCTION

This paper describes a unique entrepreneurial venture initiation class conducted in the spring 2007 semester at The Wharton School, University of Pennsylvania. The students of this class started a business together and shared in the value created. The business was a social networking Web site, www.wishfood.com, forming a community of individuals with an interest in food and wishing to share recipes. The course was designed to expose students to the process of starting a business, to teach the technical skills required, and to imbue an entrepreneurial spirit.

The course ran for 14 weeks, the full semester at the University of Pennsylvania. Students were split to three groups: business developers, creative designers, and programmers. The allocation of these groups was voluntary, based on the students' own interests, and what technical skills they wanted to develop. Often times, students played multiple roles. Each skill group worked together to build the Web site, with the business developers handling marketing and business direction, creative designers providing web graphics, and the programmers implementing the ideas of the other two groups by building dynamic Web-page scripts and the database.

As expected of any business, the initial team structure, job allocation between students, timeline of milestones, and goals of the business changed frequently through the weeks as the business evolved.

In the following sections we cover the structure of the course, the contributions of the students, the business timeline, and the outcomes of the course. We conclude with a list of problems encountered, and recommendations for future improvements.

II. STRUCTURE OF COURSE

The class was conducted with a lab-based and project-based approach, with the professor often working with small groups to solve problems rather than lecturing to the full class. The class met three hours a week, in 1.5 hour sessions twice a week. All classes were conducted in computer labs, where each student had their own computer. The professor stood in front of the class coordinating discussions and votes on the initial conception and design of the business in the initial weeks of the class. Thereafter, most class sessions involved students breaking into smaller groups to work on their areas of concern, with the professor floating between groups. Though it was project-based, attendance at class times was compulsory. Student groups regularly met with the professor outside class. Also, an undergrad student teaching assistant was appointed by the professor. This student had had good experience with web start-ups and web programming, and was allocated a share of the value created in the business.

The initial idea plugged by the professor, with a working name of foodfrommom.com, was to create a portal for people to upload choice recipes, and for local eating establishments to download these recipes, cook the dishes, and deliver for a fee. The business was meant to serve college students who missed their mothers' cooking and found it inconvenient to cook in dorm rooms. It was with this initial plug that the class was marketed to the student population, to both undergrad and graduate classes.

The class was registered as "Supervised Study: Utility Programming for Business Analysts" and was worth one credit. A typical student in The Wharton School takes 4-5 credits per semester.

PROFILE OF REGISTERED STUDENTS

The course generated good interest from the students, finally drawing 31 students (26 undergraduates and 5 MBAs) with varied skills from many schools within the University of Pennsylvania. All students pursued degrees from The Wharton School but some also pursued secondary degrees from either the School of Engineering or the School of Arts and Sciences. There were, for instance, two fine arts students in the class, who assisted greatly with creative design.

There were no prerequisites for registering for the class. However, it was indicated from the onset that strong independent skills were required. Also, since the business was to be run like an actual business, students who signed up expected to engage in brainstorming sessions, design workshops, group discussions, as well as task force sessions each week where teams work on specific tasks. This expectation, spelled out clearly in the syllabus, created a self-selection process, where a majority of students who signed up were self-starters, with interest in technology, and a strong interest in entrepreneurship.

TECHNOLOGY AND RESOURCES

Since there were no prerequisites to the class, students were required to learn the required skills for a Web start-up from scratch. Each student group, whether business developer, creative designer, or programmer, had to learn the required technical skills through the weeks of the course and as the business developed. Appropriate resources were provided to achieve this end.

For starters, the class utilized the Webcafe[1] application provided by The Wharton School as a central depository of all documents, designs, and programs produced by the students. This powerful application also allowed the class to vote on ideas, upload comments, and hold discussions.

SQL AND PHP

It was decided by the professor on the onset that the Web business was to be coded in PHP and the database set up with MySQL. PHP was chosen because of its ease of learning as well as its ability to build dynamic database-driven Web pages. PHP also interacts well with MySQL, and both are open source and therefore available at no cost to students. Further, the technologies were robust enough for the needs of a real world Web start-up.

RESOURCES PROVIDED TO STUDENT GROUPS

Where possible, all programs to be used for development of the Web site were to be open source or available for free online. All resources were provided by the professor, the teaching assistant, or shared by students through their own research.

- **Programmers.** The students who signed up for programming were provided with the book *PHP and MySQL for Dynamic Web Sites: Visual QuickPro Guide* by *Larry Ullman* and were given chapter deadlines to cover week by week. Other online resources and programs were uploaded on Webcafe for programmers. These included Notepad++ for PHP coding, and HTML tutorials prepared by the professor. Web links to tutorials for PHP[2] and SQL[3], along with the download page for XAMPP[4], the chosen program for Apache development, were provided. Apache was installed on the students' individual computers for learning purposes. Later in the semester, a development server was provided by the school for site testing.
- **Creative Designers.** The program of choice was Nvu[5], the free HTML editor. CSS design resources were provided as well.
- **Business Developers.** A 120-day trial of a Monte Carlo simulation tool from cameronassociates.biz was provided for the building of spreadsheet-based business models. Business developers were also pointed to online resources for the purchase of supplies, such as suppliers of customized packaging and labeling, and promotional leaflets and posters.

GRADING

Grading for each student involved evaluations by the professor, the teaching assistant as well as by other classmates. Table 1 lists the breakdown percentages.

STUDENT EVALUATIONS

There were three parts to the evaluation process. First, each student had to allocate 100 points to the two functional groups they were not part of. For example, if a student was in the creative design functional team, the student was to rate the programmers and the business developers. Second, each student again allocates 100 points among the team members within the functional

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[1] http://webcafe.wharton.upenn.edu/

[2] www.php.net

[3] www.mysql.org

[4] http://www.apachefriends.org/en/xampp-windows.html#1221

[5] www.nvu.com

group they were part of. Third, students could make special mention of students who had particularly outstanding contribution to the class.

Table 1. Grading Breakdown

Category	Description
Business Ethics (20%)	20% of the course grade was allocated to business ethics. Poor business ethic scores went to students who: • Did not pull their weight in their teams • Engaged in actions detrimental to the business / greater good • Were deceitful, lazy, impatient, unfriendly, and uncooperative, lacked team spirit or enthusiasm for the business, or were poor corporate citizens in any other respect
Log files (20%)	Every student kept a log of the work that they did for the course. One entry for each day of the course was required. Each log contained the following: • the date • a one-sentence/paragraph description of what the student did on that day (even if it is just a list of brainstorming ideas) • a list of people (other students) the student worked with on that day, and what they did with you (one sentence each).
Personal Deliverable (40%)	Students submitted all reports, documents, images, designs, screens, and/or software code they personally produced during the course, for evaluation towards a personal grade.
Participation (20%)	Points were deducted from the students' total grade for sessions missed during the semester. • For the first 3 class sessions missed: no penalty • For each further class session missed: 2.5 (two point five) percentage points were deducted from your course grade for every class session missed.

FUNDING

Initial funding of $10,000 was provided by the professor from teaching funds allocated by the department. However, as the University policies did not permit the reimbursement of initial business registration costs and domain hosting fees, these were covered personally by the professor. University funds were used to cover product prototyping costs and the purchase of promotional items such as branded t-shirts, and custom-printed pens and fridge magnets, posters and leaflets, and food and drink for the company launch party. University funds were also used to purchase sample products from competitors so that the students could compare packaging, service, and features against their competitors in the market.

OWNERSHIP AND CONTINUITY OF THE BUSINESS BEYOND THE SEMESTER

All students were required to sign an agreement before enrolling for the course. The agreement specified how rights in the new venture were to be assigned at the conclusion of the course. Signing up for the course was voluntary, but signing the agreement was compulsory. The sharing percentages allocated are shown in Table 2.

The Wharton Gift was a gift to the Wharton School of the University of Pennsylvania designated for supporting academic activities.

Table 2. Value Sharing Percentages

Group	Percentage
Wharton Gift	10%
Cancer Research Gift	10%
Teaching Assistant	10%
Students	35%
Follow-On Team	up to 35%

A secret ballot at the end of the semester determined how the 35 percent allocated to students was going to be distributed. Each student was handed an evaluation form on the last day of class to be filled in by hand in class and collected by the professor. Students were to appraise each other on two levels: on the team level, where programmers, business developers, and creative designers were judged on their contributions, and on the individual level, where each student is appraised by the members of their team. Each student could also make special student commendations. The professor compiles the evaluation forms to calculate the split of share of the company as well as to assign grades.

Any number of students may choose to carry on with the business after the semester comes to an end. This was called the "follow-on" team. They would be distributed a 35 percent share of the business. The distribution of this 35 percent was decided by the rest of the class, dependent on the individual in the "follow-on" team's contribution through the semester. The choice of buying out the shares of the other students was negotiated at the end of the semester.

ORGANIZATION CHART

For the first few weeks of the class, students signed up to be in groups of 4-5, with a combination of programmers, creative designers, and business developers in each group. As a result, eight teams were formed. The idea was for each group to work on a distributed set of functions for the website. However, it proved that this was not feasible due to the lack of accountability. Also, the differences in motivation levels and skill ability of students made such a flat hierarchy confusing in the assignment of responsibilities.

By Week 6, a more hierarchical organization chart was implemented as in Figure 1. This ensured a more appropriate allocation of responsibilities, and facilitated better monitoring of student performance against their responsibilities.

Figure 1. Organization Structure
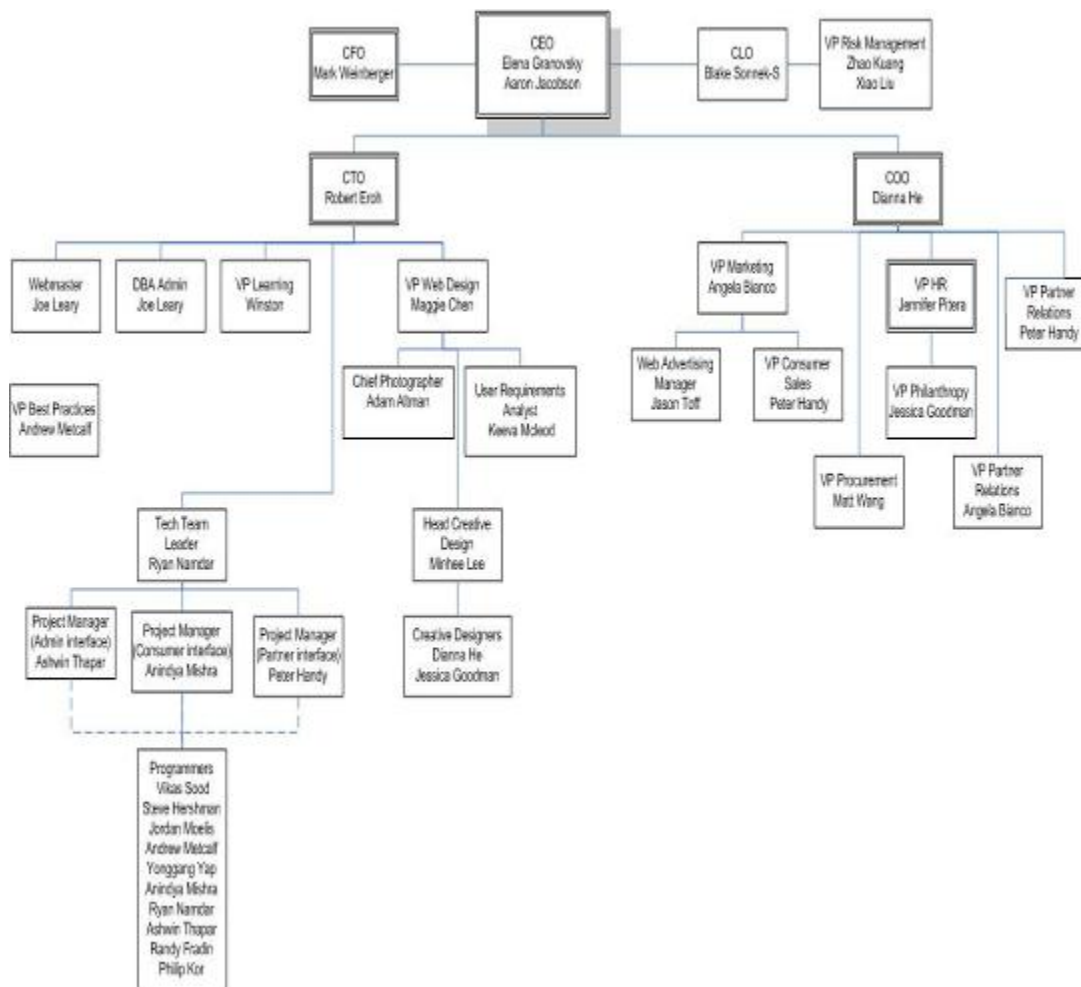
Each position was determined by nomination and vote process, and two co-CEOs were elected to head the business, though one CEO ultimately took control of the business as a whole and the other elected to manage the programming team. The class was split into working groups, where the programmers, creative designers, and business developers each worked within their own domain. Each working group had a student head: head of programmers, head of creative designers, and head of business developers. This increased accountability and it allowed motivated students to take leadership positions. Sets of features were assigned to small teams (comprising of one or two programmers, a creative designer, and a business developer), and each small team was responsible for three to five Web pages. These pages would be designed by the business developers, neatly formatted by the creative designers, and developed by the programmers. The head of creative design mandated standards for all creative designers, such as standard headers, footers, colors, fonts, and navigation schemes. Likewise the head of programmers mandated programming standards, such as standard database connection scripts, style sheets, and PHP include (*.inc) files.

All work done by each functional group was uploaded onto Webcafe where other students were able to access, comment on, and work off the files. Later in the semester, students elected into higher leadership roles like the CEO and COO, took on the task of leading the different functional groups into implementation. This team of student leaders ensured communication was smooth between the functional groups to ensure that goals were aligned. In the second half of the

semester, the three functional groups worked more closely together to put the site together, usually with the programmers doing most of the implementation onto the final phase.

III. BUSINESS TIMELINE

The achievements for each week as well as the tasks completed by each working group are listed week by week as follows:

WEEK 1

The student agreement was distributed and signed. The professor gave an introduction to the class structure and expectations. The class starting forming teams of four to five containing a mix of programmers, creative designers, and business developers. Class-wide brainstorming sessions were performed, headed by the professor. These involved different functionality ideas associated with a food or cooking Web site.

Programmers: Read chapters 1 and 2 of Ullman's book. There were a total of 14 chapters.

Business Developers: Performed research on functionality ideas; researched possible domain names, checking with InterNIC[6] on availability.

Creative Designers: Downloaded and installed GIMP (www.gimp.org) or Photoshop

WEEK 2

Voting was done on functionality, and the best feature ideas were chosen. Nominations for company name were solicited and voted upon.

Programmers: Read chapters 3 and 4 of Ullman's book; completed Web tutorials on PHP and SQL

Business Developers: Completed first cut of business model; conducted Monte Carlo simulation on initial financial model (see Figure 2.) Drew out storyboards for Web site, at this point, still called foodfrommom.com

Creative Designers: Learned GIMP or Photoshop

WEEK 3

Teaching assistant was tasked to set up AdWords, AdSense, and Paypal accounts for the business.

Programmers: Read Ullman Chapters 5 and 6**.**

Business Developers: Wrote a functional-requirements specification, explaining in detail what items each team will implement; assigned competitors Web sites to glean functionality ideas
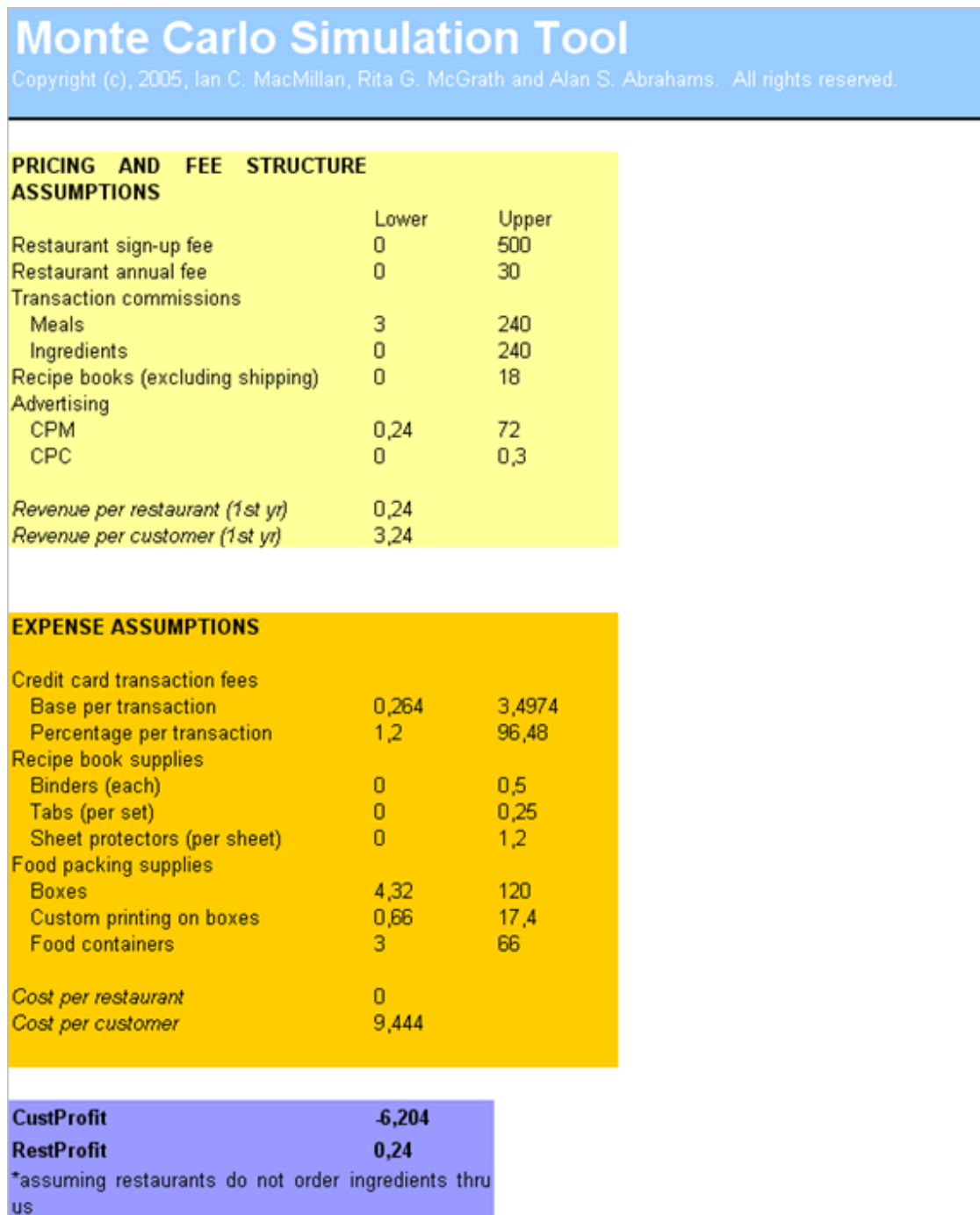
Creative Designers. Generated logo concepts; presented to class.

WEEK 4

Programmers: Read chapters 7 and 8. A few students helped with building HTML mock-ups and on researching promotional ideas and food packaging options. A mock-up, made in Adobe Photoshop is shown in Figure 4.1 and Figure 4.2.

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[6] http://www.internic.net/

Figure 2. Monte Carlo Simulation Tool

Monte Carlo Simulation Tool

PRICING AND FEE STRUCTURE ASSUMPTIONS

	Lower	Upper
Restaurant sign-up fee	0	500
Restaurant annual fee	0	30
Transaction commissions		
Meals	3	240
Ingredients	0	240
Recipe books (excluding shipping)	0	18
Advertising		
CPM	0,24	72
CPC	0	0,3
Revenue per restaurant (1st yr)	0,24	
Revenue per customer (1st yr)	3,24	

EXPENSE ASSUMPTIONS

Credit card transaction fees		
Base per transaction	0,264	3,4974
Percentage per transaction	1,2	96,48
Recipe book supplies		
Binders (each)	0	0,5
Tabs (per set)	0	0,25
Sheet protectors (per sheet)	0	1,2
Food packing supplies		
Boxes	4,32	120
Custom printing on boxes	0,66	17,4
Food containers	3	66
Cost per restaurant	0	
Cost per customer	9,444	

CustProfit	-6,204
RestProfit	0,24

*assuming restaurants do not order ingredients thru us

Business Developers: Fine-tuned financial model as new functionalities were raised in class. Continued with storyboards for pages required on Web site. Worked on static page design. Worked on promotional ideas.

Creative Designers. Learned HTML and CSS style templates. Designed initial logo prototypes – some initial design (later discarded) are shown in Figure 3.

Figure 3. Logo Concepts

WEEK 5

After students interviewed various catering companies and owners of restaurants in the Philadelphia region, it was found that not many of these restaurants were willing to provide an Internet-based food delivery service, no matter the fee charged. Other business options were brainstormed in class.

Programmers: Read Ullman Chapters 9 and 10. Continued with HTML mock-ups. Brainstormed database design. A key issue was how to classify recipes in an easily searched and displayed manner. A few students worked with the creative designers to program a CSS template as well as the basic Web site design.

Business Developers. Contacted possible food suppliers. Interviewed catering agencies. Fine-tuned business model and updated financial model.

Creative Designers. Produced detailed static Web-page designs for at least 3 pages shown in Figure 5.1 and Figure 5.2. These were given to programmers, who would make them dynamic.
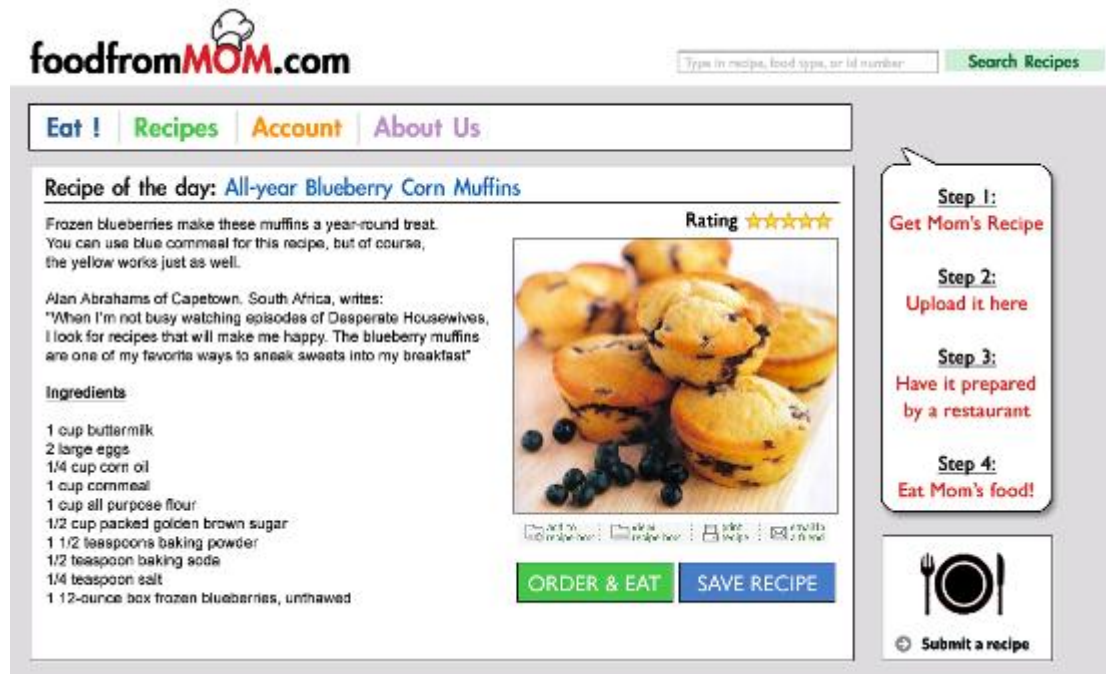
Figure 4.1 HTML Mock-up 1
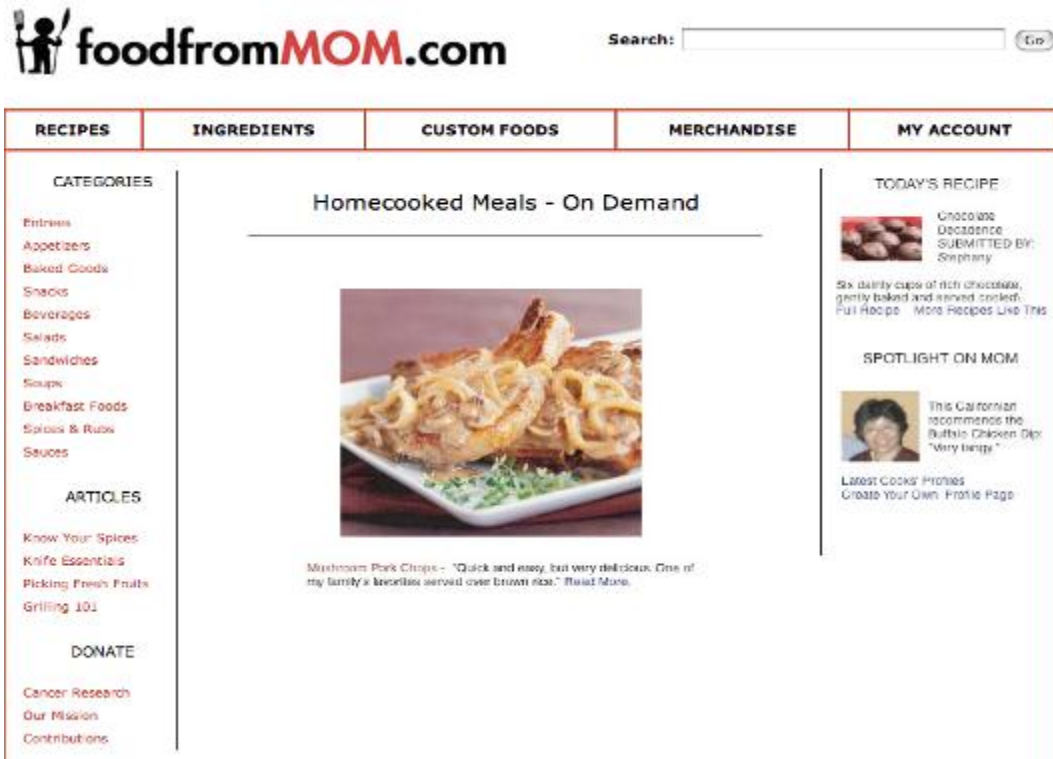
Figure 4.2. HTML Mock-up 2.
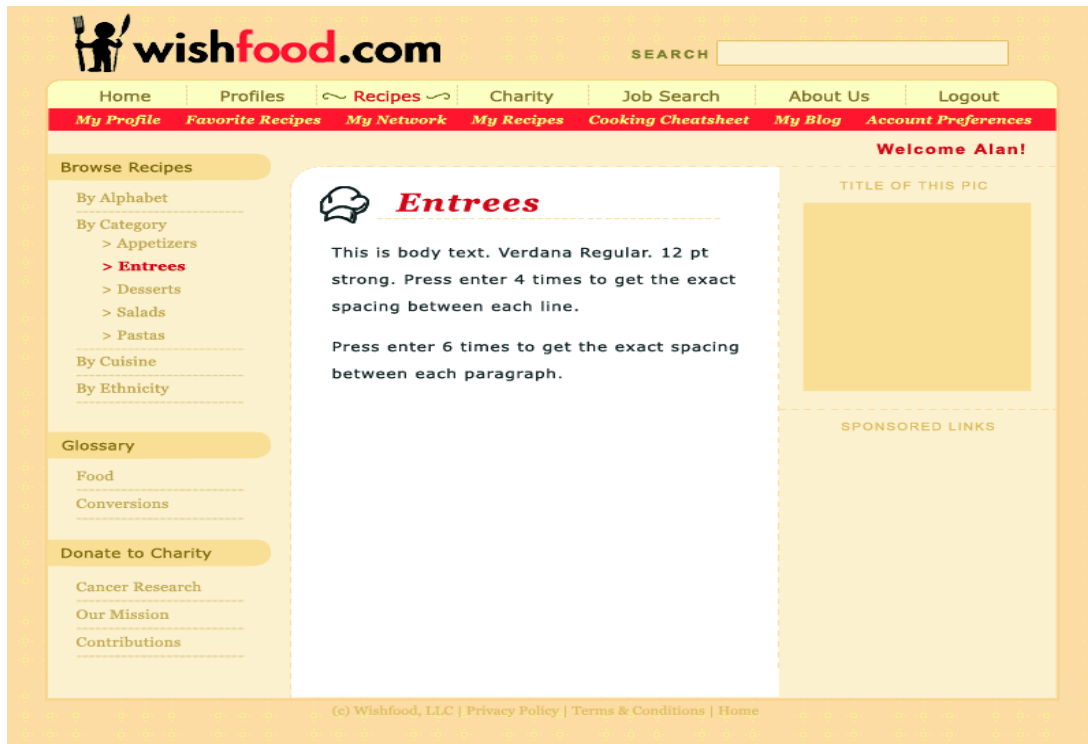
Figure 5.1 Static Web-Page Design 1
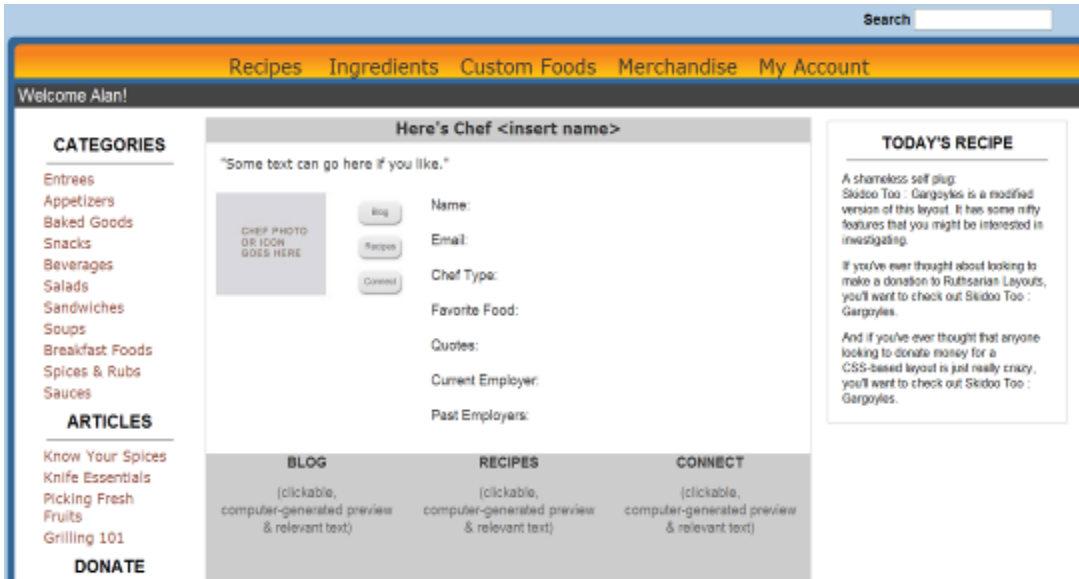
Figure 5.2 Static Web-Page Design 2

WEEK 6

Each student's commitment and capabilities were clear at this point. The professor announced that it was time to introduce a proper organization chart as illustrated earlier in Figure 1 earlier. All students were to nominate and vote for each position available. Students were also tasked to each find a cookbook, and submit features that were good. This was to gather ideas to style a cookbook to be sold from the site.
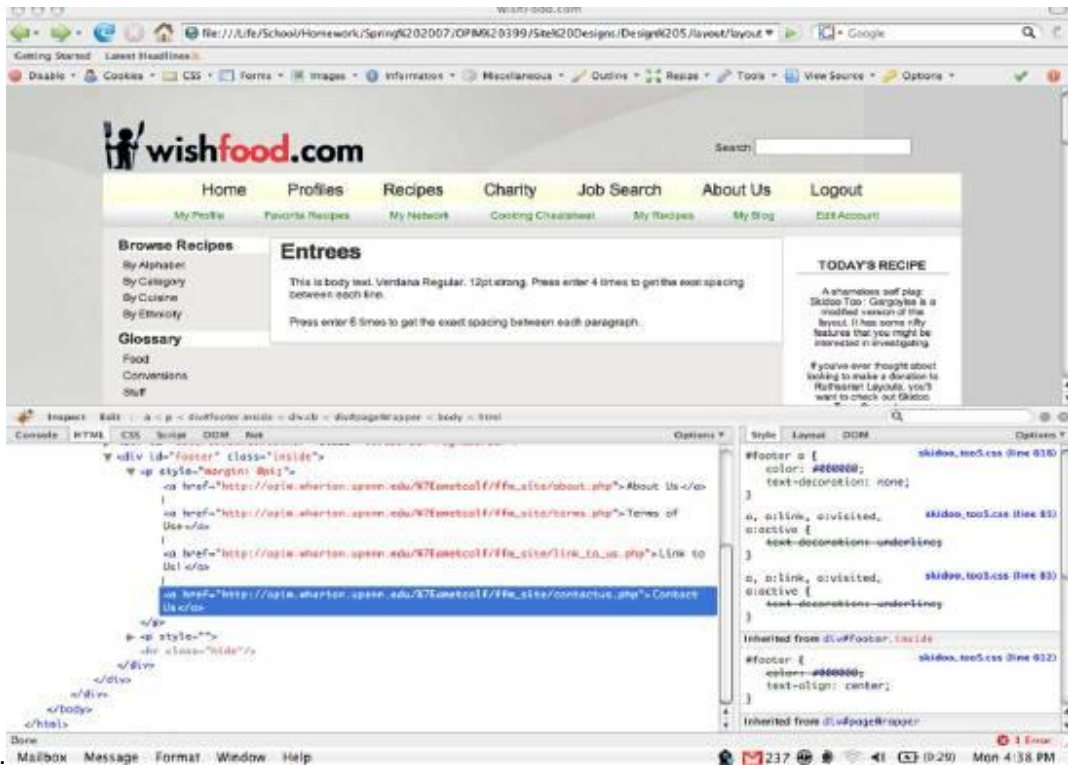
Figure 6.1 Style Template 1

Programmers: Read Ullman Chapters 11 and 12. A few students learned JavaScript (for HTML Form validation).

Business Developers: Explored packaging ideas for food (such as different suppliers of plastic and polystyrene bags and containers) and boxing ideas for recipe cards (such as different types of wooden boxes from Chinese exporters). Promotional items were brought to class for a vote. These include custom-printed magnets, pens, and measuring cups.

Creative Designers: Produced style templates for the class to vote on. Style templates shown in Figure 6.1 and 6.2
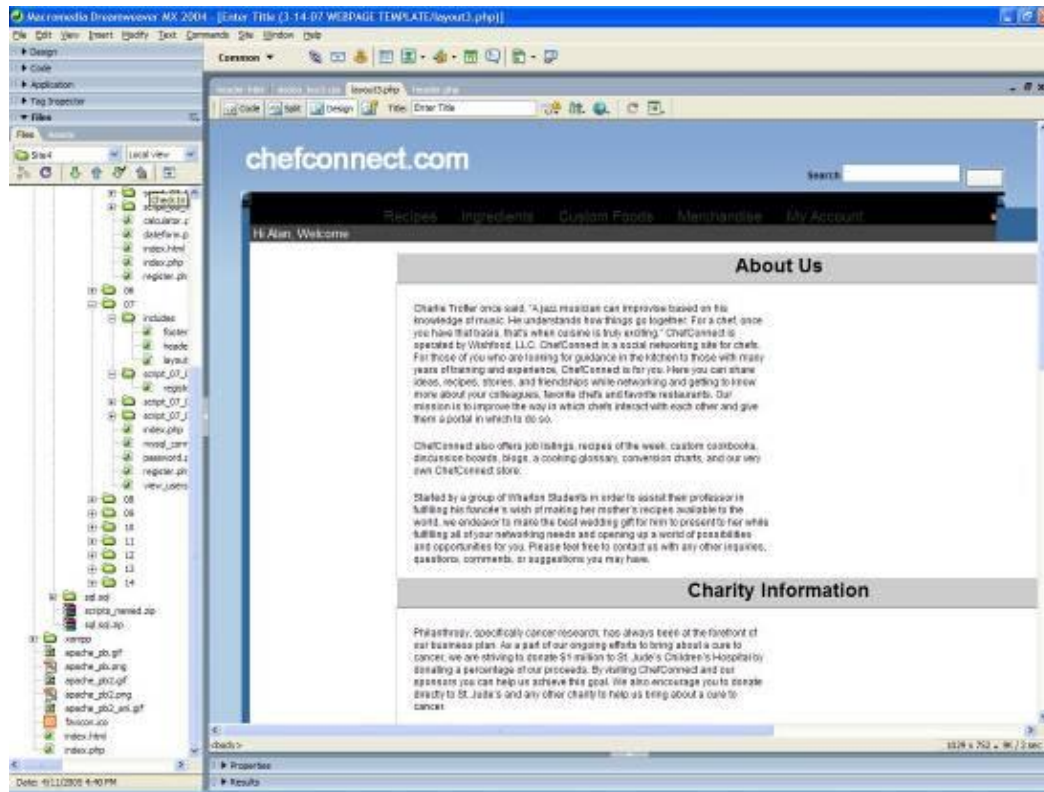
Figure 6.2 Style Template 2

WEEK 7

Black Monday date was announced to be in Week 10. Black Monday was the designation given to the day where everyone presented final functionalities on the Web site, and had their implementations criticized by other students and invited guests (friends of students). There was a dramatic change in the business direction. Earlier interviews with various catering companies and owners of restaurants in the Philadelphia region, had found that not many of these restaurants were willing to provide a delivery service. The co-CEOs and other heads of various divisions met and presented a new business direction to the class. This involved a social networking website for people who cook. This idea was plugged to fill a gap in social networking Web sites that did not have a specialty. This new Web site was to create a platform where people could upload recipes and share cooking tips with other people. This made the current working company name of foodfrommom.com less relevant, and votes were carried out to suggest a new name. Revenue generation sources on launch would consist of:

- Purchase of private recipes uploaded for sale by users;

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- Dedication of beloved recipes to a loved one (e.g. late parent);
- A customized cookbook that users could order by selecting favorite recipes from the We bsite; and from
- Web site advertisement with the AdSense program offered by Google Inc.

Programmers: Finished reading Ullman's book. Split into groups to implement different functionalities for the Web site. Each group had a business developer, a creative designer, and one or two programmers, depending on the difficulty of implementation. The list of Phase 1 features is shown in Table 3.

Business Developers: Decided on new group of functionalities for wishfood.com

Creative Designers: Worked on a new template for the new site, including a new logo

Table 3. List of Phase 1 Features

Function No.	Function Name
1	Homepage - not logged in
2	Search Recipe
3	View Recipe & Rate Recipe (if exists)
4	Add Recipe
5	Terms & Conditions
6	Register a new user
7	Login
8	Logout
9	Forgot Password
10	Personal Homepage
11	My Photos
12	Tag Chefs
13	Friending
14	My Favorite Recipes
15	My Favorite Chefs
16	My Shared Recipes
17	Browse and Search Chef Profiles
18	View Chef Profile
19	HTML Template for all emails
20	Glossary
21	My Cooking Cheat Sheet
22	About Us
23	Paypal - Custom Cookbook

WEEK 8

Wishfood.com was decided as the new name. Instructions for Black Monday were provided as follows:

In advance of Black Monday: All business developers, creative designers, and programmers to complete the final PHP versions of the features they were assigned. This was a joint responsibility of the entire team. If students were short of a programmer, they were to get the class's project manager (see Organizational Chart in Figure 1) to assign a programmer. Creative designer and business developers were to work on the HTML pages that the programmers would use to create the PHP pages.

On Black Monday: Team leader of the programmers would assign each student a list of three live PHP pages from the Web site to critique. Each student had to write up a half-to-one page document, criticizing what was wrong with the page: missing fields, poor formatting, links not working, etc. The programmers and design team would have a week to make the changes. At the end of the semester, students would be evaluated on the quality of the initial pages that their team produced, the quality of the criticism, and the quality of their response to the feedback.

Programmers: Worked on creating PHP pages for functionalities. A smaller group of committed programmers worked on creating a database design and setting up a corresponding MySQL database to be shared by the entire class. Before the Web site became live, the database and Web site was hosted on a server provided by the Operations and Information Management department of The Wharton School. At the time of deployment, this database was ported to a live commercial hosting service.

Business Developers: Created a new financial model for the business.

Creative Designers: Worked on a new logo and Web site template for wishfood.com

WEEK 9

All 1000 seed recipes as provided by the professor were uploaded and tagged appropriately into the database. A script was written by a few programmers to aid this process. To iron out inaccuracies associated with uploading, each student was assigned an equal number of recipes (approximately 35) to check and edit, to ensure correctness and quality.

Programmers: Worked to make sure different pages, in PHP, submitted by different groups linked well together. Programmers submitted and stored their pages on CVS[7] – a central depository program.

Business Developers: Tested functionalities and reported problems to programmers.

Creative Designers: Final logo was designed and voted in class. Final template were also redesigned and voted in class.

WEEK 10

Black Monday was conducted. FlySpray[8] was used as a bug-tracking software to aid the class in identifying changes that needed to be made with the Web site. A sample of issues logged in FlySpray during and after Black Monday is shown in Figure 7. On Black Monday, the class was divided up to test each functionality. Each student uploaded bug reports: a sample of a bug report

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[7] http://www.nongnu.org/cvs/

[8] http://www.flyspray.org/about

is shown in Figure 8. Responsible teams were identified and they responded with changes or explanations.
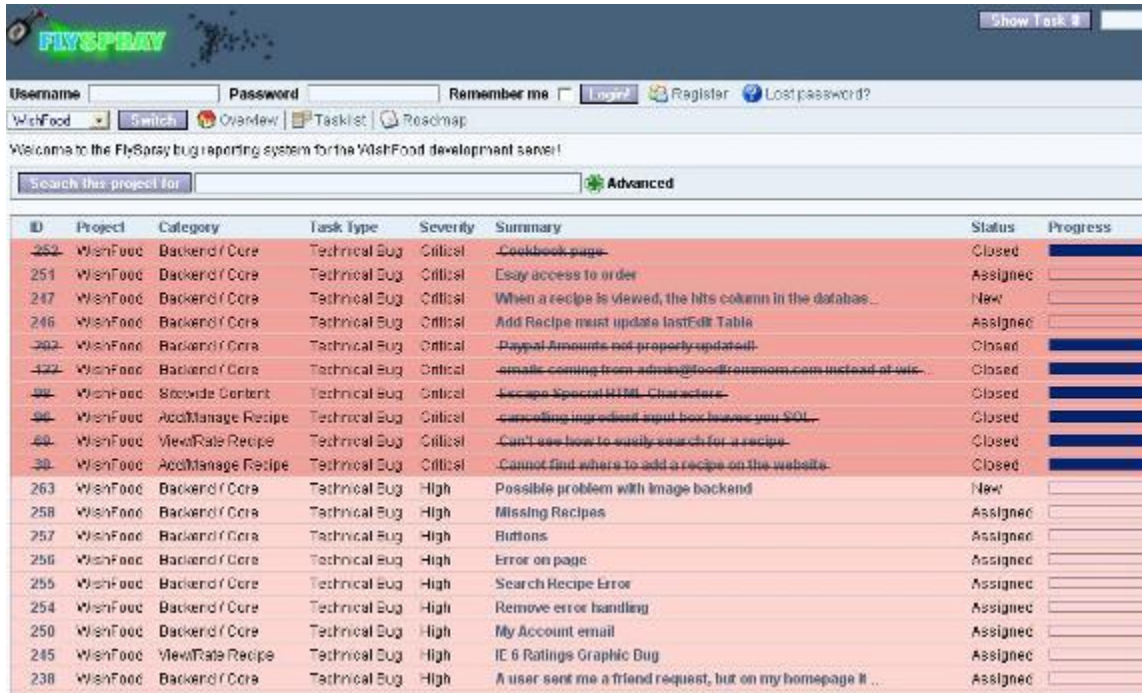

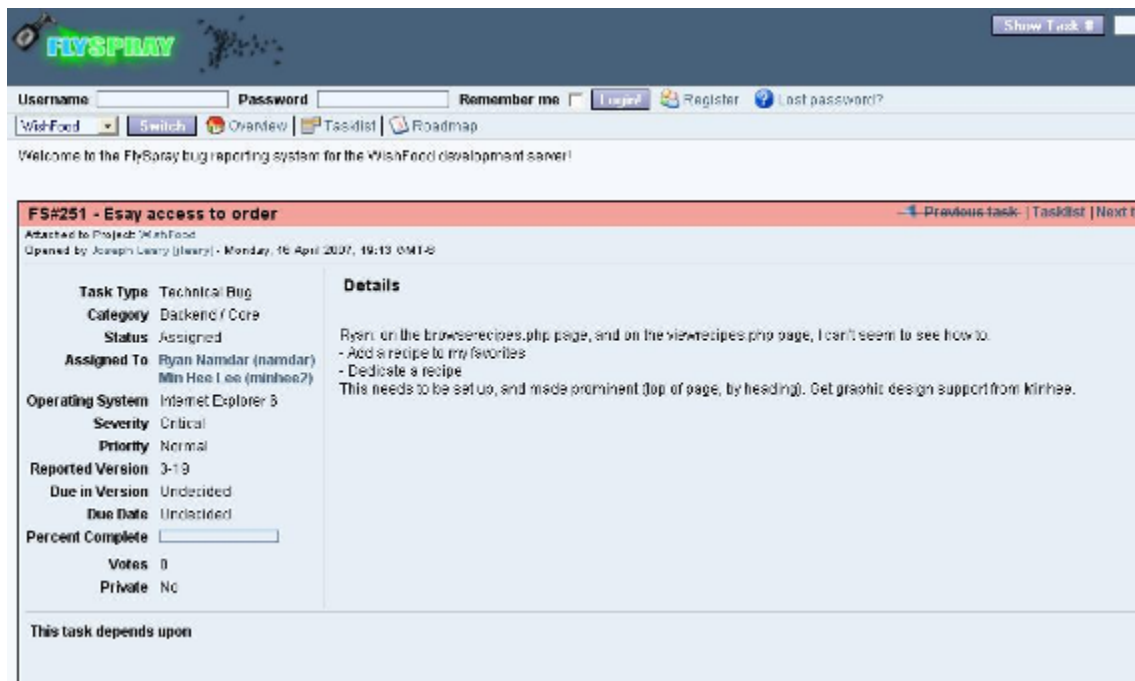Figure 7. Screenshot of FlySpray with List of Bugs

Figure 8. Screenshot of Submissions Page of FlySpray

By the end of the semester, there were a total of 263 submissions to FlySpray, with most submitted on Black Monday. However, many of these submissions were duplicated and system wide. For example, small errors in graphics on the main page were submitted multiple times. The response time to the bugs varied from immediate responses on the day itself, to two weeks later. Some suggestions submitted were not implemented for practical reasons or was discarded after discussion with other members of the class.

Programmers: Besides testing their allocated pages, programmers also responded to bugs and other suggestions on changes to be made.

Business Developers: Tested allocated pages.

Creative Designers: Tested allocated pages and made changes in response to suggestions pertaining to Web-page design.

WEEK 11

At this stage the Web site was still live only on the development server, and not on the live production server. Priorities for programmers shifted to phase 2 of Web site development – this consisted mostly of integration of a shopping cart, a script for the ordering of cookbooks, and integrating PayPal into the website. The last would allow users to purchase recipes and cookbooks.

Programmers: Continued to fix bugs reported. Also worked on Paypal integration. Coded a shopping cart and coded a script to convert recipes in the database intro an attractive PDF color cookbook format, which could be printed by a professional printing company.

Business Developers: Worked on a financial model for cookbooks

Creative Designers: Continued to make changes to design of Web site

WEEK 12

Emphasis placed on second phase of Web site development. Final changes were made to prepare for final launch in Week 13.

Programmers: Spent time on issues pertaining to adding and searching recipes, with a lot of bugs to iron out. A small group of experienced programmers also worked on the feature to allow users to compile recipes into custom cookbooks.

Business Developers: Marketing team put together to decide on arrangements for a launch party. Posters, pamphlets, and promotional items (magnets and pens) for the party were ordered.

Creative Designers: Continued with more design changes as suggestions streamed in. Made subtle changes to text form and layout.

WEEK 13

Live launch on the production server occurred quietly in the earlier part of the week, with the launch party scheduled for the week after. A "bring-a-friend-to-class" day was held. This was for students to bring in friends to critique the site on the spot and to fill out evaluation forms. These evaluation forms gave helpful outsider perspectives on how to improve the site.

Programmers: Stress tested different features of the site and made final changes. Spent time on preparing a custom cookbook for the launch.

Business Developers: Planned the launch party and consolidated financial statements prepared through the semester.

Creative Designers: Helped with launch party preparations. Made final changes to the Web site.

IV. RESULTS AND OUTCOME

Wishfood.com was launched successfully on April 9, 2007, with over 500 recipes, and with the ability to search and add recipes to custom cookbooks. The launch party generated a good buzz amongst the students at The Wharton School. The social networking aspect was also established with users able to register and create a profile. The main revenue generator of the Web site, the ordering of customized cookbooks was also successfully launched. The homepage is seen in Figure 9.

The week after the launch was filled with issues pertaining to grading. Two classes were devoted to presentations where each student presented their contributions through the semester. Voting forms were distributed for students to rate the contributions of individuals as well as to rate how good a job each working team (this being the business developers, programmers, and creative designers assigned to particular feature sets) did through the semester.

Figure 9. Screenshot of Wishfood.com Homepage

CONTINUATION OF THE BUSINESS AFTER CLASS ENDS

Eight students signed up to be part of the team to keep the business running after the semester comes to a close, also called the "follow-on" team within the class. These consisted of four programmers, three business developers, and one creative designer. These were students who took major leadership positions through the semester, and also contributed the most. They came together to formulate a proposal to buy out the shares of the other students in class. A counterproposal was also introduced by another student. A voting process deemed that neither was attractive enough to the students in the class. The follow-on team subsequently presented a revised proposal, which was accepted by the class.

V. PROBLEMS ENCOUNTERED AND RECOMMENDATIONS

INITIAL LACK OF INITIAL STUDENT LEADERSHIP

Initial weeks of the class were slow moving with not a lot of progress made. This was due to the functional group split, with each in charge of a different area of the Web site. This flat hierarchy diffused responsibility.

Recommendation

There is a need for leadership within the student population, with clearly defined tasks to assign responsibilities that aid accountability. An organization into a well-defined organizational hierarchy fared better. Students were also organized into interest groups by skill types (i.e. a business development team, a creative design team, and a programming team) to promote better collaboration and knowledge and skills exchange among students with similar interests.

AMBIGUOUS FOLLOW-ON PROCEDURE

There was discontent among students when the follow-on team suggested buy-out prices. Most students wanted to retain their share percentages yet may not have contributed significantly into the business through the semester, and did not want to continue working on the business. This caused a gridlock as the follow-on team felt it inequitable to compensate some other students who they felt had not worked very hard.

Recommendation

An acquisition team should be formed instead of a follow-on team. The acquisition team would need to buy the full business. The price could be either a small immediate sum, or a deferred, warranted amount based on revenue and profit projections. There should be a clause in the initial agreement signed by students that states that any share percentage below a certain threshold does not give the student any right to the business. This clause would ensure that only committed students have a say in the future running of the business.

LACK OF COMMITMENT FROM MINORITY OF STUDENTS

The structure of the class is such that it places a high amount of trust in the students to be self-motivated. A few students went through the 14 weeks having not contributed much. Out of a class of 31 people, eventually it was a small group of about 10 students who did the majority of the work.

Recommendation

The grading structure did not seem to be effective enough to motivate the students. The roots of this may be the uniqueness of such a grading structure and the opaqueness of certain categories which makes predicting a final grade by a student difficult. A monthly review of each student by the professor may have been useful, with the professor reviewing the commitment level of each student and providing a rough grade band evaluation. By identifying and speaking to the less-committed students early on, alternative roles and areas of contribution could also be suggested.

LARGE CLASS SIZE

With 31 students in the class, the diffusion of responsibility was too great especially for a new start-up. Even with tasks like programming, a high number of people meant a decrease in work done per person. However, an increase in individuals involved more coordination effort. In the end, the more experienced and skilled programmers found it easier to work on their own, even if this meant more tasks needed to be completed by that person. Also, discussions about business direction were contentious with 31 people, and there were regular disagreements with the leadership.

Recommendation

Limit class size or divide the class into separate businesses. This would allow students to follow their own business interests.

VI. CONCLUSION

This class managed to foster team spirit amongst many members of the class. The excitement of starting a business together was a big motivator. The problems with new venture initiation were also brought to light. Students had to work through long meetings with many disagreements, or had to dig in to find alternatives when certain business opportunities were deemed unfeasible. The short time span of starting a business together also pushed many students to pick up technical skills quickly, whether it was using the Monte Carlo simulation software for business developers, learning HTML and GIMP for creative designers, or learning PHP and MySQL for programmers.

Technical skills aside, the class was successful in providing students a chance to express their entrepreneurial spirit in a sheltered class context. Many students in a business school have thoughts of starting their own businesses. However, many are hindered by the lack of financial and technical resources, other course work, or inability to find like-minded individuals with a diverse skill set. This class managed to overcome these issues by providing seed money and technical direction, being counted as a course towards the students' degrees, and by bringing together students with disparate backgrounds but with a similar interest in entrepreneurship.

Editor's Note: This article was received on June 23, 2007. It was with the authors one month for one revision.

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LIST OF ACRONYMS

PHP   Hypertext Processor

SQL   Structured Query Language

OPIM   Operations and Information Management Department at The Wharton School, University of Pennsylvania

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