1. Objectives

This semester IPRO 329, Edutainment, continues placing its complete efforts toward an educational computer gaming suite targeted at fourth-grade students and the subjects these students struggle with most in school. The tentative title, *Scholars of the Lost Exhibit*, remains the same this semester. Work on this project began two semesters ago as the team completed their award-winning game *College Pursuit*. During this semester, we will continue to focus on the design, development, testing, and marketing of *Scholars of the Lost Exhibit*.

There are multiple objectives and goals the team has set forth this semester:

- Continue to complete the high-level architecture of the development portion of Phase II for each of the wings
- Research the user experience for all other subject wings: Social Science, Mathematics, and Language Arts
- Have all IPRO deliverables three-fourths complete by mid semester, except Project Plan and Midterm Report, which will be completed before this deadline
- Create paper prototypes of the rest of the Science wing and then continue on to the Social Science wing
- Conduct peer evaluations each month and distribute these evaluations to allow all team members to see where they stand with their teammates
- Construct a working prototype of the Science wing for IPRO day
- User test the pieces of the game we have completed in children's museums
- Revamp marketing materials for Phase III

The development of *Scholars of the Lost Exhibit* education gaming suite is the main objective for this semester, but the team can only reach this objective through integrated participation and collaborative learning. To create this educational experience, every person must remember the importance of the overall team experience besides the objectives of the project.

2. Background

These past four semesters, IPRO 329 turned its focus and efforts to the need for educational games that serve as supplements for classroom subjects and their trouble areas. Often times, students do not completely grasp certain focus areas within specific subjects. Because of this, our team has decided to develop a game called *Scholar of the Lost Exhibit.* In order to solve this problem, the team will use iterative design and development methods. Furthermore, the development team will use Flash and Action Script 2.0 to program the game.

This particular IPRO had been very successful during its past semesters. For example, the team from Fall 2004 won an award from the Society of Technical Communications (STC) for their completion of *College Pursuit*, a computer game developed to teach high school students about college financial aid. Furthermore, this IPRO grew successful after its first game, *CreditSafe,* was published on the Illinois Secretary of State's web site. In addition, this game garnered an award from the same STC competition. In recent semesters, the games have been brought to local grammar schools and have been very popular. Eventually, the IPRO plans to enter several additional competitions when enough work has been completed on *Scholars of the Lost Exhibit*. Overall, IPRO 329 holds high standards and follows a strict process in order to achieve successful and award-winning results.

3. Methodology

There are a number of approaches to software development, each of which has a set of advantages and disadvantages associated with it. For our projects, we have chosen an approach that we call the ***Pipeline Process*** model and the ***Iterative Prototyping*** process model.

When using the *Pipeline Model*, the team follows three phases, each of which has particular tasks associated with them. The team can keep track of which level of development the problem is at and determine a plan of completion in an organized manner. Furthermore, these phases provide a great basic structure for problem solving because the phases make time for research, development, testing, and marketing. Within this model, the developers use the *Prototyping Model*. While using the *Prototyping* model, the developers will build a simplified version of the proposed system and present it to potential users for consideration as part of the development process. The users, in turn provide feedback to the designers and developers, who go back to refine the system to incorporate the additional information.

The ***Pipeline Model*** consists of the following phases:
- **Phase I -** Create, analyze, research, and select game ideas based on successful gaming criteria
- **Phase II -** Using aforementioned iterative methods, the game is brought from preliminary design to final development and then to user testing.
- **Phase III -** Through various outlets, the game is introduced to the public and any legal issues are resolved

This is the third semester of implementation of this model, and it has undoubtedly proven to be imperative to IPRO 329's success. As IPRO 329 continues to grow in size, this model provides one great advantage:
- Team members have a way to stay organized and know where each group (Development, Design, User Experience, and Management) is with the research, design, development, testing, and marketing of the project.

The ***Pipeline Model*** allows for even development and proper implementation of the *Prototyping Model.*

The ***Prototyping Model*** consists of the following looping steps:

- **Requirements Definition/Collection.** The information collected is usually limited to a subset of the complete system requirements.
- **Design.** Once the initial layer of requirements information is collected, or new information is gathered, it is rapidly integrated into a new or existing design so that it may be folded into the prototype.
- **Prototype Creation/Modification.** The information from the design is rapidly rolled into a prototype. This may mean the creation/modification of paper information, new coding, or modifications to existing coding.
- **User Testing.** The prototype is presented to possible users for review. Comments and suggestions are collected from the users and reported back to the team.
- **Prototype Refinement.** Information collected from the customer is digested and the prototype is refined. The developer revises the prototype to make it more effective and efficient.
- **System Implementation.** In the traditional model, the system is rewritten once requirements are understood. In the *Iterative Prototyping* process, the results of the tests are used to guide the changes to the system. As some parts or phases of the software are implemented, other parts are prototyped and tested.

The process model we use has proven successful to the needs of similar past projects of ours. There is one major benefit of this approach:

- Creation of the major user interfaces without any substantive coding in the background gives the users a "feel" for what the system will look like and uses their feedback to refine the system at a very early stage.

The iterative nature of development allows for parallel progress of several tasks – different system features are being designed, tested and implemented at the same time.

4. Expected Results

The IPRO's most important result is that we achieve our goal of educating while entertaining. In addition to that goal, each sub-team has developed a set of goals for this semester in order to ensure product achievement. If each group follows the aforementioned procedures, these goals should have results within these next thirteen weeks. This subdividing of the team was implemented a couple semesters ago, and it proved to be as imperative to success as our methodology.

Team 1. Development

This team is responsible for programming the game. With this in mind, it is necessary for the entire team to learn Flash and Action Script 2.0 before any other work is done. After this is complete, they have set a hefty task of finishing the science wing of the game. This would me completing two mini-games in about a month. After they have completed the science wing, they hope to begin work on the math wing. They

hope to make substantial progress on the math wing through the end of the semester. They will also be in charge of the website in order to market our games further.

Team 2. Design

Responsible for the overall look, feel, and playability, the design team will be continuing to develop games for programming to implement into a game. They will begin the semester by doing initial research. This research deals with opinions from knowledgeable people in each area. The research will range from professors to psychologists. After the research is complete, the design team will begin to devise games for the science and math wing. In addition to developing new games, the design team must work closely with user experience and development through the semester.

Team 3. User Experience

The user experience team is responsible for developing gaming solutions based on the student's needs as well as their likes and dislikes. They must conduct research, interviews, and observations to gather information required to make this game as effective for the target audience as possible. They provide the groundwork on which the game develops. To begin the user experience team will return to the Children's Museum to observe more trends in children's interests. They must also finish their paperwork for the Institutional Review Board (IRB) in order to test children ethically. After they complete their certification with IRB, they will begin to test in schools. These tests will hopefully show that our games are engaging and educational.

Team 4. Management

The management team is in place to solve the problems of constructing and submitting deliverables, which they excelled at last semester. The management team is responsible for making sure that everything is running well and on time. In order to do that, the management team has various tools from email to calling people. This semester they wish to focus on getting more companies interested in their project. They intend to plan a day where companies can view a presentation of the game. In addition to organizing the presentation for the companies, they will be developing a new grading system. Management hopes to maintain a balance between marketing, keeping people on task, the deliverables, and getting our game known by related companies.

Overall IPRO

For IPRO Day, the entire IPRO would like to have a more complete interactive demo complete for judges and others to play. In addition, the entire team would like to present the two models/processes used for game development and explain how these two models/processes provide the necessary layout for game planning and progress. Furthermore, the entire IPRO would like to see their developing product marketed through handouts, CDs, business cards, and pamphlets. Furthermore, in order to support their product, the team expects all of its members to know the problem at hand as well as research used to solve the

problem. Lastly, we hope to gain more attention from related companies through IPRO day and our special presentation.

5. Budget

<u>Included below is the itemized budget for the project:</u>

Design Team	Expenses
Educational books from teachers store	$50.00
Materials for prototypes	$100.00

Education books (Curriculum guides and tips for creative games)
- *Learning by Doing: A Comprehensive Guide to Simulations, Computer Games, and Pedagogy in e-Learning and Other Educational Experiences (Hardcover) by Clark Aldrich*
- *E-Learning Games : Interactive Strategies for Digital Delivery (Neteffect Series) (Paperback) by Kathleen M. Iverson*

	$60.00
	$45.00
Subtotal	**$255.00**

Marketing Team	Expenses
Business Cards	$20.00
5 copies of Final Report @ $4	$20.00
50 brochures @ $2	$100.00
T-shirts @ $20.00 (20 total)	$400.00
Buttons @$.60 (30 total)	$18.00
Subtotal	**$558.00**

Development Team	Expenses
100-Pack Blank CD-ROM Media	$35.00
Additional Support for Constellation Game	$200.00
Subtotal	**$235.00**

Usability Team	Expenses
Video tapes/Data CD's	$75.00
Incentives	$125.00
Travel	$100.00
Subtotal	**$300.00**

IPRO Team	Expenses
2 Final posters	$200.00
Subtotal	**$200.00**

GRAND TOTAL		**TO BE DETERMINED**	

The success of our project is strongly dependent on the availability of these resources.

6. Project Deliverables and Milestones

Project Deliverable	Due Date		Teams
User Manual	draft: final:	Ongoing	User Experience, Management
Product Rollout Plan	draft: final:	Jan. 31 Feb. 3	Management
IRB Presentation		Feb. 21	User Experience
User Testing Begin Testing in Schools		Feb. 27	User Experience
Begin Math Wing		March 21	Development
Develop All Math Wing Games		March 21	Design
Development Documentation		Ongoing	Development

IPRO Deliverable	Due Date		Teams
Project Plan & Budget		Feb. 3	All
Mid-term Report		March 10.	All
Website	draft: final:	March 28 April 28	Design, Management
Presentation	draft: final:	March 28 April 28	Management, All
Poster	draft: final:	March 30 April 28	Design, Management
Abstract	draft: final:	Feb. 16 May 1	Management
Final Report	daft: final:	April 4 May 5	All
Team CD		May 5	Management

7. Weekly Assignments

Week	Tasks and **Deliverables**
Jan 17– Week 1	Meet with team and review last semester ➞ Begin project plan
Jan 24 – Week 2	All ➞ Discussed goals for entire IPRO as well as each individual group ➞ Make everyone aware of last year's progress Development ➞ Get acquainted with software ➞ Brainstorm prototypes ➞ Acquaint new members with previous work Management ➞ Distribute Project Plan Work Load ➞ Show New People How to Use IGroups and Gmail User Experience ➞ User Experience Testing for newcomers. Develop Budget was Schedule. Start IRB Documentation.
Jan 31 – Week 3	Development ➞ Divide tasks into teams Design ➞ Go over work done last semester. Management ➞ Begin To Research Interested Companies ➞ Finish Project Plan User Experience ➞ Finish IRB Documentation and prepare for approval. Generate Observations Sheet and form plan for Navy Pier Children's Museum Trip. IPRO trip to Navy Pier.
Feb 7 - Week 4	Development ➞ Complete Constellation Game Design ➞ Research complete Management ➞ Distribute Peer Evaluations ➞ Design Business Cards ➞ Remind People about Bi-weekly Reports User Experience ➞ Analyze observations and develop future plans for Navy Pier.

Feb 14 – Week 5   Development
- Fully Design Science Room

Design
- Rought sketches of theory/concept ideas

Management
- Design T-shirts
- Design Buttons
- Progress Reports Distributed

User Experience
- Work with design team and or the development team on science and math game prototypes.

Feb 21 – Week 6   Development
- Complete Planet Game
- Complete Door Function

Design
- Paper mockups of scene seq. / run by dev and UE

Management
- Divide Mid-term Report
- Order T-Shirts

User Experience
- Work with design team and or the development team on science and math game prototypes. IRB Presentation (2/21, 12-1 PM).

Feb 28 – Week 7   Development
- Complete Third Science Wing Game

Design
- Fix it week / feedback from profs / sci game

Management
- Begin Updating Website
- Begin to Plan Out Poster

User Experience
- Design experiment for actual user testing at schools.

Mar 7 – Week 8

Development
- Completed & Assembled Science Wing

Design
- Finalized sketches w/ justification / rough science sketches

Management
- Distribute Peer Evaluations
- Finish and Turn in Mid-term Report

User Experience
- User testing at schools.

Mar 14 – Week 9

Development
- Continue to develop math wing games

Design
- Continue with sketches

Management
- Progress Reports Distributed
- Order Buttons
- Order Business Cards

User Experience
User testing at schools. Get approved by IRB.

- **Midterm Report Due- March 10**

Mar 21 – Week 10

Development
- Start Math Wing Design
- Start Math Wing MiniGames

Design
- Develop math game content / finalized Science sketches

Management
- Complete Abstract
- Rough Draft of Final Report

User Experience
- User testing at schools.

Mar 28– Week 11   Development
    ➢ Further development of math wing design

    Design
    ➢ Begin brainstorming ideas for new wing

    Management
    ➢ Update Website
    ➢ Begin to Plan Out Presentations

    User Experience
    ➢ Prepare all data.

Apr 4 – Week 12   Development
    ➢ Further development and improvement of math wing minigames

    Design
    ➢ Run content/theory by UE/redo everything (problems)

    Management
    ➢ Evaluations Distributed
    ➢ Complete Poster
    ➢ Complete Website
    ➢ Complete Brochures

    User Experience
    ➢ Finish all user testing and data analysis.

Apr 11 – Week 13   Development
    ➢ Complete Website Due (Mois Demo)

    Design
    ➢ Script of how to test the game / content for Science game

    Management
    ➢ Finish Final Report
    ➢ Progress Reports Distributed

    User Experience
    ➢ Analysis of Video Clips.

Apr 18 – Week 14   Development
       ➢ Crete Final Game Demo for IPRO Day and Website
       ➢ Prepare for IPRO Day

Design
       ➢ Hand in script to UE / content for Sci game

Management
       ➢ Finish Team CD

User Experience
       ➢ Video interview completed (editing, processing done).

Other
       ➢ Final Report due November 22
IPRO DAY – May 5

Apr 25 - Week 15   Management:
       ➢ Collect Any Papers for Filing
       ➢ Create Binder

Design
       ➢ IPRO Practice and Website Due

User Experience
       ➢ Prepare for presentation.

Other
       ➢ **Exhibit / Poster / Abstract Due April 28**

May 2 – Week 16   **IPRO Debriefing**

Management
       ➢ Final Preparations

User Experience
       ➢ Prepare documents for next semester.

Other
       ➢ Peer evaluations online
       ➢ **Final Report / Team Information / Team CD Due May 5**

May 2 – Week 17   IPRO Debriefing