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## Program2Play [Project Proposal]

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## PSU Integrated Cluster (IC) Project Funding Process & Proposal Form

**Project Proposal Submittal Process:** All IC projects requesting funding will require the completion and submittal of three (3) forms:

- Project Proposal Form – project scope & outcomes** (*included in this document*)
- Project Guidelines Form – reflective document outlining desirable IC project attributes**
- Project Budget Form – Excel spreadsheet to facilitate budget planning**

### **Instructions for Submitting Project Proposals:**

- ✓ Download the 3 forms to your computer
- ✓ Complete the forms and save them; including the title of your project in the file name
- ✓ Forward the 3 files via email to the IC Project Manager, Ross Humer  
[rhumer@plymouth.edu](mailto:rhumer@plymouth.edu)
- ✓ Project Proposal will be logged & forwarded to the appropriate IC Guide Team

If not reviewed in advance of the submission, it is important to discuss the Project with the IC Guides to review, refine, and rework (if necessary) to obtain funding approval.

**Project Funding Review Process:** All proposed projects will be reviewed by the Cluster Guide team. Depending on the level of funding amounts being requested, the proposal request will follow the process outlined as follows:

- **Level 1:** Any project with a proposed budget of less than or equal to \$1,000 can be approved by the Cluster without additional review
- **Level 2:** Any project with a proposed budget of \$1,000 but less than \$5,000 can be approved by the IC Project Review Team, which is made up of representatives from each of the 7 Clusters (*see release time exception directly below*)
- **Level 3:** Any project with a proposed budget of \$5,000 or greater **or** requires faculty release time, must be first endorsed by the IC Project Review Team and submitted to the Academic Deans for review and approval

The project funding approvals are limited to one academic year; projects which require additional funding in subsequent years will need to be resubmitted annually for review and approval.

**Deliverables:** At the conclusion of the academic year, a deliverable to the Integrated Cluster Proposal Review Team and Academic Deans is required in order for the project director/coordinator, artist, or author and collaborator(s) to be eligible for future funding. This reporting requirement may be met by numerous means which will be identified as this process matures. It is anticipated that awardees will present their works before a wide public gathering to be scheduled during the upcoming Academic Year.

**Instructions for the PSU Integrated Cluster Project Proposal Form:** Please complete all of the elements of the following form in the spaces provided before saving and then submitting the document.

## **PSU Integrated Cluster Project Proposal Form**

**Title:** Program2Play

**Project Leadership:** (Identify Project Director/Manager or Co-Manager/s Evelyn Stiller will be the project director.

**Project Description:** This project entails using/developing a series of web-based games in which players use JavaScript instructions to play games.

### **Project Goals and Outcomes:**

**1. Project Goals – Briefly identify and describe the objectives of this project.**

**Goals include:**

- a. Create a sequence of thematically related, web-based games that teach students to problem-solve using JavaScript;
- b. Provide an engaging (game play) environment for learning programming skills.
- c. Involve students in web development;
- d. Involve students in game development;
- e. Involve students in the creation of artwork used in games.
- f. Involve students in the production of music and sound effects used in game.
- g. Exploring basic game design principles.

**2. Student Learning Outcomes – Outline the expected student learning outcomes**

- a. JavaScript programming (problem solving/analytical thinking)
- b. Web development (problem solving/analytical thinking)
  - i. Programming with HTML
  - ii. Programming with CSS
  - iii. Programming with Php
  - iv. Programming with JavaScript
- c. Testing/adapting Program2Play to other web browsers/devices.
- d. Instructional video production.
- e. Creating graphics for games.
- f. Creating sounds/music for games.
- g. Usability testing

### **Rationale and Impact:**

**Considering the questions below, please write your project rationale and impact statement.**

Include how this project will further the Mission and Vision of PSU with respect to 1) fostering collaboration across disciplines; 2) addressing a relevant societal issue, and 3) establishing relationships with community partners, external institutions, companies, non-profits, schools, government agencies, etc. and 4). Making an impact

How does this proposed project advance the Integrated Cluster mission and vision? How does this project facilitate high impact teaching and learning, cross disciplinary collaboration, student engagement and partnership involvement, and real world problem exploration? What are the anticipated impacts of this project?

Is this project an extension of work already in progress, or an entirely new endeavor? Does it integrate with areas that team leaders are already teaching or is it an opportunity to delve into unfamiliar content or a bit of both?

**Project Rationale and Impact Statement:** Program2Play is an initiative offering a series of thematically related games that invite students to formulate JavaScript instructions to control various elements of each game. Students are in effect playing the game by programming. The game sequence starts with a simple game scenario that increases in complexity as the player/student progresses through the sequence. As the games increase in sophistication, students are asked to formulate a greater portion of the programming instructions. This approach is intended to create a user-friendly learning environment for students.

Because Program2Play uses games as its problem-solving context, students can readily relate to the programming objectives. This provides an interesting/relevant context for problem solving. During early phases of Program2Play games, students are required to code a small number of JavaScript instructions. Specifying a small number of instructions encourages experimentation and allows for a more successful trial and error coding progression. The specific programming tasks embedded in Program2Play are intended to provide a visual outcome for the instructions provided by the students. For example, a student could code an instruction like *bee.x += 10*, and see a bee graphic move across the game surface at 10 pixels at the frame rate.

These games are suitable for high school audiences, for non-cs major undergraduate audiences or to provide extra introductory programming exercises for those needing it. Program2Play builds confidence in players' programming skills in a gradual, engaging manner, broadening the audience for majors in digital media, information technology or computer science. This initiative addresses the lack of diversity in technology-based majors by using a non-traditional pedagogical approach (bricolage, defined below). According to the White House blog (for the Obama Administration), "to meet the projected workforce need of 1 million additional STEM graduates by 2022, and to realize the vision of a highly diverse, creative, and sufficient STEM workforce and a STEM-literate citizenry, the Nation must engage all students".

An initial sequence of 13 games have been completed and are ready for usability testing.



## Project Team

**PSU Project Participants** (essential core team participants including faculty and staff)

Name	Position/ Title	Project Role	Discipline/ Specialty	Email
Evelyn Stiller	Professor of digital media	Key game developer and project manager	Digital media & software engineering	estiller@plymouth.edu
Others as interest allows.				

**Non-PSU Project Participants** (stakeholders; partners; academic institution; etc.)

Name	Organization	Project Role	Discipline/ Specialty	Email

**Student Participant Profile** (Identify the student population/s to be engaged in the project.

Identify if this has been or is planned to be incorporated into curricula)

Class/ Student Organization/ Individuals	Role in Project	Academic Level (Undergraduate or Graduate)	Academic Discipline	Total Student Population
Communication and Media Studies	Usability testing. Develop narrative content for web pages.		Communication and Media Studies	6 students (3/semester) Paid positions (see budget item)

Art	Develop graphics. Usability testing		Art	0-2 (class projects as interest arises)
Music	Develop game music. Usability testing		Music	0-2 (class projects as interest arises)
Computer Science	Usability testing/ Development of additional game/game sequences.		Computer Science	0+ as interest dictates.

## **IRB (Institutional Review Board) Compliance**

IRB Compliance: <http://www.plymouth.edu/office/institutional-review-board/>

- This project DOES NOT require IRB compliance  
 This project DOES require IRB compliance (*complete below*)

IRB Approval Status: Select an Option

IRB Approval Date: [Click here to enter a date.](#)

Any funding approvals of IRB-required projects are contingent on obtaining IRB approval.

## **Project Management: Timeline and Milestones**

Identify the timeline for the project including start, completion, and major project milestones. A closing report will be required as a part of the project funding process.

**Project Start Date:** 9/1/2016

**Project Complete Date:** 5/11/2018

Project Milestone	Milestone Description	Target Completion Date
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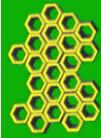
<b>1</b>	<b>Completion of first Program2Play web-based game sequence.</b>	<b>5/31/2017</b>
<b>2</b>	<b>Classroom testing</b>	<b>12/15/2017</b>
<b>3</b>	<b>Other usability testing to take place in IC</b>	<b>5/11/2018</b>
<b>4</b>	<b>Creation of artistic resources (graphics/music) by other participating departments. (Art and MTD, should there be interest)</b>	<b>tbd</b>
<b>5</b>	<b>Develop additional Program2Play games</b>	<b>5/11/2018</b>
<b>6</b>	<b>Extend use of Program2Play to other web browsers.</b>	<b>7/30/2018</b>

Please identify any pre-project education or training for students, faculty, and staff that would be helpful for your project team to have in advance to begin work on a strong footing (e.g., skill training, concepts), and identify any training and education that you are willing to help provide during the preparatory period for the project team before team work formally begins.

Student Education/ Training Requirements: Web literacy: Web Expressions and Interactive Web Development would be useful courses. I plan to develop guidelines/pointers for usability testing for Program2Play web pages.

Sample Program2Play web page:





**Get pollen from the flowers and bring it back to the hive. (Use right arrow to change speed)**

**Provide instructions to change the direction of the bee when it reaches the edge of the canvas. Move the bee using bee.chngX.**

```
//Provide instructions to move the bee at a constant speed  
// Also provide instructions to change the direction of bee  
// when it reaches the edge of the canvas.
```

Code

Submit Query

Program2Play

```
bee.x += fun;
```



Previous  
lesson

Lesson by  
topic

Lesson by  
number

Next Lesson

## WHAT IS BRICOLAGE?

- Claude Levi-Straus used the term to describe how pre-industrial societies gained new knowledge and engaged in problem-solving.
- A bricoleur uses readily available materials in a trial-and-error manner to construct a solution to the problem at hand

## CHARACTERISTICS OF A BRICOLEUR

ACCORDING TO TURKLE AND PAPERT

- Enjoy working with information in context (conceptual framework)
- Like to arrange and rearrange well-known materials to form theories
- Prefer to have relationship with or understanding of subjects of inquiry
- Often need to “visualize” information
- Prefer to collaborate

## PEDAGOGY OF PROGRAM2PLAY:

- **Uses principles of bricolage:**
  - Establishes a concrete context for programming instructions (game as conceptual framework)
  - Lets students see consequences of their instructions immediately
  - Allows a trial-and-error dialog with programming instructions, encouraging experimentation.
  - Provides an interactive/visual requirements statement