

Planning Your Learning Object

Working Title EvolveIT

Elevator Speech (What will it do? 3 sentences or less!)

EvolveIT will be a simulation that allows users to compare two populations of finches over time. Based on Darwin's research in the Galapagos Islands, EvolveIT will help students understand some of the natural forces that drive evolution in a species over hundreds of years.

Educational Objective

Purpose: Why do this project?

This simulation will have an impact on thousands of biology students. It will allow them to do virtual experiments of a nature that could not be replicated in a lab setting. It will reinforce and extend the learning that takes place in the classroom.

Learners: Who will use this learning object?

This learning object is intended for undergraduate students taking introductory biology courses. It will also be used by independent learners who happen to find it, and perhaps by high school students as well.

Outcomes: What are the specific learning outcomes?

After using EvolveIT, students will be able to:

1. Explain why beak size in a population of finches may change over time.
2. Explain how natural selection helps a species survive.
3. Discuss the results of a species' failure to adapt to changing conditions.
4. Set up a simulation run to demonstrate concepts like those described above.

How Will This Learning Object Be Used? List specific activities that learners might do.

Common Uses

- students can set certain parameters and specify a length of time to "observe" their finch populations
- students can set up two islands at once to compare different settings
- after viewing results, students can elect to change one or more params while leaving the rest alone & rerun the simulation
- parameter settings and results could be illustrated graphically for students
- students could be given starting conditions and asked to report the results
- students could be given ending conditions and asked to derive the starting conditions that would bring them about

Unusual, Innovative Uses

- students could record the results of several runs, along with parameter settings, in a "lab notebook" that could be exported, printed, and handed in as an assignment
- students could view several different types of graphs showing different aspects of the results

Resource Tracking Worksheet

| List people, equipment, and software that you have or need for each phase of the project: | Cost Estimate (money and/or time) | Have This | Need This |
|---|---|------------|-------------------------------------|
| Project Planning: Describing the learning object Content experts: biology faculty (at least two) Biology faculty #1 Biology faculty #2 Instructional designer Programmer (for reality checks & participation in design meetings) | (Release time) 10 hours 10 hours 10 hours 5 hours | yes yes | yes yes |
| Design: Interface design, graphic design, software architecture Interface designer – initial design, user testing (paper mockups) Graphic designer – initial designs for approval Programmer Users (for user testing) – three to five volunteers | 15 hours 20 hours 20 hours 2 hours each (volunteer) | yes | yes yes yes |
| Content Development: Creating or gathering the digital assets Biology faculty #1 – writing text to go on screens, content correction Biology faculty #2 – writing text for screens, content correction Media specialist (for scanning, etc) Graphic designer – create web-ready graphics | 20 hours 20 hours 5 hours 10 hours | yes yes | yes yes |
| Software Development: Creating the actual learning object Programmer Graphic designer – tweaking graphics, creating extra ones, etc. Interface designer – tweaking design, addressing issues as they come up, etc. Usability expert – for usability assessment during development Software for programmer | 40 hours 5 hours 5 hours 15 hours \$99 | | yes yes yes yes yes |
| Assessment: Developing related learner assessment activities Biology faculty #1 – writing assignments & quizzes Biology faculty #2 – writing assignments & quizzes | 10 hours 15 hours | yes yes | |
| Hosting/Delivery: Making your learning object available to learners Web server Administrator for web server Programmer – for any issues that come up with getting it "live" Usability expert – for usability assessment after release | \$40/month to campus (included in server cost) 10 hours 10 hours | yes yes | yes yes |
| Other: | | | |

Potential Contacts & Resources. List people or other resources, potential collaborators, etc.

Biology faculty who might help: Bob Jones, Susan Nelson, ...

Activity Planning Worksheet

Project Name EvolveIT

Educational Objective State your educational objective here.

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Activity List

Using your lists from "Planning Your Learning Object" (page 1) as a starting point, describe the activities you would like to build into your learning object. Note any special features or characteristics of the activities and briefly list the resources you will need to create each activity (content/assets, authoring tool functions, specialized developers, etc.).

| √ | Activity Description | Notes | Resources Needed |
|---|---|--|--|
| | students can set certain parameters and specify a length of time to "observe" their finch populations | allows students to control the outcome | data on finch populations/changes over time – for simulation engine |
| | students can set up two islands at once to compare different settings | encourages critical thinking/comparisons | images for each parameter (beak size, clutch size, etc.) |
| | after viewing results, students can elect to change one or more params while leaving the rest alone & rerun the simulation | helps students link results to input parameters | this is a programming detail |
| | students could be given starting conditions and asked to report the results | could be a writing exercise | a way to input specific params & a way to save/print/export results/graphs |
| | students could be given ending conditions and asked to derive the starting conditions that would bring them about | uses reasoning skills | nothing new |
| | students could record the results of several runs, along with parameter settings, in a "lab notebook" that could be exported, printed, and handed in as an assignment | uses writing skills; supports research practices | lab notebook design & programming |
| | students could view several different types of graphs showing different aspects of the results | helps students realize how many factors are involved | graph designs |
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Mapping Worksheet

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Conceptual Map

Using the box below to represent the first screen or step of your learning object, draw a map showing the relationships of the different concepts, areas, screens, or activities you plan to offer. Show the paths that connect the activities or areas to one another. Don't forget to include standard areas like help and a system map.

