

The Reinvention of Study Island

Project topic and purpose:

Reinvention of Study Island, an online program designed to help K-12 students master common core concepts and thus help improve standardized test scores.

Importance:

Look up the exact phrase “I hate Study Island” and you’ll get close to 100,000 entries. Besides being needlessly boring, I believe several key underlying instructional elements of the site are flawed and intrinsically demotivating. And while [Study Island](#) does attempt to incorporate gamification elements, they are ill-conceived and embody some of the worst stereotypes associated with edutainment.

Project Goals:

The desired learner outcomes I am seeking to create is higher levels of engagement, increased intrinsic motivation and decreased time investment with maintained or increased learner effectiveness (as reflected in test scores). And a heck of lot less kids saying, “I hate Study Island!”

Situational Analysis:

It would be impossible to create an effective plan for re-designing Study Island without analyzing its current incarnation. Study Island represents a school district deployed service that sits behind password-protected walls. As such, for me to develop an understanding of how Study Island works, I scheduled an hour with my girlfriend’s daughter to get a complete demo of the site and discuss her (and her friends’)

experiences. In addition, I had the opportunity (via a screen share and live audio chat session) to witness first-hand her interactions with Study Island relative to an assigned math homework module.

Based on this interaction, key elements of the service are summarized below, along with identification of perceived issues. To help illustrate these elements, select screenshots from the Study Island site have been utilized. All visuals are property of Study Island and utilized here only for educational analysis purposes.

Components of a typical module
(note: example here is about multiple meaning words):

- A short **written lesson**
- Two **sample questions**
- A 3 minute scenario based **animated video lesson**
(in the example, the cashier has requested a water carrying pitcher and has been presented with a baseball throwing pitcher)
- Two **practice questions**
 - Not graded

Multiple Meaning Words

Sometimes words are **spelled alike** but have **different meanings**. Knowing about different types of words and their definitions is very important to reading and writing.

Multiple meaning words can be tricky. Use context clues and think carefully about the sentence's message to figure out which meaning is being used. Below are some examples of words with multiple meanings:

- **Concrete** can mean "real" or "a hard and strong building material."
- **Staple** can mean "a metal loop to fasten together material" or "a resource that is in high demand."
- **Foil** can mean "to prevent the success of someone or something" or "a very thin sheet of metal."

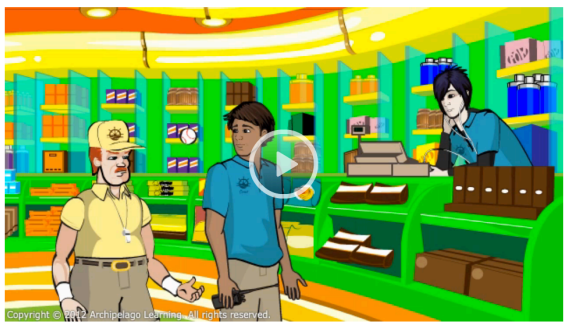
Sample Questions

The water created a **groove** on the hill as it traveled downward.

What is the meaning of the bold word in the sentence above?

- A. a long narrow channel
- B. a fixed routine
- C. a track on a music record
- D. an enjoyable experience

Explanation: The word "groove" has many meanings. All of the answer choices are definitions of the word. However, in this sentence, "groove" means "a long narrow channel." The correct answer is A. The reader can tell that this definition



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When Sheila saw how expensive her electricity bill was, she wondered if the **meter** had been read correctly.

In this sentence, the word **meter** means...

a measured rhythm pattern

a person who measures

a unit of length in the metric system

an instrument used for measuring

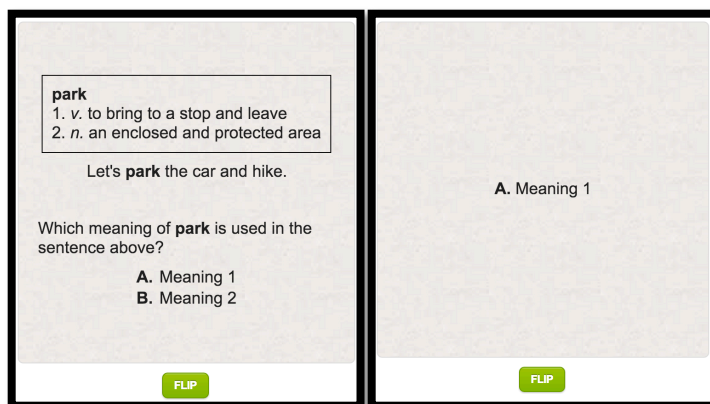
You got it right! In this sentence, meter means an instrument used for measuring, in this case measuring electricity! Well done.

That's not it. Think about how the word **ace** is used in each sentence and try again.

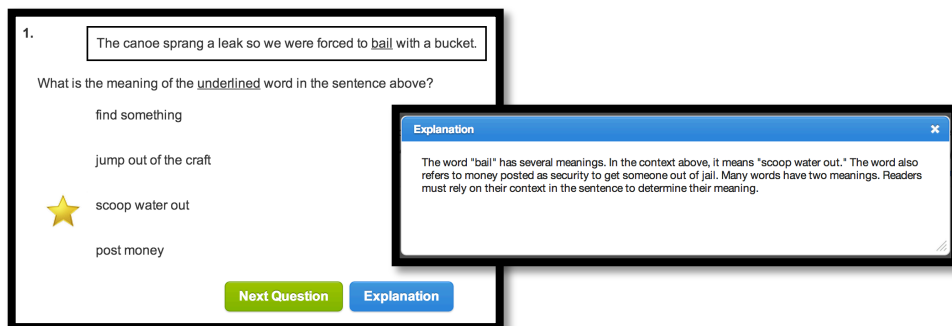
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Click or Tap to Continue

- **Flashcards** (interactive or printable)



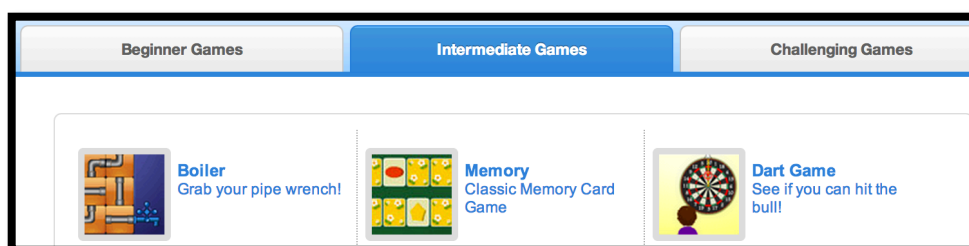
- **Assignment** (gradable multiple choice questions to be complete on own)
 - Explanations are available after one answers the question



- One must answer 10+ questions and achieve a passing goal % (that is dictated by last year's PSSA scores) to earn a blue ribbon.

<input type="checkbox"/>	Topic	Your Results Items:Score	Passing Goal Items:Score
<input type="checkbox"/>	1. 🏆 Headings - Lesson	13 : 92.3%	10 : 90%
<input type="checkbox"/>	2. ⚠️ Graphics and Charts - Lesson	25 : 68%	10 : 90%

- There is also an assignment **game mode**. One first selects a game...



- One is then asked a multiple-choice question much like above, but answer choices are themed to the selected game (soccer here).
 - An incorrect answer is factored into the assignment score. A correct answer is not. It does move player into game mode.
 - Game is unrelated to subject lesson matter. In example below, one shoots goals against a goalie.



- **Multi-module test** (to be executed in-class)
 - 20 question multiple-choice format much like assignment area, but test is only scored when all questions are completed.

Teaching/learning strategies:

I am accepting the basic multiple-choice structure of Study Island as a given as well as the specific nature of the questions being asked. The focus of my improvement and gamification efforts is in the following areas: game modes, motivational strategies, thematic overlays, personalization and scoring, rewards and badging.

Improvement Gamification Plan for Study Island

Core Problem: Game mode is not integrated into learning task

In the example shown, soccer is merely a thematic overlay that has inherently nothing to do with the particular module being taught (multiple word meanings). As such the game is borrowed interest and thus represents a purely external form of motivation.

The subtext of the Study Island game mode is this: “If I get this answer right, I can do what I really want to do. Play games.”

Furthermore, the game play is actually counterproductive to the learning. Each correct answer places the learner in game mode and the game takes a lot longer to play than answering the trigger question. This is prime example of edutainment that is primarily entertainment.

Proposed Game Mode Improvement

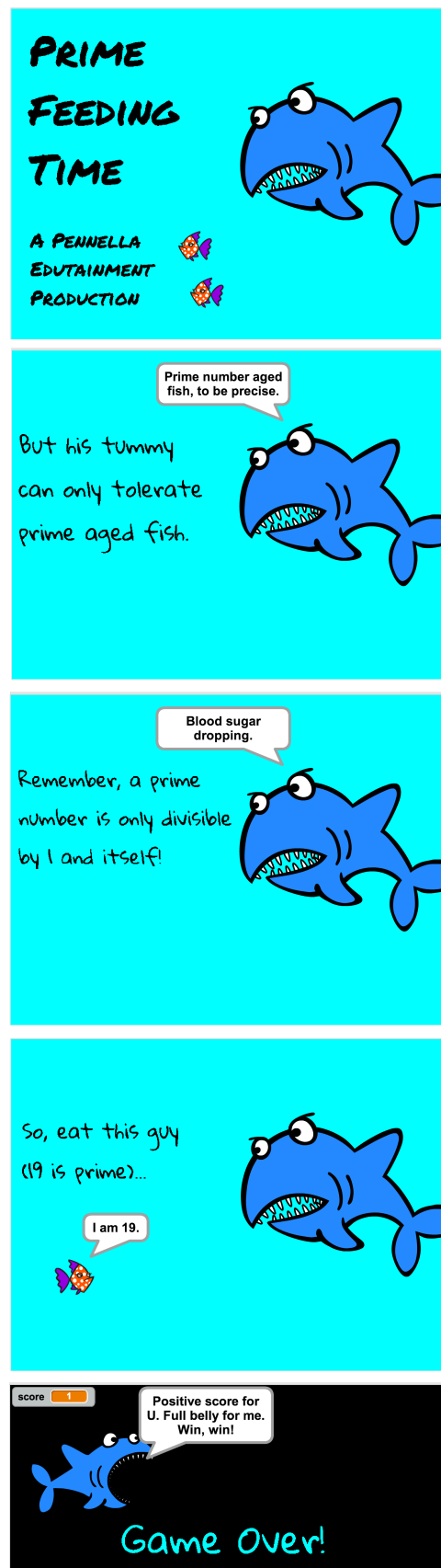
First of all, Study Island needs to immediately jettison all these “party” games and replace them with games where the key module concepts are integrated into the game play, in much the same way the animated video scenarios do. An example will illustrate. Right now, if there was a Study Island module on prime numbers, the game mode might look something like this: after selecting a shark themed game, I answer questions about prime numbers where the multiple choice answers are portrayed as different color fish. I get the answer right and I start playing a game where my shark swallows as many fish as possible in sixty seconds. Then back to more questions to earn more game time.

What instead needs to happen is that when students enter into game mode, they are presented with a game like *Prime Feeding Time*.

[*Prime Feeding Time*](#) is a game I have developed in Scratch for 4th/5th graders. In this game, one is introduced to a shark with a sensitive stomach named Delmar. Learners score points by eating prime numbered fish and avoiding non-primes. Success in the game is integrally related to the understanding of what is a prime number.

Unlike the “party game” version of the shark game, this one has the ability to create intrinsic motivation. The game attracts *attention* by creating perceptual arousal via humor, attractive design and color. The game is *relevant* because it relates directly to the subject of prime numbers. It builds learner *confidence* in the ability to answer prime number related questions and provides *satisfaction* in that the game can be successfully won if the right fish are swallowed.

As the game mode is now constituted on Study



Island, there is an active disincentive to play the games. As a learner, why would I want to play a game if answering trigger questions could endanger my overall assignment grade? Case in point, I get 9 out of 10 assignment questions and meet my 90% goal. Great. So now I go over to the game mode, get the trigger question wrong and realize I now have to go back to the assignment area and answer another 9 questions in a row to get back up to 90% (18/20). No thanks.

Changing the scoring/grading system

To further both the relevance and satisfaction of the game mode in Study Island I would make sure gameplay results contribute to overall assignment grades, as much as 50%. This communicates that the game is a legitimate instructional activity and not merely a “play time” reward. Furthermore, I would not make the game optional because ultimately learners will benefit the most from being exposed to two different instructional approaches (game and multiple choice).

To enable game play to influence assignment grades, the scoring system of the Prime Feeding Time might need to be altered to express a percentage score (e.g., you made the correct prime/not-prime decision on 18 out of 20 fish (90%)). This would allow test scores to be easily combined with the multiple-choice question scores.

Another structural change I would make is that both game and multiple-choice performance should be driven by latest performance and not overall performance. Can you imagine a video game where the leaderboard is based on average performance?

Gamers would revolt, as you're essentially penalizing them for the learning phase. But this is exactly what happens with Study Island.

For example, if I get only 1 out of the first 6 questions correct (as might reasonably occur when one is still trying to understand the concept in question), I will need to reel off 44 correct answers in a row to achieve "A" level competency. My girlfriend's daughter almost burst into tears when informed of this. This needs to change.

Relative to gaming, depending on how long the actual game is, your score should be based on your last 2 or 3 efforts. For multiple-choice questions, if you can achieve 90% in your latest run of 20 questions or get 10 questions in a row, this should constitute "A" level competency regardless of how many you missed when you first began.

Setting performance targets within Study Island

A brief aside with regard to that 90% Study Island assignment performance target. As mentioned earlier, this target level is set based on your previous test year performance in this subject area. So, if you tested at an advanced level you might have this 90% target. But someone who scored at a proficient, basic or below basic level would have much lower targets. This strikes me as a self-fulfilling prophecy. You did poorly on the standardized testing, so our official expectations moving forward for you are equally low. Again, can you imagine if there was a video game leadership board that was based on a curve: "Mike, your high score was only 1000, but based on your historic performance that's more than what we expected of you, so your 1000 is actually better than Kris' 1400 score." Absurd.

The current Study Island goal/standard setting process is driven by a belief that only marginal educational or testing improvement is possible. And I'm sure it delivers just that. Especially with a subject like math that builds upon itself, we don't need lower expectations. What we need is to go back to where the conceptual understanding has broken down and start from there.

Practice games and question answering

An idea that I admittedly sourced from my focus group of one is to have the option to practice the game before playing it for real (i.e., having it count towards one's grade). I believe this should be incorporated into Study Island relative to the multiple-choice questions as well. One needs to closely recreate the gradable scenario as much as possible in a non-stressful practice environment. Otherwise, we are just upping the stress quotient on test taking.

Leaderboards

On the topic of leaderboards, further Study Island reform is needed. The current site posts high score by school for the "party" games that have no relationship to the learning modules. Talk about rewarding and incentivizing the wrong things! I am not sure this is an appropriate setting to employ leaderboards. My earlier comments aside about the standard/goal setting process, I do believe in an academic environment, leaderboards can be demotivating. The math video game that I analyzed earlier in the semester, [Refraction](#), did not employ leaderboards. And I suspect it was for just these reasons.

But at the same time, competition is a big motivator. My compromise would be that relative to the practice version (which would not contribute to your grade) of my Prime Feeding Time game, I would let people compete on time. The game allows for the possibility of accelerating your shark through the course with the forward arrow button. This creates a new type of challenge that would contribute to game replay value.

Social Components

I think even the name Study Island is problematic. The idea of an island, especially the island suggested by their current logo, invokes feelings of isolation and being stranded. We are not talking Club Med here.



The whole concept runs counter to the established importance of social interaction in successful learning. Yes, I understand that standardized test taking is an individual activity, but the practice and learning leading up to testing doesn't have to be. In the practice modes advocated above, I believe there should be the ability to share a screen with a friend along with a chat capability of some sort. Either learner/player would have the ability to invoke a pause and have "Wait, why was the answer that?" kind of dialogue. I think this would go a long way in reducing stress as well and help foster mentoring and tutoring abilities and practices.

Now, granted, this might require a more sophisticated game development environment than Scratch. But if one could stay within the Scratch environment, I think there would

be a wonderful opportunity to actually source Scratch games from the learners themselves. Certainly, a wonderful way to learn about a subject is to develop a game.

Escape from Study Island – the tip of the iceberg!

The reality is that the reformation of Study Island could support a much longer paper than this assignment dictates (or current time allows). For example, I think there is a wonderful opportunity to infuse multiple-choice assignments with thematic overlays that would make the experience fun. For example, imagine an “Escape from Study Island” overlay. With each multiple question you get right, you earn an additional item. And then after ten questions, those items assemble automatically into an innovative way to get off Study Island. One time it builds a raft and you sail away. The next time you build a lighthouse and signal for help. Another time you earn turtle after turtle and then walk across their backs to the mainland. The possibilities are endless for injecting a little levity into the process and again, learners could contribute ideas. Learners would be motivated to get the right answers and find out what the next interesting way off the island would be.

Another idea would be to personalize questions based on anonymous profiles of things you like to do, places you’d like to visit, favorite books or movies, etc. This would allow for the construction of questions that would be authentic not to a general age group but to a learner in particular. So your question asks how long you were playing soccer if you started at X o’clock and stopped at Y, and my version talks about bird watching.

Finally, I believe one could cross a [fun badging system from a game like Ruzzle](#) with a concept like Study Island. Khan Academy already has.

In many ways, I think Khan Academy shows how this whole online tutoring/test taking industry can be taken to a higher level (though I think the fun quotient can be upped even further). Will Study Island step up its game (and it's games!)? Or will competitors with superior instructional thinking and superior creativity rescue the next generation of K-12 learners from Study Island? All I know is that learners definitely deserve better.