Credit-Meter Assisted Learning

A parenting tool which stimulates free software development

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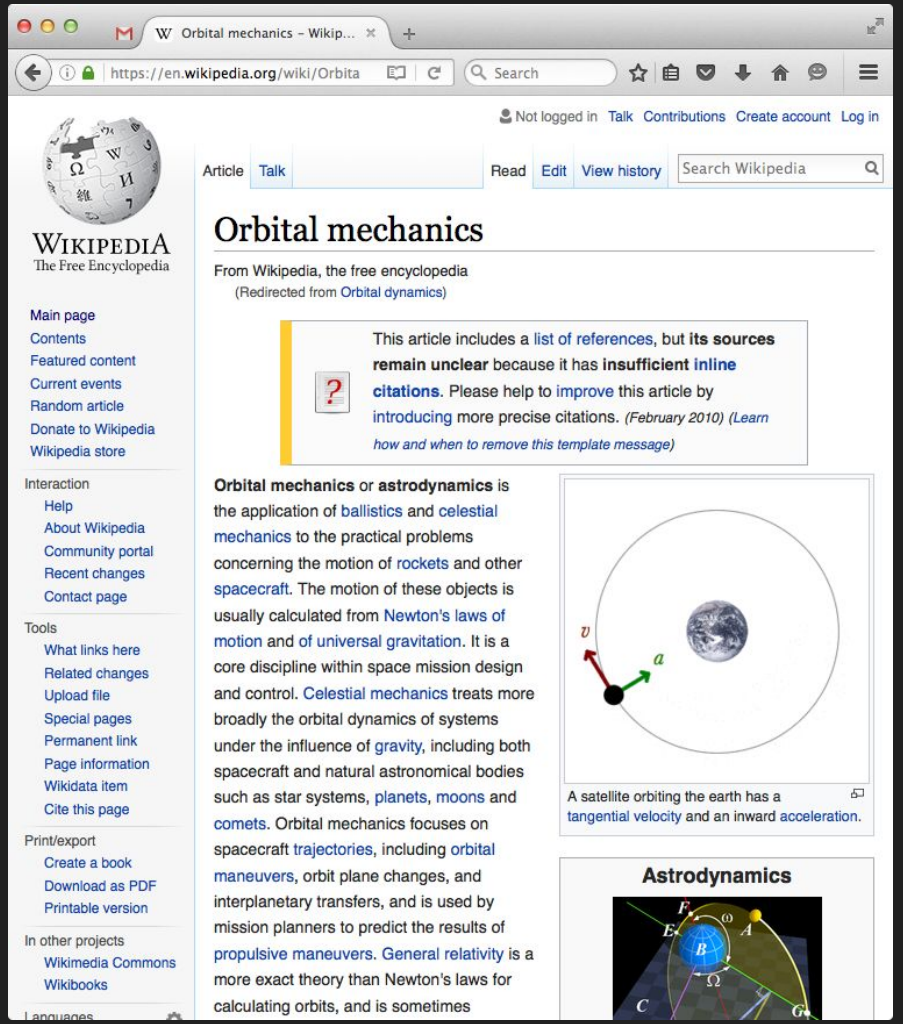
The scenario:

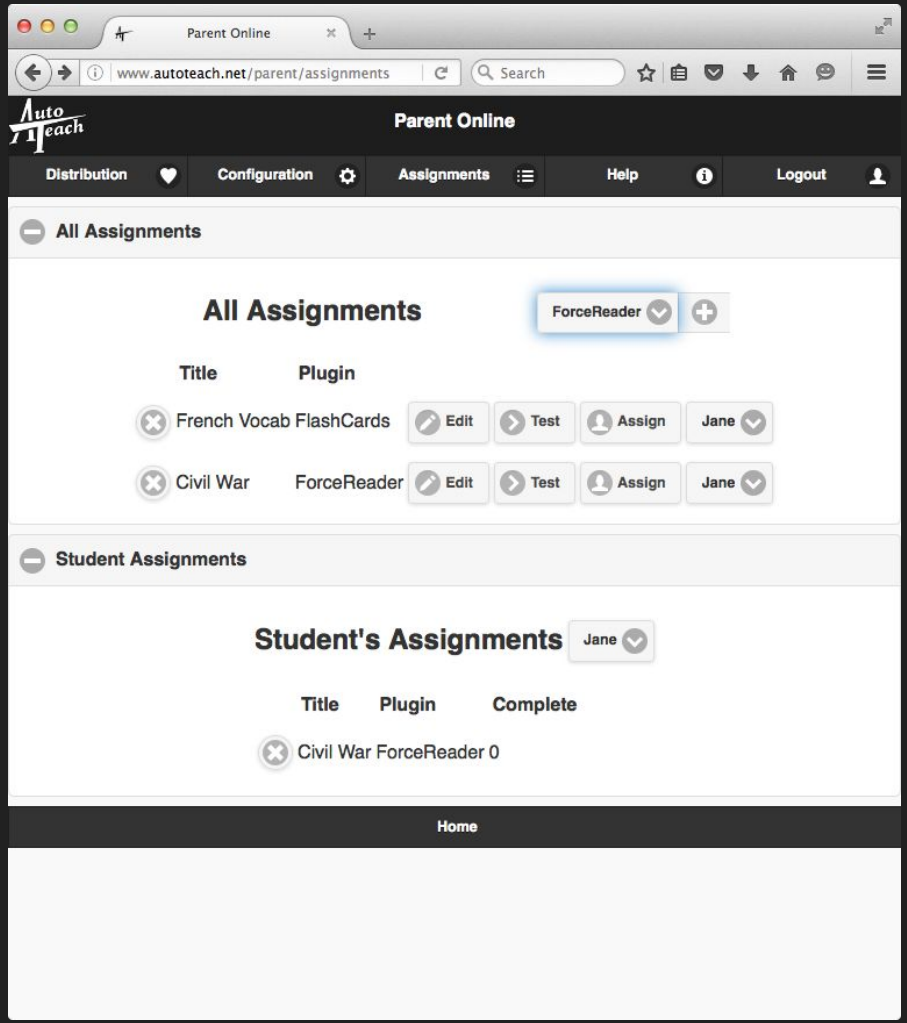
You are stuck at the office until 5pm and your daughter, Jane, is at home. You want Jane to do something constructive before surfing the web or playing video games. Let's say you want to ensure that she reads this article on Orbital Mechanics ...



Blank assignment

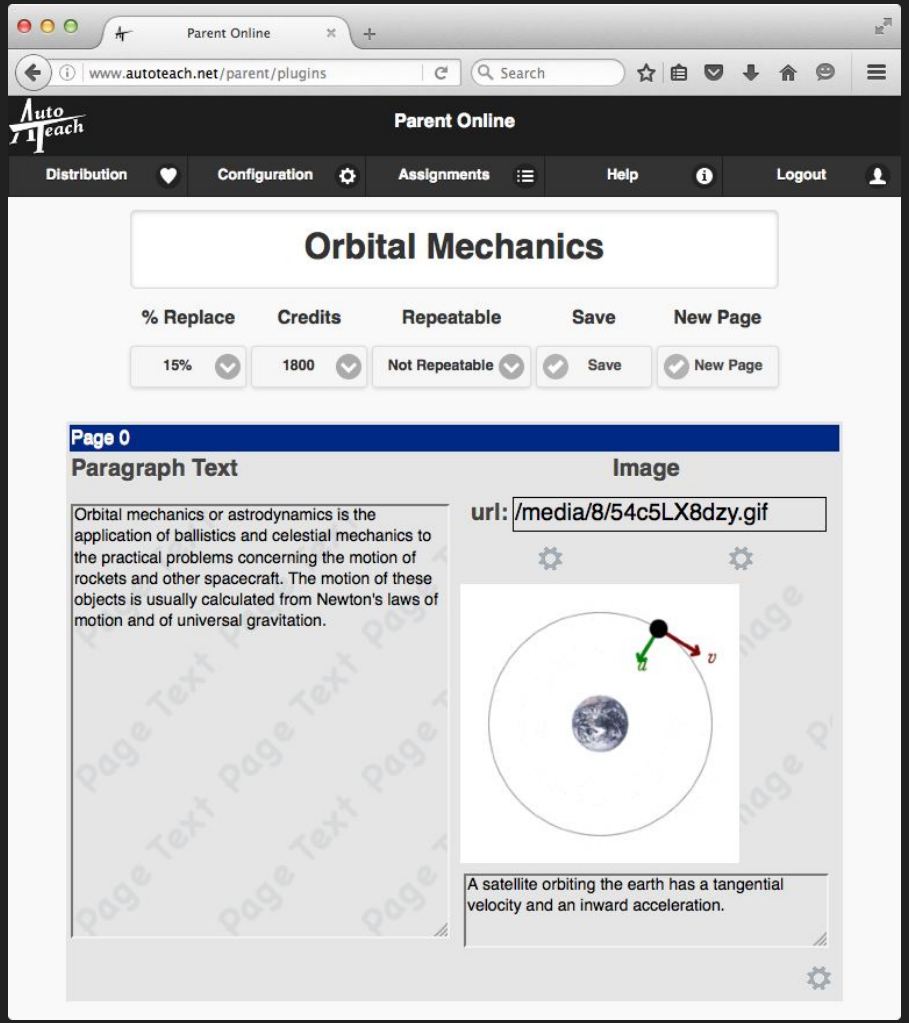
From the comfort of your office, use the assignment dashboard to select the plugin for the type of assignment you wish to create. For the current scenario you choose the “Force Reader” [1] plugin and click the + icon to create an empty assignment. The blank assignment will appear in the “All Assignments” section. Click “Edit” to open the plugin’s configuration interface …

[1] The name Force Reader was a joke in our house of Star Wars fans which referred to the way Darth Vader “Force choked” his subordinate in the 1st movie.



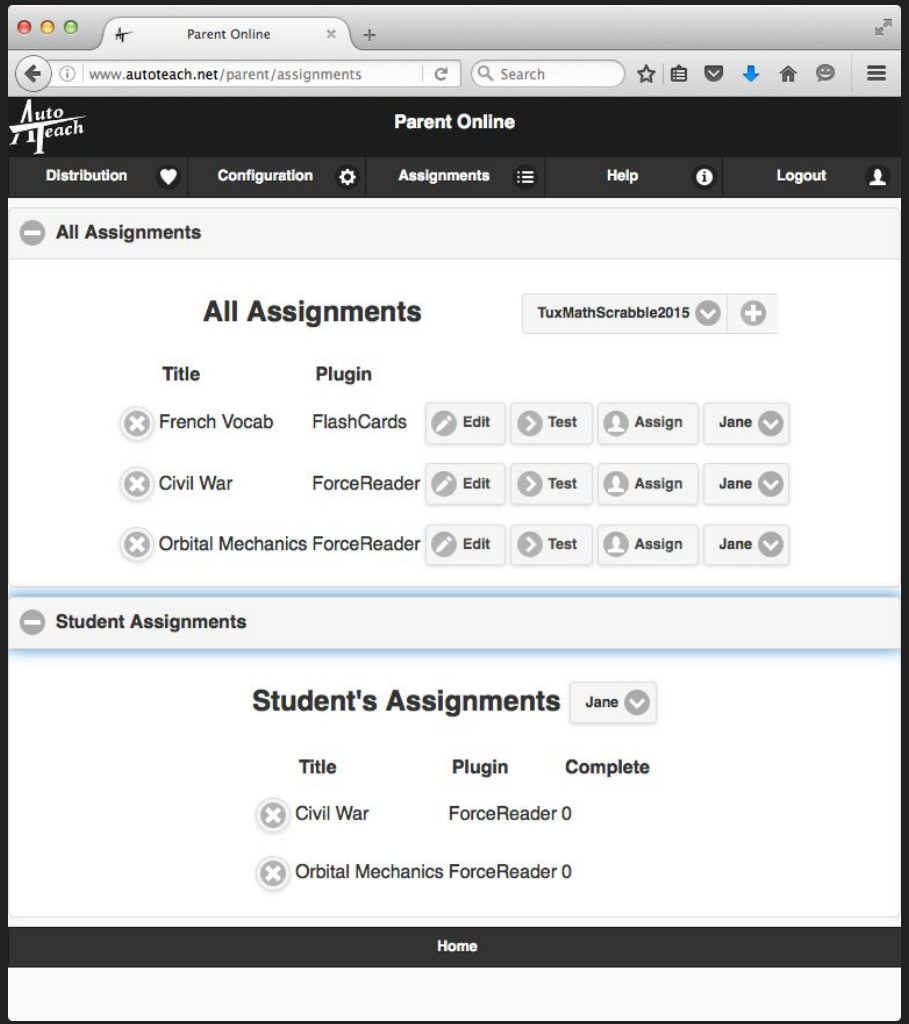
Paste content

We'll just make a one-page assignment to illustrate the procedure. Click "Save" and return to your dashboard ...



Add to queue

Now just click “Assign” and your new assignment will appear in Jane’s queue. Your work is done! What took you 5 minutes to create will keep Jane busy for considerably longer …

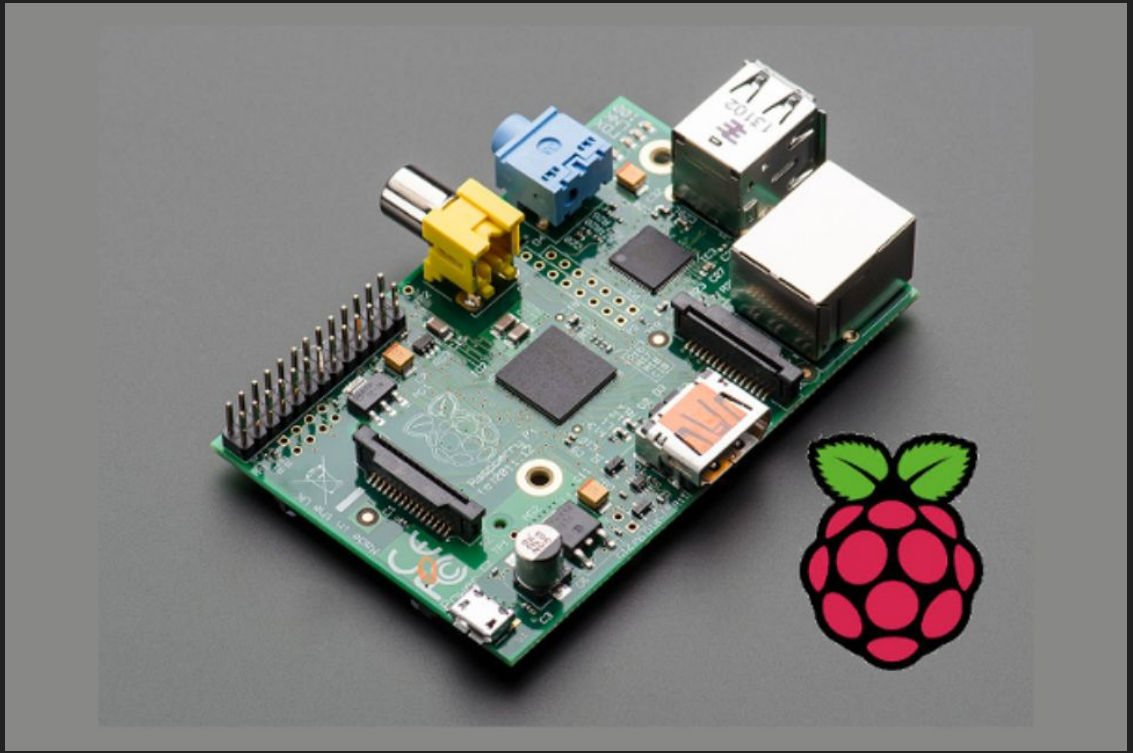


Back at the house

Back at the house Jane is required to access the internet through a special device configured as a Wifi HotSpot.

The device is called a Raspberry-Pi and costs roughly $50. It is slightly larger than a credit-card and can be purchased from many vendors.

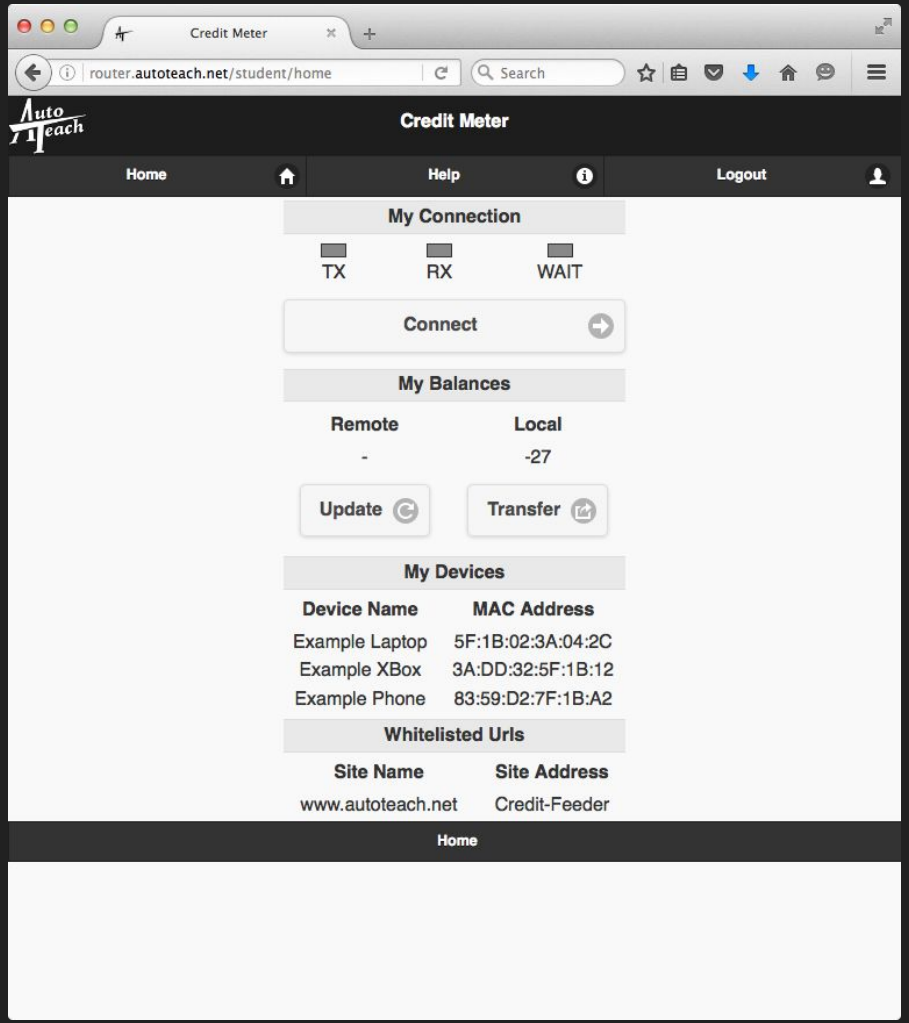
You can also buy a nice case for it!



The credit-meter

In addition to being a Wifi HotSpot, the Raspberry-Pi runs a firewall and this credit-meter website.

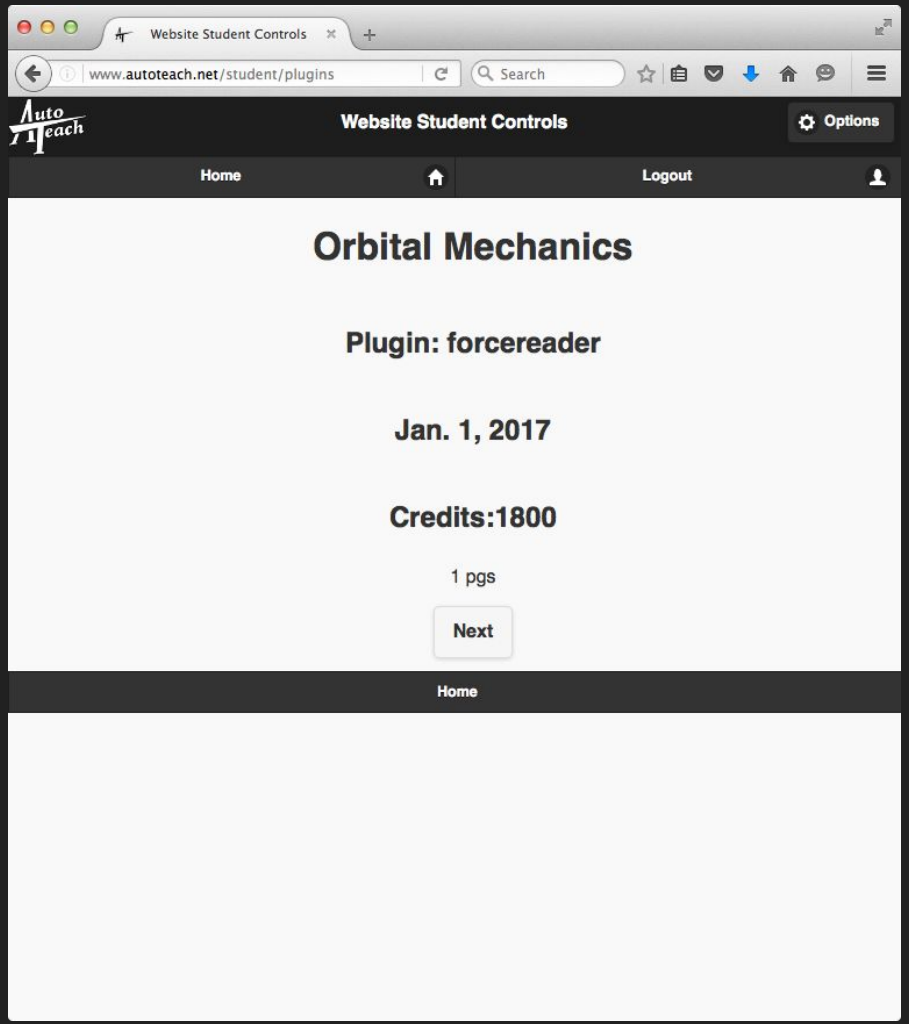
Jane must earn credits from the white-listed credit-feeder website, transfer those credits back home to the credit-meter, then run the credit-meter to open the firewall to her list of devices.



Jane visits website

When Jane clicks the assignment in her queue she is presented with a title page telling her how many credits she will earn upon completion.

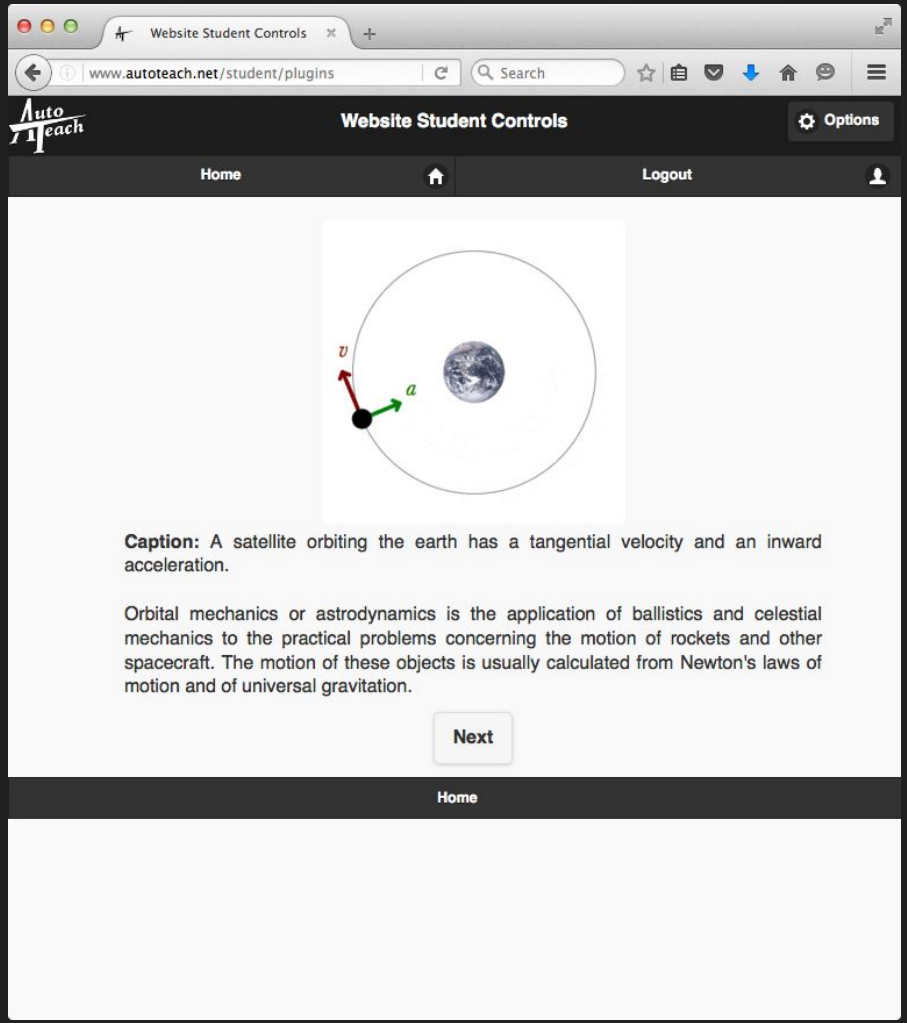
In this case 1800 credits, where each credit is one second of access, thus 1800 credits = 30 minutes.



Paragraph intact

In the next screen Jane is presented with the formatted content you created earlier.

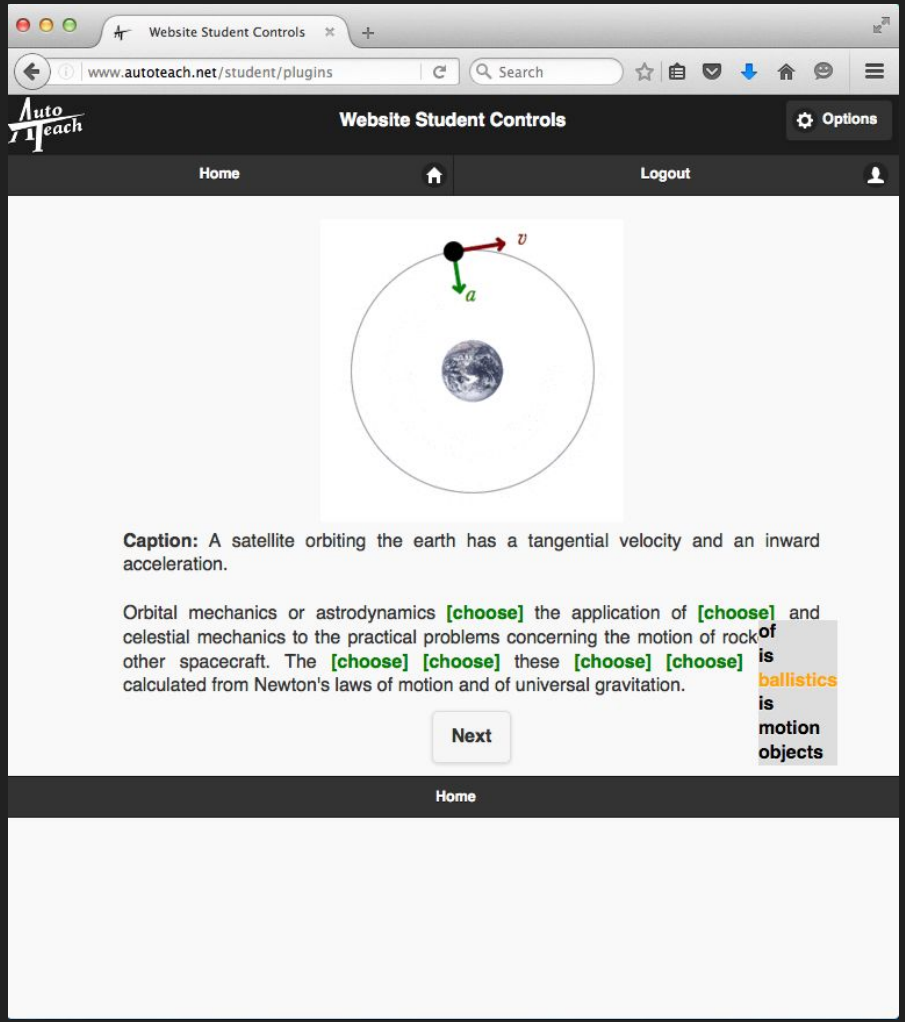
In this particular activity each page is displayed twice, first with the complete text, then with a configurable percentage of words replaced by choices so that she can reconstruct the paragraph and thus demonstrate that she read carefully.



Paragraph reconstruction

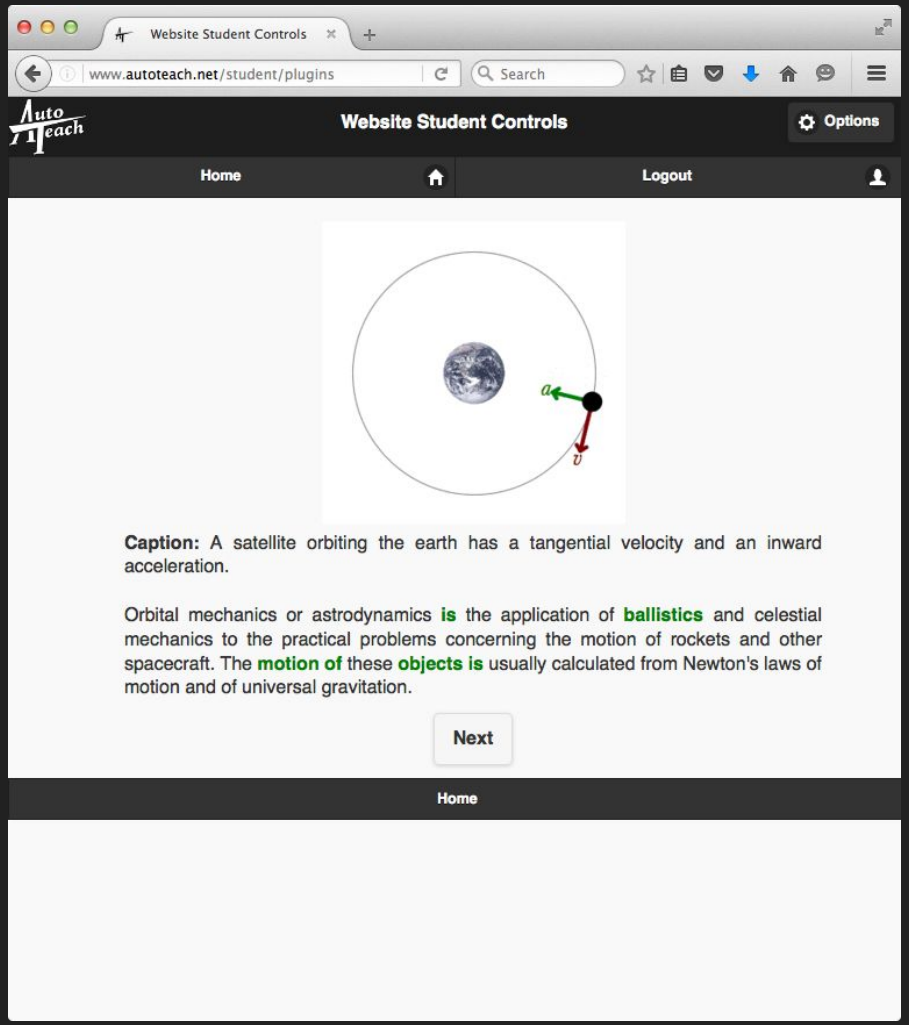
In this prototype activity the default setting is to replace 15% of the words with choices.

She can repeat as much as necessary but each time a different set of words will be replaced.



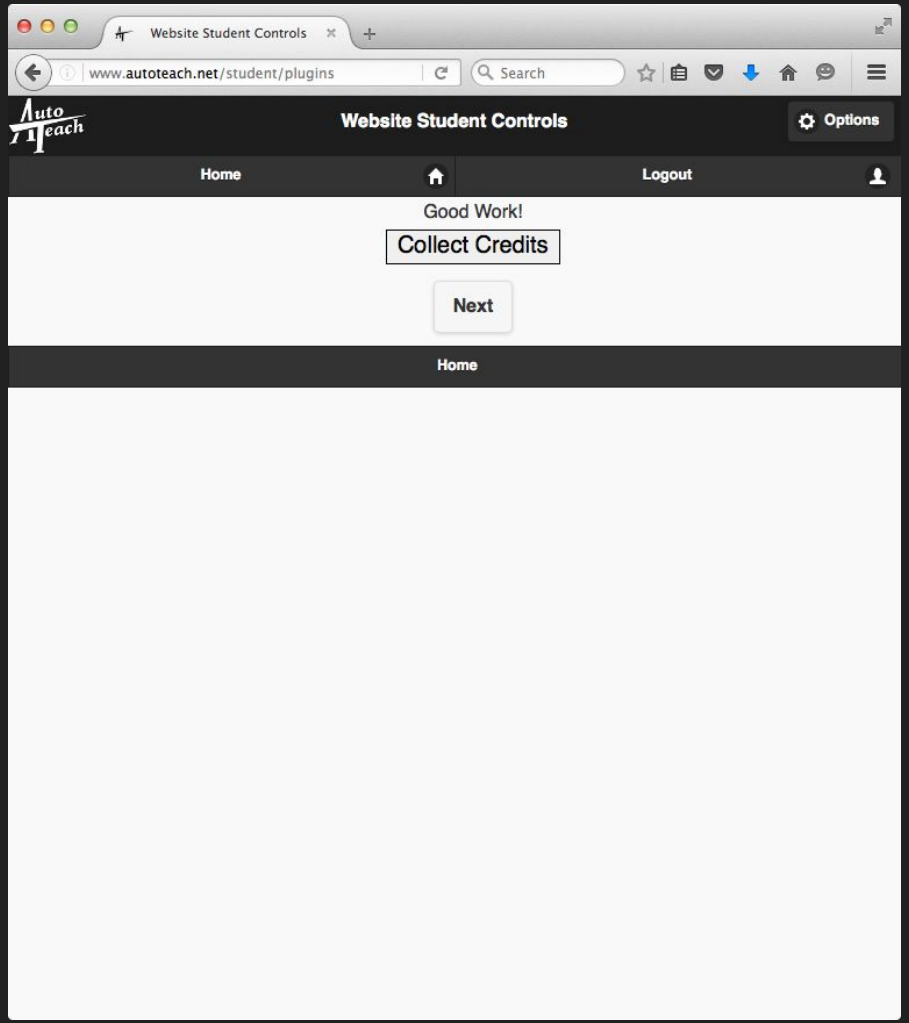
Read to check

Once she has finished the page is ready to check.



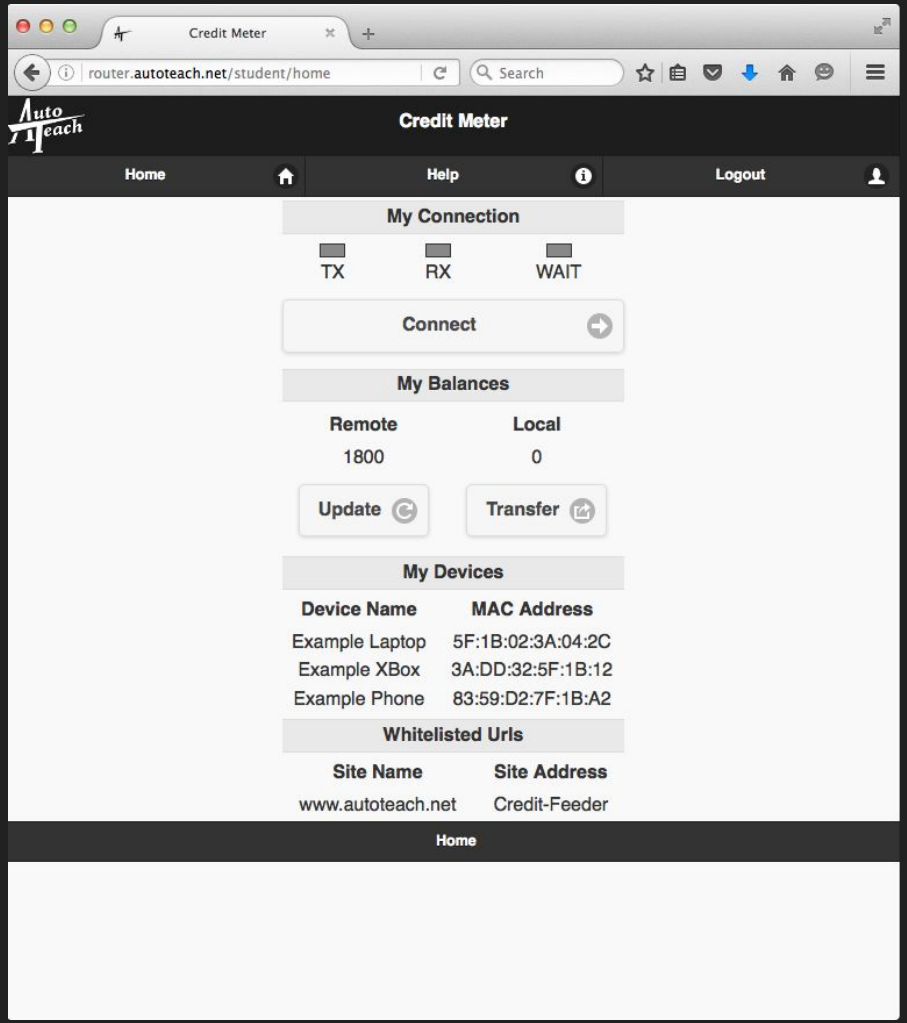
Collect credits

By pushing the “Collect Credits” button she will be returned to her online dashboard where she will see the credits which she has just earned.



Credit transfer

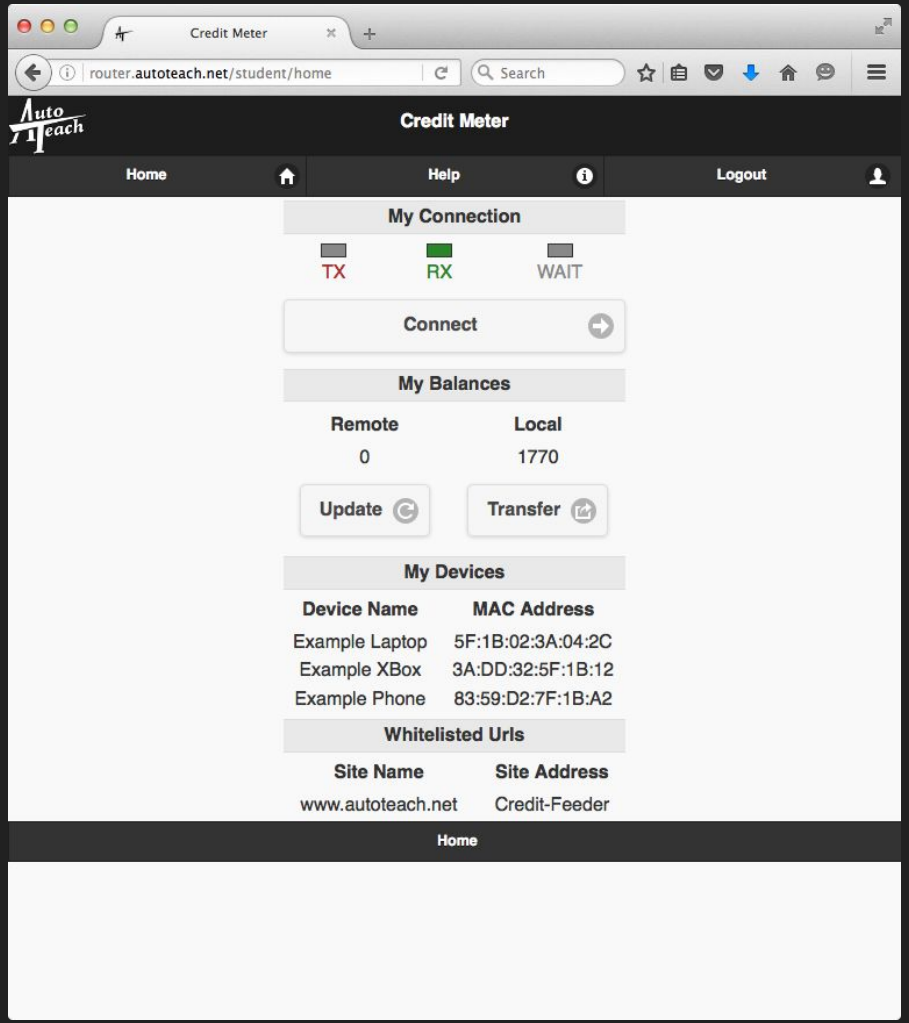
Using the credit-meter interface being served by the Raspberry-Pi device at home she can check her remote balance and transfer the credits from the online account to the credit-meter.



Access granted!

Clicking the “Connect” button starts the credit meter and opens the firewall to her list of devices.

After 30 min (= 1800 sec) her credits will be finished and she will need to return to the white-listed credit-feeder website to (L)earn some more.



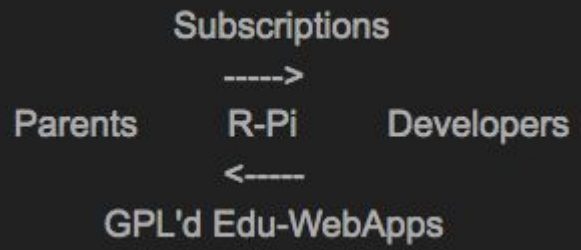
A brief history

The evolution of this project was driven by necessity. As a parent I found it difficult to watch my children waste all their time on video games when they lacked so much knowledge about the world. As a physicist and software developer I took it as my personal challenge to explore new ways of teaching them using technology. Many people were advocating the use of games, so I tried my hand at that and created one called TuxMathScrabble, followed by several others. With the advent of browser technology I began focusing on web-based activities, and created an early version of the paragraph-reconstruction activity featured in this presentation. But there was always the problem of getting them to work carefully, to focus and to think. Direct supervision takes a lot of time and frequently results in drama! That's when the credit-meter was conceived. The credit-meter, known as the NetDispenser at the time, solved all problems by taking me out of the picture. The only thing I had to hear was my children asking for more work in order to earn more credits. Eureka!

Project potential

The most important point about this project is that any activity can be substituted behind the credit-meter and the child will be motivated to make an effort just the same. This is something new, and it has the potential to accommodate a wide-range of new software for education. To reach its full potential the project should attract activity contributions from the largest number of developers possible. And this, in turn, requires complete openness and transparency with no gimmicks or lock-in, while providing some form of incentive at the same time. There is a simple way to achieve this …

Ecosystem concept



Charging parents a subscription in order to compensate developers would result in value flowing in two directions: money from parent to developer, and applications from developer to parent. Let the money be handled by a trustworthy foundation, and let each parent distribute their own subscription fee among developers as they see fit. Require each activity to run independently of the platform and to be licensed as free software. The result is a transparent and healthy new market for free education software.

Conclusion:

This plan offers an opportunity to begin a new chapter in free education software development by providing incentive, an organized community, a user base, a market and an increased likelihood of developer satisfaction, at the same time as focusing positive attention on the Free Software Foundation.

There is plenty of room for new innovations in education software, and there are plenty of creative people who might be interested if there was an active community and some incentive beyond altruism. The tools are there, the ideas are there, the developers are there, but without an organized community, without strength in numbers, those ideas will wither and die.

Consider all of the people learning to program at this very moment. This platform could give them a meaningful context in which to develop their programming skills, complete with the possibility of being rewarded for their efforts. Doesn't that sound better than the same old exercises?

Charles B. Cossé

Appendix 1: PyCon 2017 Edu Summit Abstract

Edu-FLOSS has the potential to change the world one application at a time. Free education software can reach untold numbers of children and empower them for the future. The fact that so much potential for Edu-FLOSS continues to go un-realized suggests that current motivations, i.e. personal satisfaction, are insufficient to stimulate large-scale Edu-FLOSS development. This talk provides an overview of a Django-powered eco-system to stimulate Edu-FLOSS development.

Appendix 2: PyCon 2017 Poster Abstract

Requiring kids to earn their internet access from a self-serve education platform can serve as an effective means to supplement their education and develop a host of other life-skills, such as time management, accountability and attention to detail. The desire for credits serves as a single point of motivation which can be harnessed to teach any subject matter through well-designed activities. Enabling parents to control distribution of a subscription fee to activity developers of their choice keeps the user and developer communities connected with value flowing in both directions. Requiring FLOSS licensing and usability outside of this Django-powered credit-earning platform stimulates development of Edu-FLOSS software which thereby empowers children everywhere.