Open source learning system, where it is the students creating the code and content

As computers were created for the purpose of computing things, why are we not teaching computation (aka math) using code? Why is [LaTeX](https://en.wikipedia.org/wiki/LaTeX) so difficult to translate into code? Why are textbooks often in static file formats that cannot be easily copied, searched, and adapted? The rationale behind using code as a method of teaching other subjects comes from the fact that you can't leave things out when you are writing a function, all variables need to be accounted for. So, as long as these variables, functions, and classes are also well documented, and all the source code is available, you can go from the fundamental definitions to complex topics and see how the cascade of events leads to the end results. It is really hard to do that using a printed book or PDF. You also have a much easier way to check your work, and it is much easier for a professor to evaluate code (just run it) than paper based assignments or

# Way I am thinking this would work:

1. See if there is already a something that explains the topic in a clear way
   1. If there is already a clear implementation of the idea in this application, great, just look it over and hopefully the problem is solved
   2. If there is a clear description elsewhere on the web, implement that function and ensure it is clearly documented
2. If there is not and you are struggling to understand how to implement an example, think whether the topic can be broken down. Examples:

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1. Once you understand the topic, write a function/set of functions that illustrates how the topic works
   1. The purpose should be readability, even if there are ways of writing the function that are more computationally efficient.
   2. Complex topics must be built on simpler functions (i.e., basic algebra, +,-,\*,/) and not use shortcuts (ex. sympy.diff(…) )
2. After the function is written, have a QA/UX/Peer Review feature where people validate other people's code for both errors and understandability
3. Then the function is added to the list of examples and we move on to something else

Eventually, the hope is to create a complete searchable list of examples of all math/science/engineering formulas that will only grow as more and more students learn using this method.

For funding, I am looking for other students to submit a plan for a small grant application about inclusive learning: <https://www.umass.edu/diversity/oei-engagement-fund>

Also, Berthiaume Center For Entrepreneurship <https://www.umass.edu/entrepreneurship/> may be a good place to start.