

Proposal for Educational Software Development Sites

An open source tool to create the learning software we need

By Marc Prensky

DRAFT I

[2833 words]

“If you don’t make it yourself, it’s not fun”.

– Stu Bonn

I am writing here about a Big Idea. The Big Idea is that the educational software we use (all of it – games, non-games and anything else, at all levels, pre-school to adult), should be created by the “world mind,” should not belong to any of us, and should be available, for free, to anybody, anywhere, who wants to use it. I know this is possible, and I believe it will lead to things being far, far better than what we have today. I also believe it can be done at very moderate cost and at no harm (except perhaps to those now selling educational software for exorbitant prices.)

In a nutshell, the idea is this: universities, colleges, teachers colleges, and other schools around the world each pick a subject and level. For example, I know one school that wants to do Psychology 101. This is a fairly broad topic, as is 3rd grade math, or calculus, or nanotechnology or bioethics. So in some cases the topics could be something narrower, like photosynthesis, or fractions, or second order differential equations. If there are not enough colleges worldwide to cover all the topics we need, we could then let the best executors do multiples.

The school that picks each particular topic (we can hold lotteries, if necessary) becomes the “home” for all educational software developed in that field – by everyone in the world working together. All development and serving would be done by software on their own systems (when this gets big, they may need grants). But starting relatively small, with some simple, open-source internet-based software initially created for the project (not much more, probably, than internet-based frameworks, tags and extensions useful to learning and gaming), each school would post its own material.

The absolute requirement, however, would be that everything every school does be open, in at least 3 ways:

1. They will required to constantly comb the world for good things that are out there and add them to their system, organizing them in useful ways for learning and teaching.
2. Their software (and organization) will all be Wiki*, (or some variation) so that anybody can add to it. All teachers and students around the world in the subject would be encouraged to do so. (With Wiki it is easy to keep the good stuff and screen out the bad stuff, and more tools would be developed over time to make this easier.)

* A Wiki site is a web site that all can access with administrative rights and therefore change. A good example of wiki in use is the Wikipedia, a free encyclopedia written by people on the internet, at <http://en.wikipedia.org/>. For more, see "Digital Immigrants Remedial Vocabulary" at www.marcprensky.com/writing/default.asp.

3. Anything good and useful (idea, tool, content or anything else) developed by any of these sites anywhere in the world would (because the system would require it) be quickly adopted by all the others, so that the software at all the sites would remain at the state-of-the-art.

What would this give us? First, an educational technology system that is worldwide and where everything works together. Second an educational technology system that everyone in the entire world interested in education (student, teacher, expert) contributes to. (If a teacher in a remote place has developed a great way to teach the division of fractions, they can share it, potentially, with every learner in the world!) Third, an end for schools having to decide which proprietary system to "go with," only to forfeit the benefits of the ones they don't pick – our free, open system will have all the best components of all of them. Fourth, a way for classroom teachers, home schoolers and all students and learners around the world to have access to the best and latest ideas and technology for free!

Sound fantastical? Pie-in the-sky? It's NOT! This is what the Internet brings (or should be bringing) us! (MIT has all of its content online already. This just takes things a bit further.)

Let me quickly run through some potential objections:

1. Nobody will pay for it.

I strongly disagree with the premise that that learning software needs to be paid for by the people who use it, or even make money. Who says so? In my view, that's like saying education needs to make money. The education of our young people is a public service. What we *do* need is a way to *support* education and its tools, and support creativity in their creation. But there are many potential models for this. One of my current projects is to explore new business models for educational software: see the article "New Business Models for Education"

appended here. It is possible to design into this ways for business, government and private foundations to all contribute. (If any reader is particularly interested in this, please write to me directly at marc@games2train.com).

2. You need a company to maintain software in usable form.

Maybe we will need a small one (not-for-profit), or perhaps a standards organization, like the Internet has. But not much beyond that. Look at Linux. That, game modding and other projects demonstrate that people will do enormous amounts for free for something they believe in. We just need to channel their work. Of course developing good educational software, and particularly good educational games, takes creative, experienced teams and people. But these already exist, and many are disposed to contributing *pro bono* to education. So that an IBM, for example could take this under its wing in a similar way that it has done for Linux, but as a public service.

3. No one will post or input anything

“What people put into the Internet is much more important to them than what they get out of it,” says Tim Berners-Lee, the creator of the World Wide Web. Anyone who believes there won’t be input is living in a pre-Internet world – the problem will be *too much* input. What teacher wouldn’t want his or her favorite method, trick, game, etc. seen worldwide? In addition to creating software for content and methodology, a major part of the project’s challenge and effort will be creating software to classify, order, link, and facilitate users’ finding exactly what they want and need.

4. Then we’ll need a lot of help organizing and controlling it.

Yes, and this is where the colleges come in. This is work that is both important to world education, and appropriate for college students, and students should certainly get credit for doing it. As an added incentive, their input will be instantly seen and used around the world to improve education – what better motivator? And who better to write the software than the world’s best engineering students? Anyone who doesn’t think college students will be excited by the opportunity to help improve the world’s educational system doesn’t know today’s kids.

5. How do the creators get compensated and incentivised to continue to create?

In this system, the creators *don’t* get compensated; the incentive to create and contribute comes out of individuals’ interest in educating the world’s youth – people under 25 now constitute half the world’s population. Creators and contributors will have to get paid for doing something else, – e.g. teaching, doing the same thing for industry, or an unrelated job. They need to be doing this in their spare time (i.e. the time they devote to their volunteer efforts.) We are not

asking anyone (other than students, who are compensated in credits) to devote their whole careers to this. In fact, the reason it works is that rather than a few people doing this full time for pay, we have many millions each putting in a little for free.

Not all creators are motivated by money. The experience of the Internet is that people –many of our very brightest people, in fact – will do amazing amount of work and accomplish amazing things for free if they believe in the cause. Tim Berners-Lee, a world-class scientist, not only created the World Wide Web because it was something he thought should exist, he deliberately rejected the financial siren song of the Internet bubble. Teams of gamers make entire huge games (i.e. mods**) for free, both because they enjoy the process, and because they want to show that they can. In fact, I submit that if *everyone* who is in the educational software business to make money – or even “to earn a living” – got out, we’d still have more than enough people, and possibly the best people, to do the job.

** Legal “game modifications,” using software tools that ship with many commercial games. For more, see “Digital Immigrants Remedial Vocabulary” at www.marcprensky.com/writing/default.asp.

6. What is the business model, then? Where does the money come from?

This is what we need to, and are trying to design. See the attached piece, “New Business Models for Learning,” for some ideas. It is clear to me that if we do this right, business, government and private foundations will all help when needed, since it is to all of their benefit to have a better-educated population.

An Example

Here’s an example of how I see such a system working in one area I know well: educational games.

Say College X takes on Psych 101 as its topic. They put out a call on their software for game ideas, presenting the major curriculum topics of the standard Psych 101 course and asking, rather than for a whole game, for game “levels” to be designed for each main topic.

This call is publicized to psychology departments worldwide through the usual academic Internet channels. (In the long run everyone will know to come to www.psych101.college.edu, or whatever it is called.) Teachers announce it to their students. (We might provide some incentives here, like “If a good idea comes from your student body...”). There are also other channels, such as game sites to reach students directly. (Note: This part is not pie-in-the-sky either. The Liemandt foundation, which recently announced a contest for college students to create games for middle schoolers had thousand of hits on their site the day of their official announcement.) Teachers, of course, can also contribute.

Hopefully the college (perhaps in conjunction with its computer science department) creates (or finds) some good open-source software for talking in submissions and sorting them in a useful way. This software becomes part of what is now shared with every college for every subject and is used by all – until someone improves it or comes up with something better. In this way the underlying software, at all schools and in all subjects, always remains state-of-the-art.

Using this software, users from around the world post their submissions (originally in English, but eventually translation – human and machine – could be made part of the system), and College X invites users to comment and vote on them.

After an appropriate time, the call goes out on the site for people to unify the best topics into a game – again with submissions and voting. In the meantime, some of the levels may be exciting enough for people to want to begin to create them – they are invited to submit and post online prototypes.

And once those prototypes are online, they can be, and will be used and field-tested in classes or by anyone studying or teaching or interested in Psych 101 topics. Every student in the world taking Psych 101 will have an incentive to come and use the site, because it will help them understand better/faster. Hopefully some of the world’s experts in the field – with their kids – will also chime in here with ideas and contributions.

In time, some of the prototypes will be deemed so good, via usage, voting and comments from teachers and students, that they will be sent out for “professionalization.” This will be done either by the big game companies working *pro bono*, or by designers, programmers and artists interested in education who have already made their millions, or by anyone who has the skills and wants to contribute. It could also be funded by foundations, or by companies like Microsoft, which has already given money to colleges for educational games. Instead of taking a chance on one small group’s idea of what *might* work, the funders will be backing the improvement and upgrading of something *proven* to work.

(Note: since the sites aren’t only for games, every online teaching and learning aid in the world related to Psychology 101 will be posted, subject to the review by the college for suitability and correctness (but *not* for presentation – new ways of presentation is precisely what we’re looking for!) Another thing the colleges would be involved with is measurement and evaluation of the software on their sites – again sharing their methodologies with all the other schools for replication and continuous improvement.

The Principle

Here’s the underlying principle: **We allow no proprietary ideas in education, and we get the world to develop the ideas into products which anyone can use for free.** Can there be proprietary executions of ideas? Sure, if you think you can compete with the entire world working for free, go ahead. Let the best model (for the students) win! But where sites already exist that do some of this (and they already do), those sites should be

either consolidated voluntarily into our model, or copied and usurped to the very limits of the law (and some – of course not me, here – would advocate beyond) in the name of all our kids.

Getting Started

It shouldn't take much to get started implementing such a system. All it will really take is for 2-5 colleges or universities to volunteer (I already have two.) The schools would agree to assign teachers part-time to the project (i.e. the school pays the teachers – not a grant), and to offer a course or courses in educational software development as a part of the standard curriculum, for which the students would receive academic credit. Each school would need to decide on a topic for its specialty, and to coordinate between its department or school of education, its department of computer science, and the department of the school's specialty (and any other relevant departments, such as psychology or learning science) to create an implementation team.

Seed money, of an amount to be determined, would be used (1) to help set up the initial web sites, (2) to create some common base software, (3) to pay an initial coordinating team, and (4) to publicize and offer rewards for breakthrough successes. During the first two years, the coordinating team would work with the implementation teams at the various schools, together and independently, to get things started.

The pace of the project would be a business pace, not an academic pace. The goals would be to have the overall designs coordinated by month 3, to have the sites up and running by month 6, to publicize the sites by month 9, and to determine the program's future needs by month 12. Only people willing to work at this accelerated (for academia) pace would be accepted on the teams. Student team members would be solicited from day one.

By focusing each participating school on one single academic topic (with no duplication) we will retain the competition we want among different ways to learn the material (they are *all* up on the site), but avoid wasteful duplication and competition we don't need between schools (i.e. my Psych 101 site is better than yours.) However all schools will still compete to create better ways to present, display, share and evaluate online teaching and learning – ways that they will be given “bragging rights” for having invented, as these better ways are shared with all other schools in the program.

Teachers and individual learners will be able to use the sites as soon as they are up, in what ever ways they see fit. At all points their suggestions for improvements (and for what they need that isn't there) will be solicited, and there will be as many opportunities as possible for users to send feedback and for collecting users' success (and failure) stories.

Our goal is the best learning software in the world, produced by the world, for the free education of all our youth. The half of the world that are learners deserve no less from the rest of us.

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