

Interview in l'Unità

Rome, Italy

Interview with Marc Prensky, for article by Luca Landò
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LL: The title of your last book is "Teaching Digital Natives": does this mean our schools are not prepared to face digital innovation?

MP: It means, to me, that the young people of today are not well-served by what we offer them in our schools, which is, mostly, "the education of yesterday for the children of tomorrow." In particular, the "telling and testing" pedagogy works less well than perhaps it once did---many of today's young people just don't listen well, and as a result don't learn. On top of this, students in school are not treated as individuals, their special knowledge (e.g of technology and games) is not respected, and they are not given anywhere near enough opportunities to teach themselves, to solve real, complex problems, and to create. In school, students' individual passions hardly matter at all.

Until we change this, and change our basic pedagogy, digital tools and innovation will not help our young peoples' education very much, at least in school.

LL: Shortly... how can we teach digital natives?

MP: Our teachers need to partner with our students in a new way. The old "partnership" of "I talk, you listen" needs to be replaced by a pedagogy where our students do what they do best --- find content, use technology, create things that demonstrate their understanding and creativity--- and where the teachers do what they do best---ask the right questions, offer appropriate problems, ensure rigor and quality, and put things into proper context. We need to put students individual passions in the forefront not the same pre-determined content for everyone, and we need to learn to teach students whatever we think they *should* know in the context of those passions. To do this we need to first know and care about what those passions are, and, second, figure out how to make them the context for each students' learning. The era of "one education fits all" ---that there is a single curriculum and our job is to stuff it into all kids' heads---is over. Given all the tools available, today's students---when motivated by passion---can teach themselves, using their teachers as coaches, guides and partners.

LL: Do we need "digital teachers"?

MP: It will help greatly if our human "digital" teachers understand and respect what today's digital tools can bring to education. To do that, though, these teachers do not have to necessarily learn to use all the tools themselves (unless they want to) because the students can use them---and they *do* want to. Teachers can model using technology for students, when appropriate, but they should *never* use digital tools (electronic white boards, or computers or anything else) *for* the students---students should use them by themselves, with their teachers' guidance and quality-control of the output.

The other sense of "digital teachers" though, is computer programs, videos, games, etc as aids in the teaching and learning process. This, of course, is already happening (see www.khanacademy.org for example) and it will become much more sophisticated as the century progresses. A major benefit it brings is that students can review the teaching at their own pace, as many times as they like, and can learn in the way they are most comfortable learning, with many more choices offered. This could potentially be a big positive for schools, in that it allows the human teacher to take on the important roles of coach, guide and partner, as the technology takes over the bulk of the traditional teaching.

LL: What's the main opportunity represented by a fully digital school? And the weakest (or more dangerous) point?

MP: Digital technology potentially brings a great many advantages to education, including ease of connecting with the world, ease of sharing, ease of getting and giving feedback, and better, faster ways to create and communicate (just to name a few.)

But digital technology is not, by itself, the answer to education, or our educational problems. In fact, just adding technology to the old “tell-test” pedagogy can actually *hinder* education and learning, by distracting students from listening, while not taking maximum (or any) advantage of the powerful tools they have. So the pre-requisite for adding technology to change teachers’ pedagogy to some form of partnering.

LL: The so called “half life” of knowledge is getting shorter and shorter: wider and better research, improved knowledge (that brings more knowledge), better schools, new communication technologies are all posing knowledge to an intensive rate of innovation. Given the shortening half life of knowledge it’s clear we have to change our idea of education. What do you suggest? How can we move from the “school years” to a “school life”?

MP: The explosion of information (and, to a lesser extent, knowledge) and its rapid changes means that learning “things” or “information” is far less important than learning “skills”---and certain skills in particular. The new book I am currently writing is entitled ***Problem-solving, Passion and Producing*** which combination, I think, is a good formula for 21st century success. To elaborate:

Problem-solving---which we ought to teach systematically, starting in the earliest grades--- includes a whole range of important component skills, such as understanding, critical thinking, decision-making, judgment, analyzing, self-directing, self-evaluating, adapting, thinking creatively, designing, continuously improving, reflecting, being proactive, prudent risk-taking, thinking long-term, and learning. Even leadership skills are often required for effective problem-solving, as are character traits, such as persistence, morality, honesty, and truthfulness.

Passion is the motivator for learning and success---i.e. one’s individual passion, whatever it may be.

Producing is the key to being and staying employed. Students in the digital world should be continually producing, as they learn, output that is real and useful to others, preparing them for the work they will eventually do, in whatever jobs and fields. Even today’s primary school students can already produce truly useful web sites and other things. The sooner we start teaching students future skills, such as programming, video production, and wise participation in digital communities, the sooner we will begin preparing our students for a digital life filled with learning and productivity.

LL: How new technologies could help us in this?

MP: New technologies are crucial, but they are the tools, not the solution. In this regard, I offer the metaphor of “verbs” and “nouns”. “Verbs” are the skills we want our students to learn and know, such as critical thinking, analyzing, presenting, problem-solving, etc. (there are many.) These skills don’t change much over time---they are the “constants” of education. The “nouns” are the tools, which are increasingly technology based, and which now change very rapidly. The trick is for educators to use the best, most up-to-date nouns i.e. tools) for each verb (i.e. skill) they are teaching. For example for the verb “communicating,” the preferred noun “hand-written letters” moved to “email,” which has moved yet again to “texting” and “twitter.” The preferred noun will no doubt change again. Yet “communicating” will endure as a needed skill.

LL: Shouldn’t schools teach students how to use new technologies to recover/update information?

MP: Applying the same metaphor, the verb is “retrieving and updating information” As nouns, ancient Egyptian students used scrolls. Later generations used books and physical libraries. Today’s and tomorrow’s kids use computers. Those are the tools of their times.

I remember going to Firenze after the flood in 1967, and seeing the card catalogs that had become solid masses of mud. Today, there are only a few libraries left with paper card catalogues--- it is all electronic! All students should know how to use an “electronic card catalog” (In English, at least, the term, anachronistically, remains.) Plus today we have information, such as video, which is not catalogued at all, but is important to find in any search. So our students have to learn (and invent) new methods for retrieving and updating information

LL: Do you foresee a world in which the teaching will completely be web based?

MP: Although even today the web contains just about all the information one might ever need in most fields, using only the Internet is not particularly an attractive or inviting way to learn in large doses, except for the most highly motivated learners. That will no doubt change---in fact it is already changing--- and we don't know what's coming, except that it will be *very* different. The science fiction writer Vernor Vinge imagines, in his near-future novel *Rainbows End*, that all the information needed for any new job can be downloaded directly into the brain. The downside, though, is that after a few of these massive data transfers, the mind breaks down and can't work well any more.

I suspect that "people partnering with other people" will remain, in some form, an attractive way for many to learn for the foreseeable future, but such human-to-human learning will be more and more heavily mediated by technology, and less and less of it will be physically face-to-face.

LL: Fifty years ago knowledge was linear (go to school, open a book, listen to a conference) now is fragmented: pieces of information from here and there. Who teaches you how to compose all these fragments?

MP: Knowledge was always fragmented, until people pulled it together. One difference is that in the past it took "experts" to do this, now with modern tools, it is easier for individuals to do this in novel ways. Wikipedia is a great example. Mashups are another good example.

Theoretically, the new, quickly changing tools could be learned in formal settings, such as school. But, given the speed of change, it is more likely to happen, I believe, informally, through media like YouTube, for example.

Linear structure is still important--- it is the basis of logic, for example. But now we have many more non-linear options as well, including various form of simulation. Today there are a great many more ways to put knowledge together and make sense of the world than there were in the past, and our students need to learn to use all of them.

LL: What is the ideal school (or the most efficient) you have in mind?

MP: School should be, in my view, a place where people pursue their passions---whatever they may be---and have the opportunity to learn as much as possible in the process. Among the most important skills to be taught and learned in any school are how to address and solve problems that arise in life and in one's field, how to remain motivated throughout life, and how to create output that is original and useful to others.

LL: In general, what is your idea of the connection between internet and education.

The Internet is currently the repository of much of the world's information and knowledge. But again, the Internet is only a tool, or noun. It will certainly be replaced, at some point, by some better noun.

Education, though is about skills, or verbs, i.e. learning to do something creative and useful with that information and knowledge.

MP: Couldn't it be dangerous to organize a world where the knowledge is web based when not all the people can be connected (digital divide)?

Is it dangerous to have education, or electricity, or health care when not everybody has equal access to it? Of course not. We just have to work harder to give everybody access. I believe all people, and educators in particular, should strive to become "digital multipliers," i.e. they should do their part to bring the benefits of digital technology, including access, to a wider and wider group, until it encompasses all people. And they should also be doing that for health, food, education and other technology as well.

LL: What's your last teaching software/videogame you developed? What are you working on now?

MP: I recently made extended games for learning financial literacy (for students leaving high school and entering college) and for preventing and overcoming depression (for 13-15 year olds). Both have been shown by researchers to be very successful in teaching these subjects. I am currently working on a game to teach grammar and history---players having to add punctuation on a teleprompter to the speeches of famous

people. I am also working on games for learning algebra, and games for learning topics in history and in science. I think that once they are developed well, with sufficient coverage and breadth, games will become an import tool (noun) for Digital Natives' learning, although certainly not the only one.

Marc Prensky
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