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Eli Kannai

Eli Kannai envisions the possibilities for future of Jewish education completely integrated with technology.

What will education look like in five years?

During the summer of 2010 many tech gurus decided to take a shot at prophecy. Many of their predictions had to do, in one way or another, with education. The “Techonomy” conference (Technology + Economy = Techonomy) brought together many of the current and past technology leaders, assembled in Lake Tahoe in August 2010 (techonomy.com). Bill Gates said that: “Five years from now, on the web, for free, you’ll be able to find the best lectures in the world. It will be better than any single university,” and went on to predict that most people in the modern world will not go to university, but will rather learn as they go about their adult life as lifelong learners. University costs are simply prohibitive and the alternative on the web is too appealing. While elementary schools may stay quite like they are today, high schools will have to adapt appropriately as they will no longer prepare kids for college but rather teach them to become independent learners forever.

At the same conference, MIT professor Nicholas Negroponte, founder of the One Laptop per Child Association (OLPC) and the low cost, crank powered XO laptop made for the Third World, explained that the physical book is dead. Get ready, Rabbis, for some new Shabbat challenges. In July, Amazon announced that it sold more digital books than hardcover books (paperbacks are still ahead, see <http://tinyurl.com/33nml3n>). Seth Godin said that he is not going to write more books, simply because it is no longer the best way to spread his ideas (<http://tinyurl.com/366yelj>). He tweets and blogs – and this does the job better. Some universities are lowering costs by using electronic readers and textbooks instead of physical ones. In five years the prophets predict that over 50% of book sales will be e-books (<http://tinyurl.com/2btz8sp>).

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Even more changes are on the way – at Google Europe there was a push to consider that the desktop computer will be dead by 2013 (<http://tinyurl.com/2958epq>). Cloud computing, the use of software coming from servers over the Internet rather than local computers or local servers, such as Google Docs or Salesforce, make the need for a powerful PC obsolete. Smartphones and tablets (iPad), those low cost, always on, carry on access devices that let us access the web, downloadable apps and electronic readers, will all come to the PCs funeral. In the technology blog Techcrunch (techcrunch.com/2010/08/28/phone-numbers-dead), Nikhyl Singha quotes Mark Zuckerberg, founder of Facebook saying: “I don’t know how long telephones will be around for.” Singha continues that, “It may not even take five years for the phone service, as we know it, to meet its demise.”

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Where does this “5 year prediction” come from? Five years is actually a while away, but not too far. Tech companies try to plan for five years, since most of the technologies that will prevail in five years time are actually visible today at different startup phases.

The problem is that there are many more technologies around at this phase than the ones that will eventually land in our consumer hands and some will take much longer than five years. As opposed to science fiction or futurism, which try to envision life in 20 years or more, 5 years seems like a “just below the horizon” time frame.

People today may have as many e-mail addresses as they choose to have, and as many phone numbers (try Google voice). I personally do not go to large technology conferences since the better key lectures (and the demos) are posted online. Many of Bill Gates’ predictions – in terms of content – are already true today. Try TED (www.ted.com) for popular lectures up to 18 minutes long. It is a wonderful website packed with hundreds of short “talks” from

the best lecturers in the world. OCW (open courseware, www.ocwconsortium.org) contains university level stu – for example, ocw.mit.edu lets you enjoy 2000 courses from MIT. For quick leaning, try Khan Academy at www.khanacademy.org, now offering over 1800 short videos explaining basic concepts for high school level. In India, a \$35 tablet (like the “iPad”) for the school system was recently announced – it actually works (news.cnet.com/8301-17938_105-20011536-1.html).

“Classroom” of the future

So what about high schools? We live in an interesting era – the teachers and students use technology all day long, but unplug during school hours. They both leave the house after checking e-mail and Facebook (respectively) and check in via access devices during the day – but most will not use technology during class time. As we approach a world where each student and teacher has at least one device to access the Internet, it is not news that we find schools lagging behind. For how much longer can school walls stop technology from entering the classroom? And if technology is to penetrate the school walls, what will the classroom look like? I believe that it is the fact that we do not have a good answer to this question makes teachers ask their students (and themselves) to unplug their devices as they enter the classroom. When these devices are on, it may turn the classroom into chaos. The logical options and considerations are therefore:

1. Get out of the classroom. Utilize online learning and independent learning.
2. Use technology as part of the classroom mechanics. I do not mean a projector or even a Smartboard; I mean utilizing the devices at the students’ hands, one per student. This can be done in specific well designed lesson plans.
3. A new “operating system” for the classroom, a new infrastructure which will systemically “produce” the lessons that make use of technology at the student level in every class, across the curriculum.

We actually see how all of these options are being played out in the “start-up phase” today. In the public school world, many students supplement their regular classes with online courses to take classes that are not offered in their school, to take courses during the summer, or to make their schedule work. Some school boards ask their high schools to provide online learning options so their students will be ready for this kind of learning style when they go to college. Clayton M. Christensen, in his book *Disruptive Class* (p. 98 and p. 143) predicts that by 2014, online courses will be 25% of the market share in high schools, and by 2019 about 50% of high school courses will be delivered online.

Christensen also speaks of “value added networks” of educators, places in which educators can develop and share tutoring and teaching tools, building on each other’s experiences. An example that includes a market place can be found at www.teacherspayteachers.com. Lesson plan sharing is seen even in the Jewish world (Lookstein.org and Chinuch.org are two examples) but more innovation for sharing games and demonstrations are on

the way. These tools build on the social networking culture and on user generated content, the desire of users to use “their own” tools, not those developed by professional content providers. Truth to be told, re-inventing education to take advantage and work well with technology is hard, so educators should work together to address these challenges.

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Consider the roles played by content developers (textbook writers), teachers in the classroom, parents (including older siblings) and students. The current delivery model in education has three central players. The developers create educational content, the teachers deliver this content to the students, and the students are the consumers of the content. Teachers are not developers, but since the classroom experience is always unique they are expected to teach their students based on, and adapted from, the well developed content that was created by professionals. While this model translates well to online learning, it is very different from the user generated content model. Although both online and user generated models are more student centered than the current situation, they are not the same with regard to the roles of teachers and classroom educators. While online learning is more of an “outsourcing” deal, keeping the teachers from the development world, a network of teachers creating new content together is new territory.

On the Bill Gates notes website (<http://tinyurl.com/26geq3e>) Sal Khan (whom I mentioned earlier, developer of thousands of short video clips explaining basic concepts) says he wants students to use his short educational clips as a new “operating system” for virtual schools and traditional classrooms. Time to Know (www.timetoknow.com), an Israeli startup, is developing a full curriculum that takes the one computer per student ratio as a given. The teacher can select the element of the available lesson plans to be used in each class session, and these include both frontal teaching aids and self study elements that can then be shared and displayed. Since everything is online and driven by software everything is also measured so teachers can follow the progress of their students and offer individual help appropriately. Both Sal Khan and Time to Know speak of themselves as the new “operating system” but they are actually very different from each other in the way that the local teacher in the classroom is expected to perform their job as an educator. With Time to Know it is more adaptation and less development, while maintaining the teacher’s central role in front of the students. With Khan Academy, the teacher’s role is changed and the student is actually in the driver’s seat.

On the Jewish scene

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An interesting example of a network of educators creating new content together can be found on the Midreshet website (www.midreshet.org.il). This site is a collaborative effort of the Israeli network of *batei midrash*, and now includes about 450 study sheets which are based on 3000 sources for Jewish and Israeli culture.

(www.midreshet.org.il). This site is a collaborative effort of the Israeli network of *batei midrash*, and now includes about 450 study sheets which are based on 3000 sources for Jewish and Israeli culture. Anyone can join, look for sources or add new ones, and create a study sheet based on these sources. One can take an existing

sheet and mix it with another, replace a few sources or add others. Study sheets and sources can be left as “drafts” or can be published, which would mean they would be sent for approval, checked for copyright etc. Some “best practices” are embedded in the system. Sources need to have a specified location, one can add

biographical notes about authors and there is place for explaining difficult words or phrases. Teachers can use the site as a “fixed database” with many study sheets, but they are invited to remix these sheets and take ownership by developing their own version that fits their specific needs.

Sharing may also be found in ShitufPiut, a branch of the Piyut website (www.piyut.org.il) that enables users to upload their own singing of *piyyutim* (liturgical poems), sometimes used for *tefillah* projects. This site is now working on a section in English.

Looking ahead

What will happen in five years? I do not know, but things will be different. Some teachers and schools will stay with the current model – outsourcing the development work to online course providers or “Time to Know” type of solutions. Others will participate in networks of educators creating their own content, most of it online, and manage a highly individualized classroom experience. Many more educators will do some of both – they will use ready made solutions for content they feel that they need more help with while developing their own materials for content they are more comfortable with. To enable these new educational experiences to happen all the stakeholders will have to collaborate. Educators, administrators, school networks, content providers and funders should work together to create the ecosystem that supports the innovation needed to cope with the challenge.

This is not only about the educators’ constant search for relevance in a changing world. It is not merely about student engagement. It is about the future, and our ability to prepare our future generation for the world they will live in, as we retire. It is amazing; it could be fabulous for all of us.

