

A lesson in innovation

Capital and Vision

***Time To Know*, a company founded by an Israeli investor who maintains anonymity for the time being, is attempting to lead the Israeli educational system into the twenty-first century. Three hundred employees, specialists in computers and education, blend technology with pedagogy and offer advanced computer-based lesson plans in mathematics, English, and Hebrew. By Nava Dekel**

The *Time To Know* company has been secretly busy for five years now, developing a digital-pedagogic vision intended to usher the Israeli educational system into the future. The company was founded by an Israeli investor sufficiently distressed at the state of education in Israel to invest his own money for the sake of a significant, if not entirely revolutionary, change. In his vision, children and teachers arrive to classrooms with personal computers (which he purchases) and are assisted by instructional software (which his company develops) in studying three subjects: Hebrew, English, and mathematics. The investor declines to be named for the time being, but his vision is no fantasy, as indicated by a controlled pilot project that has run during the last two years in two Tel Aviv elementary schools: Modi'im Elementary School and Yisgav Elementary School.

Shoshi Priel, principal of the Modi'im Elementary School, an inner city urban school in south Tel Aviv, recounts enthusiastically that one day she was approached by Dovi Weiss, who is the Chief Pedagogic Officer of Time To Know, a graduate of the Mandel School for Educational Leadership, and a doctoral student in mathematical education. He asked her to participate in the pilot. Priel considered that she had nothing to lose, but she did not anticipate how much she would gain. She could not have even imagined the enormous change that the program would create in the process of learning and teaching, in the motivation for students and

teachers, and in improving the accomplishments of the students, including those students experiencing the most difficulty. She also did not suspect she would postpone her retirement, after 19 years of administration, to continue implementing all of that at the school.

The birth of the idea

Time To Know was founded to solve, as completely as possible, the problem of the gap between pedagogy and technology. The founder, as Dovi Weiss recalls their first meeting, spoke of his desire to promote a holistic concept of education that would integrate the use of technology and help both students and teachers. "At that same discussion," Weiss relates, "we understood that although computers had been in some schools a long time, they hadn't caused any change in education. We decided to examine what was being done in the field around the world. Along with the company's previous CEO, I traveled and visited schools in various countries, but what we were looking for was nowhere to be found — an entire system integrating computers with classroom learning. The solutions were always partial."

Today, the Time To Know Company employs 300 people, mostly specialists in computers and in education. According to Weiss, its plans include the necessary components for turning it into an "evolutionary springboard" designed to cure the "broken machine" that is the school. He explains that the cure is embodied in four principles —

Infrastructure, Substance, Software, and Support — and it centers on the teachers.

The computer and the teacher

According to Time To Know, first of all the schools must receive a suitable infrastructure: portable computers for all the teachers and students, not in a computer lab but in the classroom — the students' routine work environment. The computers are not the goal, says Weiss, but an efficient tool for use only when they add value. Teaching and learning do not always need the computer medium. However, a computer is basic requirement for each student and teacher, as a notebook and pencil once were. Teachers in the program receive a projector and a pair of speakers along with their personal computer, and the school staff must include a technical support person on duty throughout the school day.



Shoshi Priel, principal of the Modi'im Elementary School. The parents too are pleased.

Another component — which may be where Time To Know makes its unique contribution — is the development of a holistic digital curriculum. There is no lack of digital curricula in the educational system, but they are partial and they demand a great deal of work from the teachers. Time To Know develops entire curricula that form a sequence of teaching. The teachers in the

program receive a series of complete and pre-defined lesson plans.

Asked whether these plans do not stifle the teachers' personalities and creativity, Weiss responds: "Each teacher can adopt different parts of the program and adjust them to his style, to the students' level, and to the class's needs. Our plans include research projects that require active, creative thinking, with attention to differences in knowledge, level, and interests among the students."

The software and the classroom

The computer-based work uses special software developed at Time To Know. The company's CEO for the past eight months, Dr. Yosi Ben-Dov, who comes from a career in university teaching and hi-tech management, says that the software, a kind of "Windows" for classroom use, is unlike any other in the world. It gives the teachers complete control over all the classroom activities as the teachers plan and present the lesson. The computer is not intended to replace the teacher by being a "teacher in a box," but rather to help present the lesson.

The teacher uses the software to plan and administer the lesson; she can track the students' work, seeing what they are doing and who is having difficulty. She is alerted when a student pauses for a given period of time. She can suspend work at the computers while the students look at the board or listen to her. When students finish the assigned work, they send their work to the teacher's computer and she can display correct answers on the board.

At the end of the assignment, the class discusses the material it learned. In other words — and for the Time To Know people, this is important to emphasize — the computer work does not supersede group learning, communication between students, or communication between student and teacher. Weiss enthusiastically explains that the software and the work method enable the teacher

to maneuver among teaching methods and learning methods so that, in his words, she “dances in the classroom.” The idea is that the classroom becomes a learning community with dialogue, feedback, and an exchange of output.

Developing the formula

“We arrived at our total formula,” Weiss explains, “through gradual and cautious work. We decided to construct a demonstration of sample lessons in mathematics, Hebrew, and English. For that purpose we built a simulation room, and there we presented the lessons we had prepared to educators. When we saw that the reactions were positive, we constructed a real trial in a special classroom and invited teachers and students. Until we received the participants’ feedback and saw that they had learned and had enjoyed the process, we didn’t make the decision to actually step into the system.”

For nine more months, the company’s staff developed content for the first academic year, targeting grade 4, in cooperation with computer specialists, teachers, and other educators. In 2007 they selected two Tel Aviv schools, Modi’im Elementary School and Yisgav Elementary School, which agreed to join in the experiment and received the necessary authorizations from the Israeli Ministry of Education.

Weiss and Ben-Dov say that senior educators are enthusiastic about the program and that the previous Minister of Education, Yuli Tamir, supported it as well. The current minister, Gideon Saar, has not yet been shown the program but they hope to reach him soon.

Ben-Dov stresses that the Israeli initiative is philanthropic. Time To Know is not demanding payment for the content and software that it offers. The initiative does not plan to go commercial in Israel in the future either, but schools that join the program will need to fund the technical equipment themselves.

In the coming academic year some dozen schools will be joining, in Ashdod, the Hefer Valley, Netanya, and possibly the Modi’im district and the north. The authorities there have committed to purchasing the necessary technical equipment, including the portable computers for everyone who will participate in the program; Time To Know will provide the software and train the teams.

How is such an expensive solution funded? According to Ben-Dov, Time To Know hopes to cover the expenses — tens of millions of dollars — and even to make a profit, by distributing the software abroad. They’ve made a beginning already. In Texas, USA, there have been trials in four schools. Now the company is trying to distribute the plan in teacher’s colleges as well, and it seems that next year they will begin training students at the Levinsky College. Prof. Ami Volansky, an advisor to the company, is responsible for liaison between the Time To Know project and the authorities.

What happens at a lesson

In the building that Time To Know recently moved to, the feeling is of activity and enthusiasm. Computer specialists are developing software on one floor, design work proceeds on another, and on yet another educators and academics are dealing with pedagogic development. From this perspective, everything looks organized, punctilious, and sophisticated as befits a hi-tech company. But schools are known to be the opposite of that hi-tech appearance. How does the software look from the school’s perspective?

At the Modi’im Elementary School, August is used for cleaning, painting, and straightening up in anticipation of the new academic year. There are no students, but the principal is active, energetic, and enthusiastic about the Time To Know lessons.

It is evident that Priel loves her students and that their success gratifies her greatly. She relates that

the experiment began at the Time To Know offices. The teachers were the main partners in the experiment, telling what they wanted to have in the classroom. Priel emphasizes that something unique emerged — dialogue between elementary-school teachers and a hi-tech company. The teachers and the company staff built the program together. Instruction took place in a special classroom built for the purpose, and the children were driven there. Today her school already has three Time To Know classrooms, and they are fully equipped for instruction under the program. The students' portable computers stay in the classrooms, in special cabinets, and there is a permanent technical support person who oversees maintenance and support. In the coming academic year, three age levels will be studying under the program — grades 4, 5, and 6.

Priel defines the program as a “global-scale revolution,” for the teachers and students alike. The program has influenced the teachers' standing and their motivation to teach. Teachers realized that this is something special and helpful, so they wanted to work hard at it. Granted they were paid for the extra work, but Priel says what's significant is what happened during the lessons. She stresses that Time To Know lessons differ greatly from regular lessons. They last ninety minutes, and during that time the classroom is quiet. No students ask to go outside, there is no violence, and there is complete cooperation from the students.

Priel relates that she didn't believe it until she sat through a whole lesson outside the special classroom, which was built to provide for external observation, and saw the calm and enjoyment that prevailed. At a time when immense wastage of school hours is being discussed, and attributed largely to disturbances, she says that more than 80% of the time in a Time To Know lesson is spent on learning. So the teachers are naturally pleased, they feel more valuable, and they are willing to work hard to prepare the lessons.

Priel waxes enthusiastic as she speaks of the students. She tells about students who managed to advance in reading solely because of the program, about those who were unable to sit in the classroom but today sit quietly through the double-length lesson and don't want to leave for recess, about students who lacked basic knowledge but after a year of work successfully closed the gap, and about the stronger students who receive enrichment.

The results also showed in tests administered to fifth-graders by the Szold Institute, which is supervising the program. The grades improved impressively. And most importantly, the children themselves feel that they know much more.

Like the Time To Know people, the principal too stresses the research approach that the program follows. She tells of an assignment the children received: “preparing the chewing gum of the future.” The children looked for information, thought about possible formulas, and suggested creative, interesting possibilities. No wonder everyone is enthusiastic, she says.

In the course of the year, adds Priel, many visitors came to observe the program. Those visiting at the end of the year were especially enthusiastic because they saw the silence in the experimental classrooms and the work that was progressing in an orderly fashion up to the last day of class. The parents too are pleased, and they feel greater calm between themselves and their children. The school's neighborhood is challenged both economically and otherwise, and the parents are aware of the wonderful gift they have received — a gift with great significance for their children's future.

Is everything rosy?

When everything sounds so good, complicated questions also arise. In education, history shows that during the experimental stage everything goes fine; the problems start at the end of the experiment and of the funding. Other questions

are less vital but intriguing: why is the donor maintaining anonymity? Everyone knows that most donors like to be recognized. To this question, the Time To Know staff and the principal answer similarly: “He is a modest person and doesn’t want publicity.” “He wanted to contribute to education; he believes it was stagnating.” “He is cautious, and he doesn’t want publicity until there is proof of success.”

When I press Priel as to whether anything is missing from the program, she says that the instructional aspect works fine but the aspect of values may be wanting. In order to strengthen that aspect, the Modi'im school has begun giving students scholarly group assignments: to find stories with a strong message of values. Another difficulty is the price of the program. In another year, when the trial ends, the school will need to invest money in the program’s continuation. Priel is already seeking donors to help her continue implementing the program.

And that isn’t all: The use of advanced technology in teaching and learning, it must be noted, is not a unique and original venture on the part of Time To Know. The Center for Educational Technology (CET) has been Israel’s leader in the field for decades already. Ben-Dov points out cautiously that although there is a difference in approach, the two organizations are planning to cooperate. If they meet with success, Israel may someday have Smart Schools.



**The company’s CEO Dr. Yosi Ben-Dov and its Chief Pedagogic Officer Dovi Weiss.
The key: Infrastructure, substance, software, and support.**

THE VISION

The goal of *Time to Know*: To inclusively and systematically put effective digital content and tools in the teacher's hands. By Dovi Weiss

When a teacher enters a typical classroom, he or she confronts three major obstacles to the job: *differentiation* (How can one teacher answer the needs of 35 students who all differ from one another?), *traditional teaching* (How can the teacher interest “digital native” students in learning from chalkboard lectures?), and *feedback* (How can a teacher give timely feedback and support to so many students?).



Dovi Weiss

Over the past fifty years, we have learned from Piaget, Wiggotsky, and their successors that effective learning is not a process where the teacher pours knowledge into the brain of a passive student but rather a process where the student is active and involved, creating meaning, discussing ideas, and constructing knowledge. So why is the educational system not succeeding significantly in the transition from instruction to construction? Because the students in the twenty-first century study according to a school model that was developed two centuries ago during the industrial revolution and was intended to qualify workers for uniform jobs at factories. Our society, economy, and educational goals have changed

dramatically since then but the school environment remains unchanged.

We founded Time To Know from that starting point. The pedagogic principle underlying the company is to create meaningful learning out of a three-part synergy:

Active learning, where knowledge is constructed and drilled under the teacher's guidance. The computerized environment has a decisive role in administering work to the students, encouraging curiosity and research, and enabling the teacher to anchor the new knowledge and understanding in a real-world learning environment. The computer is an ideal tool for drilling on the one hand and for creating opportunities for demonstrating understanding on the other hand.

Group learning that creates pedagogic dialog and social interactions. The computerized environment can function as a medium for conveying information, for presenting it to a group, and for turning it into an object for group discussion. The students send their work outputs via the wireless system to the board and the teacher leads a discussion on the basis of those outputs.

Adaptive instruction. The computerized environment is customized to different proficiency levels and learning styles and can respond to student preferences. It enables each student to advance at his or her personal pace and receive customized feedback. The computer can respond to the student's choices and enable the student to follow through on his or her inclinations and preferred learning style. Seen at the system level, the connection between computers and education over the last forty years has been a partial and shallow connection, taking place mostly outside the core process of the classroom. Time to Know is the first to introduce computer technology into the classroom in a teacher-led process of learning.

This is not a computer lab where students sit two hours a week with headphones on and go through a sequence of courseware or games. This is not a smart whiteboard where the teacher presents information attractively but continues to leave the students passive. Time To Know is about interactive content, with technological tools systematically and holistically embedded into the sequence of classroom teaching, learning, and assessment while covering the Ministry of Education's official curriculum in core subjects.

The teacher plays a vital, central role in the Time To Know environment. The teacher creates a partnership with this technological environment, in which the computer performs tasks such as delivering animation, presenting tasks to the student, and storing and communicating information, while the teacher leads the instructional process, makes decisions based on assessment reports, and finds time to sit with small groups of students.

This is the goal of Time To Know: to *inclusively and systematically* put effective digital content and tools in the teacher's hands.

Is it possible to imagine today that engineers, physicians, bankers, and many other fine professionals would do their jobs without technological tools? So how can it be that a teacher, one of the most important professionals in human society, lacks the assistance of a holistic, methodical technological environment?

A technological environment under the teacher's leadership will strengthen the educational system's ability to attain the goal of education: *achievement and evaluation*. An ambitious and active student will develop into a knowledgeable, involved citizen. A student who has experienced group work will be a team member who knows how to cooperate with colleagues in order to achieve a common goal. If a student successfully expresses individuality and difference while succeeding at school, that student will become a happy and fulfilled adult contributing to the surrounding society. John Dewey said that education is not a preparation for life but is life itself. The technological environment that we offer enables that vision to become reality.